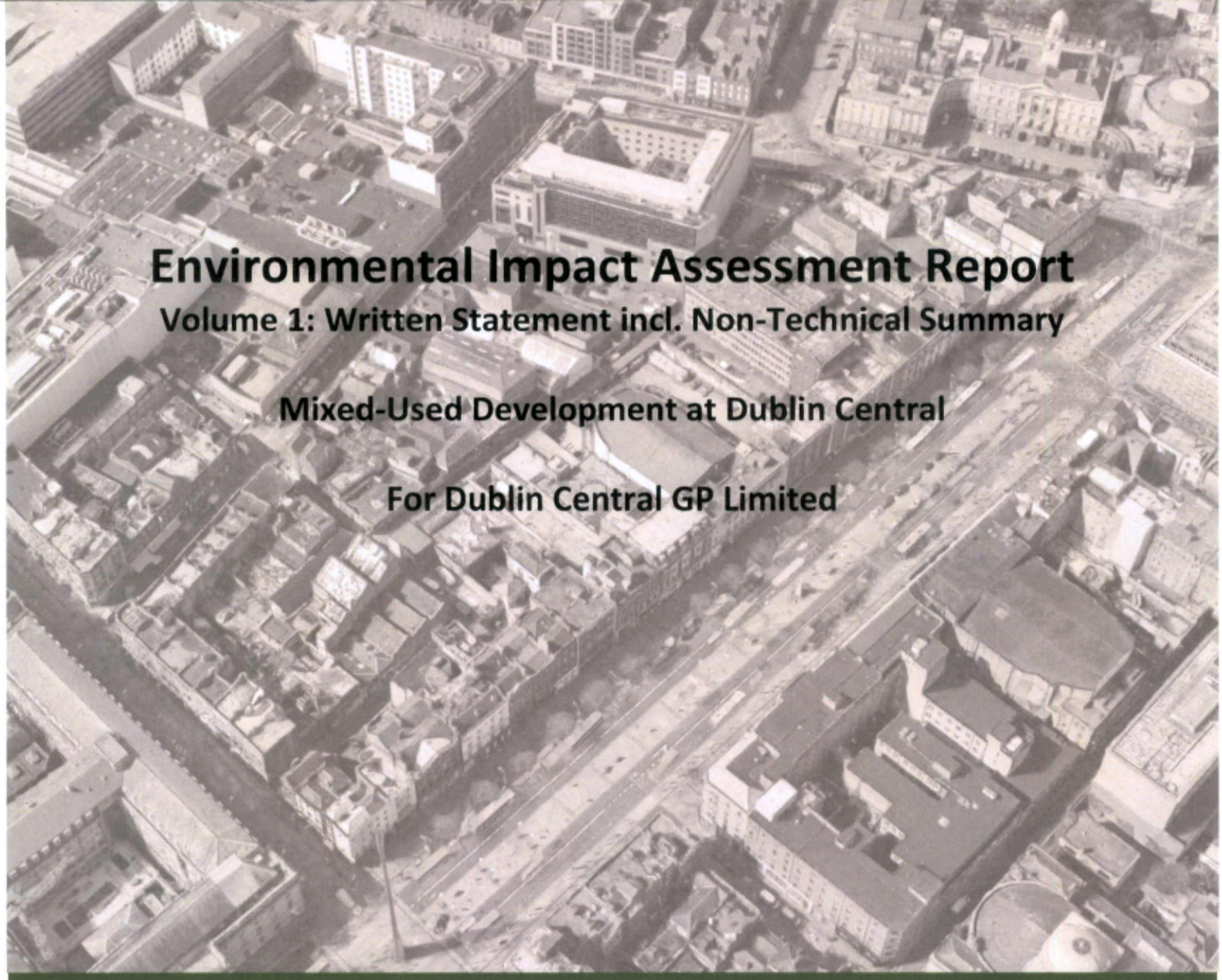

Environmental Impact Assessment Report

Volume 1: Written Statement incl. Non-Technical Summary

Mixed-Used Development at Dublin Central

For Dublin Central GP Limited

Prepared By: -

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MAY 2021

TABLE OF CONTENTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

EIAR VOLUME 1 – WRITTEN STATEMENT, INCLUDING NON-TECHNICAL SUMMARY

- Chapter 1 – Introduction
- Chapter 2 – Non-Technical Summary
- Chapter 3 – Description of Proposed Development
- Chapter 4 – Examination of Alternatives
- Chapter 5 – Popuation and Human Health
- Chapter 6 – Biodiversity
- Chapter 7 – Land, Soils and Geology
- Chapter 8 – Water
- Chapter 9 – Climate (Air Quality & Climate Change)
- Chapter 10 – Climate (Sunlight & Daylight)
- Chapter 11 – Air (Noise & Vibration)
- Chapter 12 – Landscape and Visual Impact
- Chapter 13 – Material Assets (Transportation)
- Chapter 14 – Material Assets (Waste)
- Chapter 15 – Cultural Heritage (Architectural)
- Chapter 16 – Cultural Heritage (Archaeological)
- Chapter 17 – Risk Management (Major Accidents & Disasters)
- Chapter 18 – Summary of Mitigation Measures
- Chapter 19 – Summary of Cumulative Impacts and Interactions
- Chapter 20 – Summary of Residual Impacts
- Chapter 21 – Bibliography

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

EIAR VOLUME 2 – APPENDICIES

- Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan
- Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3
- Appendix 3.3 – Outline Construction & Demolition Management Plan – Site 4
- Appendix 3.4 – Outline Construction & Demolition Management Plan – Site 5
- Appendix 6.1 – Protected Sites for Nature Conservation in the Vicinity of the Proposed Development
- Appendix 6.2 – Desk Study Flora and Fauna Records
- Appendix 6.3 – Examples of Valuing Important Ecological Features
- Appendix 6.4 – Potential Roost Feature (PRF) Photos from Building Inspections
- Appendix 7.1 – Environmental Assessment (Site Investigation)

- Appendix 9.1 – Ambient Air Quality Standards
- Appendix 9.2 – Dust Management Plan
- Appendix 11.1 – Glossary of Acoustic Terminology
- Appendix 11.2 – DCC Noise Risk Assessment
- Appendix 12.1 – Photomontages
- Appendix 14.1 – Construction & Demolition Waste Management Plan
- Appendix 14.2 – Operational Waste Management Plan
- Appendix 16.1 – Summary of National Monument Legislation
- Appendix 16.2 – Dublin City Development Plan 2016 – 2022 – Archaeology
- Appendix 16.3 – Archaeological Assessment Methodology
- Appendix 16.4 – Archaeological Testing Report

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

1 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) presents the assessment of environmental impacts and applicable mitigation measures associated with the mixed-use development on a 2.2 Ha site referred to as the Dublin Central Masterplan located in Dublin City Centre. This EIAR also provides an assessment of lands labelled Site 3, 4 & 5 – Dublin Central (hereafter, for the purposes of this EIAR, referred to as 'the Proposed Development'). The phrase 'Proposed Development' is used here to describe the entire of the proposed development within 3no. separate and concurrent planning applications for each of Site 3, 4 & 5. This use of the phrase 'Proposed Development' within the EIAR should not be confused with the separate proposed development that is the subject of each of the 3no. separate and concurrent planning applications.

This EIAR has been prepared on behalf of Dublin Central GP Limited ('the Applicant'). This EIAR accompanies 3no. separate and concurrent planning applications made to Dublin City Council (DCC) for Site 3, Site 4 and Site 5 of the Dublin Central Masterplan respectively.

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1.1 Summary of the Proposed Development

Chapter 3: Description of Proposed Development of this EIAR sets out the detailed description of the Proposed Development.

Dublin Central Masterplan

The Dublin Central project is an expansive (c. 2.2 Ha) and complex regeneration project. It needs to be delivered in stages to overcome site and project constraints.

A site wide cumulative masterplan has been prepared by Dublin Central GP Limited ('the Applicant')to set out the overall development vision for the Dublin Central project.

The Masterplan area encompasses almost entirely three urban blocks. The area is bounded generally by O'Connell Street Upper and Henry Place to the east, Henry Street to the south, Moore Street to the west, and O'Rahilly Parade and Parnell Street to the north. Moore Lane extends south from Parnell Street through the centre of the masterplan area, as far as its junction with Henry Place.

The Dublin Central Masterplan ('the Masterplan') represents the full development envisaged by the Applicant for the entire of these urban blocks. Those elements outside the planning application site boundaries for Dublin Central Site 3, Site 4 and Site 5 are not as yet fixed and remain subject to detailed design development as part of the Masterplan overall vision at this time.

'The Masterplan' area has been divided into six identifiable sites for the purpose of making separate planning applications. The only development 'proposed' at this time is that subject of 3no. concurrent planning applications for Site 3, Site 4 and Site 5.

Sites 3, 4 and 5 are primarily located adjacent to Henry Street and Moore Street, and contained also by Henry Place, Moore Lane and O'Rahilly Parade.

For the purpose of making the planning applications for Site 3, Site 4 and Site 5, and considering the cumulative effect of the proposed and planned project, the Masterplan represents the interim design for Site 1, Site 2AB and Site 2C (March 2021). This is notwithstanding that further progress on planning design continues to be worked up in the meantime and is ongoing.

Proposed Development

The description of Proposed Development can be summarised as: -

Site 3

The proposed development comprises a mixed-use scheme (c. 15,842.4 sq. m gross floor area) accommodated in 2no. blocks, ranging in height from 1 – 9 storeys over 2no. new independent single level basements. A proposed new Passageway separates the 2no. blocks (Block 3A & Block 3B), connecting Henry Street and Henry Place. The proposed blocks comprise: -

Block 3A (Eastern Block) (c. 7,806.3 sq. m gfa), fronting Henry Street, Henry Place and the new Passageway, with modulating building height at 4, 5, 7 and 9 storeys, over single storey basement. Block 3A accommodates: -

- An hotel (c. 7,175.3 sq. m gfa) with 150no. bedrooms from 1st to 7th floor and ancillary facilities at ground floor and basement, including: hotel reception addressing Henry Place.
- 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 138.1 sq. m) at ground floor on the new Passageway and Henry Place; and, 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 194.2 sq. m) and 2no. associated external terraces (c. 38.8 sq. m in total) at 8th floor of the proposed hotel.
- 1no. retail unit for use as a 'shop' or 'licensed restaurant / café unit with takeaway / collection facility' (Unit 1 – c. 127.2 sq. m) at ground floor on the new Passageway.
- 1no. retail unit for use as a 'shop' (Unit 2 – c. 326.5 sq. m) at basement, ground floor and first floor level on the new Passageway and Henry Street.

Block 3B (Western Block) (c. 8,036.1 sq. m gfa), fronting Henry Street, Moore Street, Henry Place and the new Passageway, with modulating building height at 1, 3, 5, 6 and 7 storeys, with top storey set back, over single storey basement. Block 3B accommodates: -

- 79no. 'Build-to-Rent' apartment units (c. 6,451.5 sq. m gfa), including 14no. 1-bed studios, 56no. 1-bed apartments and 9no. 2-bed apartments from 1st to 5th floor, with access from residents' lobby at ground floor on Henry Place.
- Internal residents' amenity areas at ground and 6th floors (c. 325 sq. m in total) and external terrace areas (c. 517.7 sq. m in total) at 6th floor.
- Private residential balconies and 'wintergardens' from 1st to 5th floor inclusive on elevations facing into the open courtyard areas and facing east to the new passageway. Balconies / terraces at 4th floor on west elevation to Moore Street and at 5th floor on south elevation to Henry Street.
- 5no. retail units, each for use as a 'shop', including: Unit 6 (c. 245.2 sq. m) at ground and 1st floor on new Passageway and Henry Street, Unit 7 (c. 382.4 sq. m) at ground and 1st floor on Henry Street and Moore Street, and Unit 8 (c. 182.2 sq. m), Unit 9 (c. 57.2 sq. m) and Unit 10 (c. 52.5 sq. m) at ground floor on Moore Street.
- 4no. retail units, each for use as 'shop' or 'licensed restaurant / café units with takeaway / collection facility', including: Unit 3 (c. 148.9 sq. m), Unit 4 (c. 53.5 sq. m) and Unit 5 (c. 55.1 sq. m) at ground floor on the new Passageway, and Unit 11 (c. 160 sq. m) at basement and ground floor on Moore Street and Henry Place; 1no. 2-storey building for cultural / gallery use with restaurant / café (c. 123.4 sq. m) replacing No. 10 Henry Place.

All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -

- Conservation, repair, refurbishment and adaptive reuse of part of the existing building fabric, including: -
  - Retention of Nos. 36 – 37 Henry Street, with modifications, a vertical extension and new shopfronts; Retention of No. 39 – 40 Henry Street (upper floor façade).
  - Retention of Nos. 8 – 9 Moore Street, with internal and external modifications and new shopfronts.

- Retention of Nos. 11 – 13 Henry Place, with internal and external modifications and new shopfronts.
- Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.

- New Passageway linking Henry Street and Henry Place.
- Demolition of all other existing buildings and structures on site (c. 6,701 sq. m), including No. 38 Henry Street to form new passageway linking Henry Street to Henry Place.
- Demolition of boundary wall onto Moore Lane at the rear of properties at Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street.
- 160no. bicycle parking spaces within secure bicycle facility (24no. within Block 3A, 126no. within Block 3B and 10no. in the public realm).
- 1no. external residential courtyard at ground floor in Block 3B.
- Plant at basement and roof level.
- 2no. ESB sub-stations.
- Building signage zones and retractable canopies.
- Removal of existing boundary fence at junction of O'Rahilly Parade / Moore Lane within that part of the site including No. 13 Moore Lane, No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane).

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Site 4

Site 4 comprises a mixed-use scheme (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument / Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements comprising 15no. apartment units (c. 1,454 sq. m gfa), café / restaurant use (c. 864 sq. m gfa), retail use (c. 617 sq. m gfa), cultural use (c. 60 sq. m gfa) and office use (c. 295 sq. m gfa).

The proposed development to the north of Nos. 14 – 17 Moore Street consists of: -

- Nos. 20 – 21 Moore Street are refurbished and adapted to provide 1no. café / restaurant / licenced premises with takeaway / collection facility (c. 80 sq. m in total) at ground floor addressing both Moore Street and proposed new public plaza to the rear and 1no. 1-bed apartment and 1no. 2 bed apartment located at 1st and 2nd floor level – 4no. in total (cycle and bin storage at ground floor level).
- No terraces or balconies are proposed to the residential units.
- Provision of a new 3 storey extension at the side of No. 17 Moore Street (National Monument / Protected Structure) to act as an extension for ancillary use to the National Monument – a cultural facility (c. 60 sq. m gfa).
- Provision of an archway between the gable of No. 20 Moore Street and the new 2 storey extension to No. 17 Moore Street (National Monument / Protected Structure) to form an entrance to a new public plaza off Moore Street.
- Provision of a 2 storey building with profiled roof consisting 1no. licenced restaurant / café unit with takeaway / collection facility (c. 250 sq. m gfa). This building sits independently of the northern boundary of No. 9 Moore Lane at the rear of Nos. 14 – 17 Moore Street.
- Provision of part of a new public plaza (1,085 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 5 immediately to the north (1,253 sq. m public plaza overall).

The proposed development to the south of Nos. 14 – 17 Moore Street consists of: -

- 11no. apartment units (7no. 1-bed apartments and 4no. 2-bed apartments), accessed from proposed central courtyard from Henry Place in 2 – 3 storeys buildings (1 storey to rear) contained above ground floor within No. 10 Moore Street (refurbished and adapted), Nos. 11 – 13 Moore Street (replacement buildings with party wall of No. 12 and No. 13 Moore Street retained) and No. 5A Moore Lane (also known as Nos. 15 – 16 Henry Place – replacement building) and Nos. 17 – 18 Henry Place (also known as Nos. 4 – 5 Moore Lane – ground floor façade retained) with associated resident storage area at basement level of No. 10 Moore Street.
- 5no. retail units at ground floor: Unit 6 (c. 149 sq. m gfa) and Unit 7 (c. 128 sq. m gfa) on Moore Lane, Unit 10 (c. 69 sq. m gfa), Unit 11 (c. 149 sq. m gfa – including basement level) and Unit 12 (c. 58 sq. m gfa) on Moore Street; 2no. licenced restaurant / café units with takeaway / collection facility at ground floor: Unit 4 (c. 250 sq. m gfa – including basement level) onto Moore Lane and Unit 7 (c. 130 sq. m gfa – including basement level) onto Moore Street.
- 1no. office unit at first floor (c. 221 sq. m gfa) of 6 – 7 Moore Lane with access from ground on Moore Lane.
- A new courtyard is proposed between the rear of Moore Street buildings and Moore Lane buildings to provide communal open space (c. 155 sq. m) for the residential units.
- All apartment served by terraces / balconies with exception of Unit 13, No. 10 Moore Street.

All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -

- Conservation, repair, refurbishment and adaptive reuse of part of existing building fabric including: -
    - Retention of the buildings facing Moore Street at Nos. 20 – 21 Moore Street with internal and external modifications and new shopfronts.
    - Retention of the building facing Moore Street at No. 10 Moore Street with internal and external modifications and new shopfront.
    - Retention of Nos. 6 – 7 Moore Lane with internal and external modifications and new shopfronts.
    - Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.
- Demolition of rear boundary wall onto Moore Lane at the rear of Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street, Dublin 1.
- Demolition of all other existing buildings and structures on site (c. 4,525 sq. m); 44no. bicycle parking spaces serving residential, retail and office.
- Plant at basement and roof level; 1no. ESB sub-station onto Henry Place; Building signage zone and retractable canopies.
- Ancillary temporary works at No. 13 Moore Lane and No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane), Dublin 1.

Site 5

The development is set out as follows: -

- A mixed-use scheme in a single building (c. 6,478 sq. m gross floor area) ranging in height from 2 – 6 storeys (top floor set back) over single storey localised basement. The building includes office space (c. 5,753 sq. m) from 1st to 5th floor with office lobby at ground floor level, with 3 no. terraces at 2nd, 3rd and 5th floor respectively (c. 401 sq. m in total) addressing Moore Street and 3no. licenced restaurant / café units with takeaway / collection facility at ground floor (Unit 1 on Moore Lane & O'Rahilly Parade – c. 228 sq. m, Unit 2 on the proposed new public plaza – c. 271 sq. m and Unit 3 on Moore Street, O'Rahilly Parade and the proposed new public plaza – c. 179 sq. m), together with provision of a 'delivery hub' unit at ground floor level (c. 46 sq. m).

All associated and ancillary site development, demolition, landscaping, site infrastructure and temporary works, including: -

- Demolition of all existing buildings and structures on site (c. 2,312 sq. m).
- Provision of part of a new public plaza (168 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 4 immediately to the south (1,253 sq. m public plaza overall).
- 58no. bicycle parking spaces at ground floor level with associated cycling welfare facilities.
- Plant at basement and roof level.
- Building signage zone and retractable canopies.
- A surface water drainage pipe will be laid between Site 5 and existing services in Parnell Street and will be laid in O'Rahilly Parade and Moore Street.

1.2 Aim of the EIAR

An EIAR is defined in the Draft Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2017) as: -

> *"A statement of the effects, if any, which proposed development, if carried out, would have on the environment."*

The preparation of this EIAR is in accordance with Directive 2011/92/EU as amended by Directive 2014/52/EU (the Directive), the Planning and Development Act 2000, as amended and the Planning and Development Regulations 2001, as amended. It is also in accordance with the guidelines listed at paragraph 1.3 below.

The prescribed range of environmental factors are as follows: -

> *"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: -*
>
> *a) population and human health.*
>
> *b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC.*
>
> *c) land, soil, water, air and climate.*
>
> *d) material assets, cultural heritage and landscape.*
>
> *e) the interaction between the factors referred to in points (a) to (d)"*

In addition, the guidelines quote Article 5(1) of the Directive when describing the contents of an EIAR, as follows: -

"the developer shall include at least: -

a) a description of the project comprising information on the site, design, size and other relevant features of the project.

b) a description of the likely significant effects of the project on the environment.

c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.

d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.

e) a non-technical summary of the information referred to in points (a) to (d); and

f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

Article 94 of the Planning and Development Regulations 2001, as amended, provides for the information to be contained in an EIAR as follows: -

"94. An EIAR shall take into account the available results of other relevant assessments under European Union or national legislation with a view to avoiding duplication of assessments and shall contain—

a) the information specified in paragraph 1 of Schedule 6,

b) any additional information specified in paragraph 2 of Schedule 6 relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected,

c) a summary in non-technical language of the information required under paragraphs (a) and (b),

d) a reference list detailing the sources used for the descriptions and assessments included in the report, and

e) a list of the experts who contributed to the preparation of the report, identifying for each such expert—

(i) the part or parts of the report which he or she is responsible for or to which he or she contributed,

(ii) his or her competence and experience, including relevant qualifications, if any, in relation to such parts, and

(iii) such additional information in relation to his or her expertise that the person or persons preparing the EIAR consider demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality."

1.3 EIAR Guidance

This EIAR has been completed in accordance with the requirements as set out in the EIA Directive (2014/52/EU) and relevant guidelines and documentation, including: -

- Draft Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out environmental impact assessment (Department of Housing, Planning and Local Government , August 2018),
- Department of Housing, Planning and Local Government (2018) Circular PL 05/2018 - Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- Advice Notes for Preparing Environmental Impact Statements Draft (EPA, 2015).
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017).

DCC PLAN NO.2861/21
RECEIVED 01/06/2021

- EU Commission's SEA Implementation Guidance from 2003 (Paragraphs 5.25 and 5.26) refer to HH chapter.
- Circular PL 1/2017 – Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive).
- Circular PL 8/2017 – Implementation of Directive 2014/52/EU – Advice on Electronic Notification Requirements.

1.4 The EIAR Process

1.4.1 Introduction

This section demonstrates the process that has been carried out by the Applicant and Design Team in the preparation of this EIAR. As described and shown Figure 1.1, the EIAR forms a part of the EIA process.

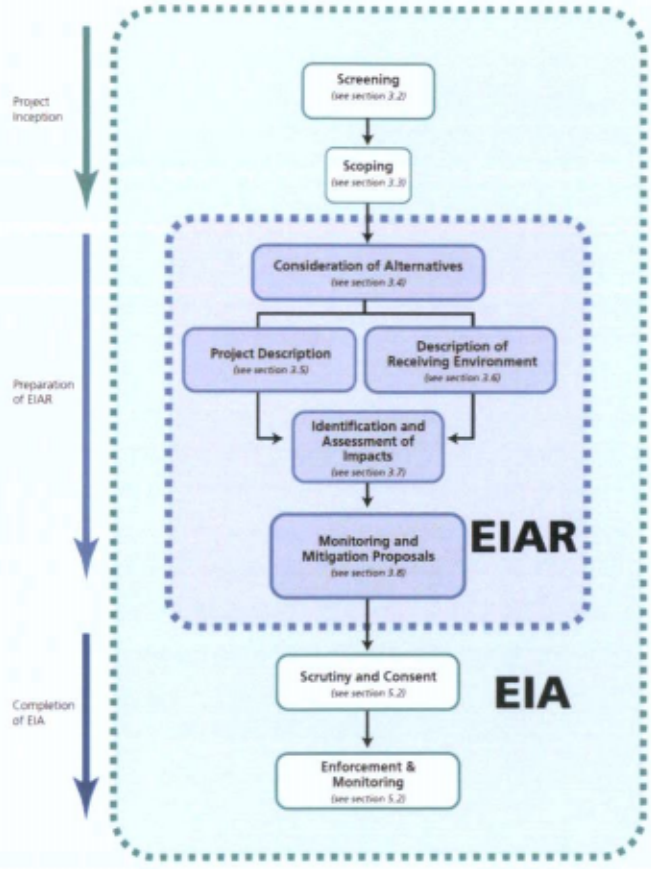


Figure 1.1: EIA Process - Extract taken from Figure 2.2, page 11 of the Draft EPA Guidelines 2017.

Further explanation of the terms referred to in Figure 1.1 is provided below: -

Screening: -

"The process of assessing the requirement for a project to be subject to Impact Assessment based on project type and scale as well as the significance or environmental sensitivity of the receiving environment."

Scoping: -

"The process of identifying the significant issues which should be addressed by a particular Impact Assessment as well as the means or methods of carrying out the assessment."

Environmental Impact Assessment Report (EIAR): -

> *"A statement of the effects, if any, which proposed development, if carried out, would have on the environment."*

Environmental Impact Assessment (EIA): -

> *"The process of examining the anticipated environmental effects of proposed project - from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR), evaluation of the EIAR by a Competent Authority, the subsequent decision as to whether the project should be permitted to proceed, encompassing public response to that decision."*

Competent Authority Decision

If, during the review, the Competent Authority determines that the information presented in an EIAR is not sufficient for it to make a determination, then the developer may be asked to provide further information.

If granting permission, the Competent Authority may attach conditions to the consent. The conditions will typically seek to ensure adherence to mitigation and monitoring measures presented in the EIAR. These may be augmented and modified by the Competent Authority.

If refusing the Competent Authority may cite specific evidence from the EIAR such as the non-conformity of potential impacts with official standards, impractical mitigation measures or uncertainty about environmental interactions.

1.5 Need for this EIAR

The revised EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) uses the term environmental impact assessment report (EIAR) rather than the previous environmental impact statement (EIS). Where current national guidelines and regulations refer to an Environmental Impact Statement or EIS, this can be taken to mean an Environmental Impact Assessment Report (EIAR).

Section 172 of Part X of the Planning and Development Act, 2000, as amended by regulation 17 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) sets out the requirement for an EIA as follows: -

> *"172 (1) An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—*
>
> *(a) the proposed development would be of a class specified in—*
>
> *(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—*
>
> *(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or*
>
> *(II) no quantity, area or other limit is specified in that Part in respect of the development concerned, or*
>
> *(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—*
>
> *(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or*
>
> *(II) no quantity, area or other limit is specified in that Part in respect of the development concerned, or*
>
> *(b)*
>
> *(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and*
>
> *(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment."*

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The Fifth Schedule of the Planning and Development Regulations lists classes of development where an EIA is mandatory under Part 1 and where an EIA may be required under Part 2. Where a project falls within a criterion for a type of development and / or exceeds a threshold as listed in Part 1 or Part 2, then it must be subjected to EIA.

Under Schedule 7 & 7A of the Planning and Development Regulations the Proposed Development can be considered sub-threshold given the nature and scale of the proposals.

However, Site 3, Site 4 and Site 5 sit within the broader context of the Masterplan which will see the redevelopment of the urban block between Parnell Street, O'Connell Street Upper, Henry Street and Moore Street. The combined site area for the Masterplan is c. 2.2 Ha within Dublin City Centre. This falls under Classes 10(b)(iv) of Part 2 of the Fifth Schedule of the Regulations, namely: *"Urban development which would involve an area greater than 2 hectares in the case of business district"*.

As such, having concluded a screening exercise, whilst it is acknowledged that the Proposed Development is sub threshold, it is concluded an Environmental Impact Assessment Report is required to be submitted to the Planning Authority with this Planning Application to consider the potential impacts of the Masterplan and the Proposed Development.

1.6 EIAR Layout & Structure

The composition of this EIAR has been prepared to respect the EPA Draft Guidelines (2017) and the screening and scoping stages described above. The layout and structure of this EIAR is laid out under 2 volumes, each containing specific sections as follows: -

- **Volume 1:** Written Statement, including Non-Technical Summary.
- **Volume 2:** Appendices.

Following on from the layout, the structure of the EIAR is shown in Table 1.1 below.

Chapter No.	EIAR Chapter Name	Consultant
1	Introduction	Stephen Little & Associates Chartered Town Planners & Development Consultants
2	Non-Technical Summary	Stephen Little & Associates Chartered Town Planners & Development Consultants with input from the consultants outlined below.
3	Description of Proposed Development	Stephen Little & Associates Chartered Town Planners & Development Consultants.
4	Main Alternatives	Stephen Little & Associates Chartered Town Planners & Development Consultants.
5	Population & Human Health	AWN Consulting Ltd.
6	Biodiversity	Scott Cawley Ltd.
7	Land, Soil & Geology	Waterman Moylan Consulting Engineers
8	Water	Waterman Moylan Consulting Engineers
9	Climate (Air Quality & Climate Change)	AWN Consulting Ltd.
10	Climate (Sunlight & Daylight)	BDP M&E Engineers
11	Air (Noise & Vibration)	AWN Consulting Ltd.
12	Landscape and Visual Impact	ARC Architectural Consultants
13	Material Assets (Transportation)	Waterman Moylan Consulting Engineers
14	Material Assets (Waste)	AWN Consulting Ltd.
15	Cultural Heritage (Architectural)	Molloy & Associates Conservation Architects
16	Cultural Heritage (Archaeological)	Courtney Derry Archaeology & Cultural Heritage

Chapter No.	EIAR Chapter Name	Consultant
17	Risk Management	Stephen Little & Associates Chartered Town Planners & Development Consultants.
18	Summary of Mitigation Measures	Stephen Little & Associates Chartered Town Planners & Development Consultants.
19	Summary of Cumulative Impacts & Interactions	Stephen Little & Associates Chartered Town Planners & Development Consultants.
20	Summary of Residual Impacts	Stephen Little & Associates Chartered Town Planners & Development Consultants.
21	Bibliography	Stephen Little & Associates Chartered Town Planners & Development Consultants.
-	Overall Co-ordination and Management of the EIAR	Stephen Little & Associates Chartered Town Planners & Development Consultants.

Table 1.1: Environmental Impact Assessment Chapters.

The relevant experts involved in the preparation of this EIAR can be found in Table 1.2 below.

Name	Years Exp.	Professional Qualifications	Professional Affiliations	Role
Stephen Little & Associates Chartered Town Planners & Development Consultants				
Stephen Little	29	Dip. Env. Mgmnt, BA (Hons), Dip. TP, Dip. EIA Mgmnt	MRTPI, MIPI	EIAR Manager Editorial Responsibility
Michael O' Sullivan	7	Masters in Planning and Sustainable Development (MPlan)	MIPI	EIAR Co-ordinator. Introduction, Non-Technical Summary, Description of Development, Examination of Alternatives, Risk Management (Major Accidents).
Naoise O'Connor	>1	Masters in Urban and Regional Planning	-	EIAR Assistant
Conor Owens	>1	Planning and Development (MSc)	-	EIAR Assistant
AWN Consulting				
Paul Conaghan	9	BSc. (Hons), MSc	IAH	Population & Human Health
Ciara Nolan	4	BSc (Hons), MSc (Hons)	AMIAQM, AMIEnvSc	Climate (Air Quality & Climate Change)
Aoife Kelly	7	BSc (Hons) PhD PgDip	MIOA	Air (Noise & Vibration)
Leo Williams	5.5	BAI, MAI Mechanical & Manufacturing Engineering - Trinity College Dublin Diploma in Acoustics and Noise Control – Institute of Acoustics	MIOA	
Stephen Smyth	18	BAI, PhD Mechanical & Manufacturing Engineering - Trinity College Dublin	MIOA MIEI	
Chonaill Bradley	7	BEnvSc	GradMCIWM	Waste Management
ARC Architectural Consultants				

DCC PLAN NO.2361/21
RECEIVED: 01/06/2021

Bill Hastings	50	B.Arch UCD 1970, 1st Honours Fellow of the RIAI RIAI accredited Grade 1 Conservation Architect Former Lecturer in Architecture, University College Dublin	Member of ICOMOS Ireland Member of the ICOMOS National Scientific Committee on Cultural Tourism	Landscape & Visual impact Assessment
BDP M&E Consulting Engineers				
Patrick Kavanagh	10	C Eng MIEI, BE Building Services Engineering 1st Honours BREEAM AP, LEED GA, WELL AP, BER Assessor, DEC Assessor, SEAI Energy Auditor, External Examiner TUD	Member Engineers Ireland, SEAI Energy Auditor, BRE, USGBC	Climate Daylight and Sunlight
Courtney Derry Archaeology & Heritage Consultancy				
Lisa Courtney	25+	BA, MSc, Dipl. Bus. Mgt., Adv. Dipl. in Planning & Env. Law, MIAI	Archaeologist and Cultural Heritage Consultant Member of the Institute of Archaeologists of Ireland (IAI) Member of the International Council of Monuments and Places (ICOMOS)	Cultural Heritage (Archaeology)
Siobhan Deery	22+	BA, MA, H-Dip (Ed.), Adv. Dip. in Planning and Env. Law, MIAI	Archaeologist and Cultural Heritage Consultant Member of the Institute of Archaeologists of Ireland (IAI) Member of the International Council of Monuments and Places (ICOMOS)	
Molloy & Associates Conservation Architects				
Maoliosa Molloy	22	B.Arch., BSc.Arch., MUBC, Dip.Arb., MRIAI, RIBA, MCI.Arb., RIAI accredited Grade 1 Conservation Architect		Cultural Heritage (Architectural)
Michael O'Boyle	28	B.Arch., MUBC, MRIAI, RIAI accredited Grade 1 Conservation Architect		
Shelly O' Donovan	18	B.Arch P.Grad.Dip RIAI accredited Grade 2 Conservation Architect		
Dr. John Olley	37	BEng, PhD		
Rob Goodbody	17	BA(Mod), DipEP, DipABRC, MA, MUBC, MIPI		
Sunni Goodson	12	BA, Msc Conservation of Historic Buildings, HNC Interior Design		
Scott Cawley Ltd.				
Siofra Quigley	3	Masters in Wildlife Biology and Conservation Zoology		Biodiversity
Niamh Burke	12	BSc Natural Sciences with Environmental Science PhD Salmonid Ecology	Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM	
Meave Maher-McWilliams	9	Biological Sciences Masters in Evolutionary and Behavioural Ecology	Associate member of CIEEM	

Waterman Moylan Consulting Engineers / Waterman Structures Ltd.				
Stephen Dent-Neville	8	BA BAI in Civil, Structural & Environmental Engineering	MIEI CEng – Chartered Engineer with Engineers Ireland	Land, Soils & Geology & Water
Joe Gibbons	35	Dip Eng (Civil) CEng, MICE	Chartered Engineer	
Brian McCann	38	BE, MSc(Eng), DIC,CEng, Eurlng	Chartered Engineer Fellow Engineers Ireland Fellow Institution of Civil Engineers Member Association Consulting Engineers of Ireland.	Material Assets (Transport)
Fernando Silva	7	BEng (Environmental)	MIEI, CREA-SP	

Table 1.2: List of EIAR Experts.

1.7 Structure of Each Environmental Topic

Each environmental topic (Chapters 5 – 16) of this EIAR has been structured in accordance to the EPA Draft Guidelines 2017, under the headings below.

In the first instance, within each chapter the Masterplan is assessed based on the design / layout at the time of submission (March 2021). As such, this considers the redevelopment of the entire urban block including the works required to facilitate the provision of the future Metro Station being proposed separately by TII.

Subsequently, each chapter will assess the Proposed Development (Site 3, Site 4 and Site 5) which are the subject of 3no. concurrent planning applications to Dublin City Council.

1.7.1 Introduction

All of the relevant introductory text and descriptions for the Chapter are located under this Section.

1.7.2 Methodology

An outline of the methodology employed in the assessment, including where possible a reference to the EPA guidelines.

1.7.3 Receiving Environment (Baseline Situation)

Existing Environment relevant to the environmental factor being assessed for this project.

A dynamic description of the specific environment into which the proposal will fit, taking account of other developments likely to occur. The particular aspects of the environment, for each topic, are discussed in terms of their context, character, significance and sensitivity.

1.7.4 Characteristics of the Proposed Development

Detailed descriptions / descriptions outside the scope of the relevant environmental factors being assessed should be removed. These may be referred to the main project description under Chapter 3: Description of Proposed Development.

The characteristics relevant to the environmental factors being assessed should be considered for the Demolition and Construction and Operational Phases.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

1.7.5 Potential Impacts of the Proposed Development

The potential impact of the proposed development includes a general description of the possible types of impacts that projects of this kind would be likely to produce, for Demolition, Construction and Operational Phases.

This includes a consideration of the 'Do-Nothing' impact. The 'Do-Nothing' impact describes the environment, as it would be in the future if no development of any kind were carried out.

Potential impacts without mitigation measures are considered in this section: -

- Construction and Operational Phase Impacts.
- Operational Phase Impacts.
- Do-nothing impacts.

1.7.6 Mitigation Measures

A description of any specified remedial or reductive measures considered necessary, resulting from the assessment of potential impacts.

A description of any post development monitoring of effects on the environment which might be necessary, covering the monitoring methods and the agencies responsible for their implementation.

Where required, a description of reinstatement measures and the agencies responsible for their implementation.

All of the proposed mitigation measures of this EIAR are grouped into Chapter 18: Summary of Mitigation Measures.

1.7.7 Predicted Impact of the Proposed Development

An assessment of the specific impacts of the subject proposal on the environment, as found by expert analysis and judgment, having regard to the receiving environment, the characteristics of the proposal, the potential impacts and any mitigation measures.

The predicted impacts, for both demolition and construction and operational stages, are assessed having regard to their character, magnitude, duration, consequences and significance.

A **'Worst Case'** impact is also considered for both the construction and operational phases of the development: -

- Construction Phase.
- Operational Phase.
- Worst Case impact.
- Interactions.
- Cumulative.

All of the Predicted Impacts measures of this EIAR are grouped into Chapter 19: Summary of Mitigation Measures.

Interactions and Cumulative Impacts are examined under Chapter 20: Summary of Cumulative Impacts & Interactions.

1.7.8 Monitoring

Required where impact pre-mitigation is potentially significant. Allows for assessment of effectiveness of mitigation measures.

1.7.9 Difficulties Encountered

Required where impact pre-mitigation is potentially significant. Other difficulties include access to site to carry out surveys during restriction in place due to Covid-19.

1.7.10 Bibliography

A list of reference material used in compiling the chapter. This will feed into Chapter 22: Bibliography.

1.7.11 Consultations

A list of consultations held in the course of the preparation of the EIAR, including the following details: -

- Agency / Body.
- Date of Consultation.
- Nature of Consultation (i.e. meeting, email, phone call).

The EIAR team has engaged in consultations, where necessary, with the relevant authorities. It has also engaged with the Design Team. The outcome of this engagement has been identified where relevant in the preparation of each EIAR Chapter.

We refer also to Section 1.9: Public & Stakeholder Public & Stakeholder Consultation , below.

1.8 Assessment of Impacts

Clarity of method, language and meaning are vital to accurately explain the full range of effects. Adherence to a systematic method of description can be of considerable assistance in this matter.

The relevant terms listed in the table below can be used to consistently describe specific effects. All categories of terms do not need to be used for every effect.

1.8.1 Quality of Effects

With regards to the **'Quality of Effects'**, it is important that any such effects are clearly identified, especially to non-specialist readers.

These effects which may occur can be characterised into 3 types: positive, negative or neutral.

Firstly, if the proposed element of the project improves the quality of the receiving environment it is seen as a Positive Effect.

Secondly, where such a change does not affect the quality of the receiving environment it can be described as a Neutral Effect.

Finally, Negative /Adverse Effects can be described as a change, which reduces the quality of the environment.

1.8.2 Describing the Significance of Effects

In terms of **'Describing the Significance of Effects'**, it is outlined under the EIAR Guidelines that such effects are specific to each different environmental topic. Interactions between factors are considered at Chapter 19: Summary of Interactions and Cumulative Impact.

The EIAR Guidelines state that in the absence of specific definitions, there are 7 potential useful definitions set out under Table 1.3.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Type of Effects	Description of Effect
Imperceptible	An effect capable of measurement but without noticeable consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity alters the majority of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.

Table 1.3: Describing the Significance of Effects.

1.8.3 Describing the Extent and Context of Effects'

When **'Describing the Magnitude of Effects'**, the EIAR will address the: Extent (i.e. Describe the size of the area, the number of sites, and the proportion of a population affected by an effect), Duration (i.e. time period, please refer to Section 5 below for more detail), Frequency (i.e. its recurrence) and Context (i.e. whether the foregoing magnitudes will conform or contrast with established baseline conditions).

1.8.4 Describing the Probability of Effects'

In **'Describing the Probability of Effects'**, a clear description of effects as outlined above enables the Competent Authority (Dublin City Council and / or An Bord Pleanála) to decide the balance of risk over advantages when making a decision. The probability is broken into 2 no. types: -

- The Likely Effects in so far as: The effects can reasonably be expected to occur as a result of the planning project if all mitigation measures are properly implemented.
- The Unlikely Effects in so far as: The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

1.8.5 Describing the Duration and Frequency of Effects

In describing the Duration of Effects, it is important to acknowledge that different environmental topics have varying concepts of 'Duration'. Therefore, it is acknowledged under EIAR Draft Guidelines 2017, that the following timescales as shown under Table 1.4 below provides a broad definition of useful times: -

Description of Effect	Timescale for each effect
Momentary Effects	Seconds to Minutes
Brief Effects	Less than a day
Temporary Effects	Less than a year
Short-term Effects	Lasting 1 to 7 years

Medium-term Effects	Lasting 7 to 15 years
Long-term Effects	Lasting 15 to 60 years
Permanent Effects	Lasting over 60 years
Reversible Effects	Effects that can be undone, through remediation or restoration.
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

Table 1.4: Describing the Duration and Frequency of Effects.

1.8.6 Describing the Types of Effects

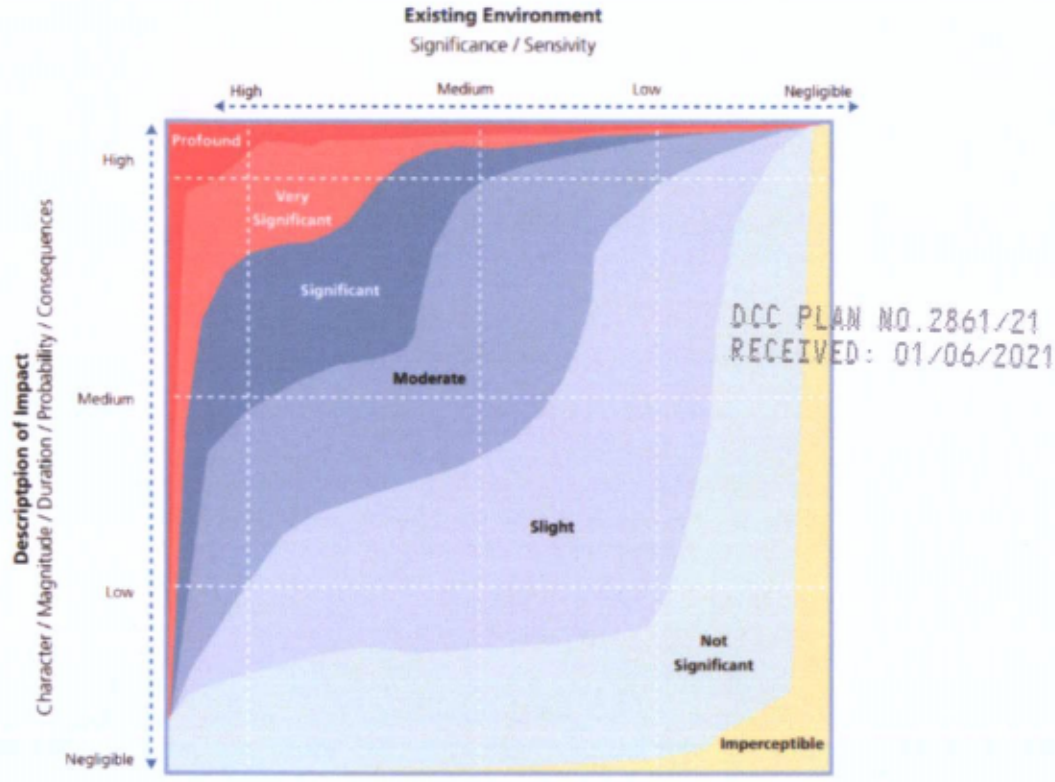
Under the Guidelines, describing the Types of Effects are identified into 8 different types of, and inter-related effects: -

- **'Indirect Effects'** (also referred to as Secondary Effects) – impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
- **'Cumulative Effects'** – The addition of many minor or significant effects of other projects, to create larger, more significant effects.
- **'Do Nothing Effects'** – The environment as it would be in the future should no project of any kind be carried out.
- **'Worst case Effects'** – The effects arising from a project in the case where mitigation measures substantially fail. It can also be a worst case assumption where there is uncertainty in the assessment or in the effectiveness of mitigation measures.
- **'Indeterminable Effects'** – When the full consequences of a change in the environment cannot be described.
- **'Irreversible Effects'** – When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
- **'Residual Effects'** – The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
- **'Synergistic Effects'** – Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

1.8.7 Determining Significance

The above Sections 1.8.1 – 1.8.6 above provide a helpful guide in determination of the significance of the impact. The language described in the above Sections has been used in the preparation of this EIAR.

Figure 1.2 taken from the EPA Draft Guidelines (2017) illustrated how the character of a predicted impact to the sensitivity of the receiving environment can determine the significance of the impact.



DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Figure 1.2: Chart showing typical classifications of the significance of impacts (Figure 3.5, Draft EPA Guidelines 2017, page 53).

1.9 Public & Stakeholder Consultation

The structure, presentation and the non-technical summary of the EIAR document, as well as the arrangements for public access, all facilitate the dissemination of the information contained in the EIAR. The core objective is to ensure that the public and local community are aware of the likely environmental impacts of projects prior to the granting of consent.

1.9.1 Submissions in relation to the EIAR

Statutory Consultation

This EIAR and application will be available for inspection free of charge or purchased on payment of a specified fee (which fee shall not exceed the reasonable cost of making such a copy) during public opening hours excluding Bank Holidays at the following location: -

- The Offices of Dublin City Council, Civic Offices, Wood Quay, Dublin 8.

Prescribed Bodies

Prior to submitting the 3no. separate and concurrent planning applications for Site 3, Site 4 and Site 5, the Applicant has engaged with the following Prescribed Bodies: -

- Transport Infrastructure Ireland.
- Irish Water.
- Irish Aviation Authority.
- Department of Housing, Local Government and Heritage.
- National Monument Service.

EIAR Portal

As of the 1 September 2018, there is an obligation on the applicant, where an EIAR has been prepared, to submit the relevant information to the EIA Portal.

The Applicant has submitted an application form, a copy of the public notice and a site location plan to the Department of Housing Planning and Local Government.

A copy of this submission and acknowledgement receipt issued by the Department of Housing Planning and Local Government accompanies the planning application.

1.10 Statement of Difficulties Encountered

No exceptional difficulties were experienced in compiling the necessary information for the proposed development.

Although not a particular difficulty, the Covid-19 restrictions created difficulties in terms of access to all buildings / the Masterplan area to conduct surveys. This was noted as difficulty as part of the preparation of the Chapter 6: Biodiversity.

In preparation of Chapter 13: Material Assets (Transportation) the Covid-19 restrictions created difficulties in terms observing local traffic conditions.

In preparation of Chapter 15: Cultural Heritage (Architectural) as some units with the Sites and the wider Masterplan are occupied access to carry out physical investigations and recording limited compounded further due to the Covid-19 restrictions. Furthermore, due to the Covid-19 restrictions research of the site in public archives has not been possible.

Where any specific difficulties were encountered these are outlined in the relevant chapter of the EIAR.

1.11 Forecasting Methods Used

The methods employed to forecast the effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines.

The general format followed is to identify the receiving environment, to add to that the 'loading' of the proposed development on the various aspects of the environment considered, to put forward amelioration measures as necessary to lessen or remove a potential impact, and thereby to arrive at a net predicted impact.

1.12 Quotations

EIAR's by their nature contain statements about the proposed development, some of which are positive and some less than positive. Selective quotation or quotations out of context can give a misleading impression of the findings of the study.

Therefore, the study team urge that quotations should, where reasonably possible, be taken from the conclusions of specialists' section or from the non-technical summary and not selectively.

1.13 Errors

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and / or minor inconsistencies do occur. These typographical errors and / or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

2 NON-TECHNICAL SUMMARY

This Environmental Impact Assessment Report (EIAR) presents the assessment of environmental impacts and applicable mitigation measures associated with the mixed-use development on a 2.2Ha site referred to as the Dublin Central Masterplan located in Dublin City Centre. This EIAR also provides an assessment of lands labelled Site 3, 4 & 5 – Dublin Central (hereafter, for the purposes of this EIAR, referred to as 'the Proposed Development'). The phrase 'Proposed Development' is used here to describe the entire of the proposed development within 3no. separate and concurrent planning applications for each of Site 3, 4 & 5. This use of the phrase 'Proposed Development' within the EIAR should not be confused with the separate proposed development that is the subject of each of the 3no. separate and concurrent planning applications.

This EIAR has been prepared on behalf of Dublin Central GP Limited ('the Applicant'). This EIAR accompanies 3no. separate and concurrent planning applications made to Dublin City Council (DCC) for Site 3, Site 4 and Site 5 of the Dublin Central Masterplan respectively.

The EU Directive requires the production of a Non-Technical Summary as part of the production of an EIAR. The Non-Technical Summary ensures that the public is made aware of the environmental implications of any decisions on new developments to take place. The Non-Technical Summary is laid out in a similar, but summarised format to the main EIAR, describing the project, exiting environment, impacts and mitigation measures.

Assessments have been conducted in an integrated, collaborative and analytical process in accordance with the Guidelines on the environmental topics to be examined. This seeks to identify the potential for significant adverse environmental impacts arising from the proposed project. Where significant adverse environmental impacts have been identified as potentially occurring during the construction and operational phases of the development, specified ameliorative, remedial or reductive measures are identified.

2.1 Purpose of the EIAR

The objective of this EIAR is to identify and predict the likely environmental impacts of the Dublin Central Masterplan and the Proposed Development as well as to describe the means and extent by which they can be reduced or ameliorated, to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process.

2.2 A Note on Quotations

Environmental Impact Assessment Reports by their nature contain statements about the proposed development, some of which are positive and some less positive. Selective quotation or quotations out of context can give a misleading impression of the findings of the study.

Therefore, the study team urge that quotations should, where reasonably possible, be taken from the overall conclusions of specialists' section or from the non-technical summary, and not selectively from the body of the individual chapters.

2.3 The Requirement for an EIAR

The process to determine whether an EIA is required for a proposed development is called Screening. This is dependent on the mandatory legislative threshold requirements or the type and scale of proposed development and significance or environmental sensitivity of the receiving environment.

Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein. Schedule 5 (Part 1) of the Planning & Development Regulations 2001-2018 brought Annex 1 of the EIA Directive directly into Irish planning legislation. The Directive prescribes mandatory thresholds in respect to Annex I projects. Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case-by-case basis for certain

classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

Schedule 5 (Part 2) of the Planning & Development Regulations 2001 – 2018 set mandatory thresholds for each project class. Sub-section 10(b)(iii) and (iv) addresses 'Infrastructure Projects' and requires that the following class of project be subject to EIA: (b)(i) Construction of more than 500 dwelling units. Category 10(b)(iv) refers to 'Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.'

Under Schedule 7 & 7A of the Planning and Development Regulations the Proposed Development can be considered sub-threshold given the nature and scale of the proposals.

However, Site 3, Site 4 and Site 5 sit within the broader context of the Masterplan which will see the redevelopment of the urban block between Parnell Street, O'Connell Street Upper, Henry Street and Moore Street. The combined site area for the Masterplan is c. 2.2 Ha within Dublin City Centre. This falls under Classes 10(b)(iv) of Part 2 of the Fifth Schedule of the Regulations, namely: *"Urban development which would involve an area greater than 2 hectares in the case of business district"*.

As such, having concluded a screening exercise, whilst it is acknowledged that the Proposed Development is sub threshold, it is concluded an Environmental Impact Assessment Report is required to be submitted to the Planning Authority with this Planning Application to consider the potential impacts of the Masterplan and the Proposed Development.

2.4 Description of Proposed Development

Dublin Central Masterplan

As noted above, the Proposed Development sits within the context of the Dublin Central Masterplan which extends to c. 2.2 ha.

The Dublin Central project is an expansive (c. 2.2 Ha) and complex urban regeneration project. It needs to be delivered in multiple separate projects to overcome site and project constraints.

A site wide cumulative masterplan has been prepared by the Applicant to set out the overall development vision for the Dublin Central project.

ACME Architects are the Masterplan Architect for the Dublin Central regeneration project. ACME has prepared a detail Masterplan Design Statement, which set out the design framework for the wider envisaged redevelopment at this significant, strategic location within the heart of Dublin city centre. The Dublin Central Masterplan is accompanied by a suite of documents which help to explain how the combined Masterplan will be built and function.

The Dublin Central Masterplan represents the full development envisaged by the Applicant for the entire of these urban blocks. Those elements outside the planning application site boundaries for Dublin Central Site 3, Site 4 and Site 5 are not completely fixed and remain simply an aspirational part of the Dublin Central Masterplan overall vision at this time.

For the purpose of making the planning applications for the Proposed Development (Site 3, Site 4 and Site 5), and considering the cumulative effect of the proposed and planned project, the Dublin Central Masterplan represents the interim design for Site 1, Site 2AB and Site 2C (March 2021). This is notwithstanding that further progress on planning design continues to be worked up in the meantime and ongoing.

Proposed Development

The description of Proposed Development can be summarised as: -

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Site 3

The proposed development comprises a mixed-use scheme (c. 15,842.4 sq. m gross floor area) accommodated in 2no. blocks, ranging in height from 1 – 9 storeys over 2no. new independent single level basements. A proposed new Passageway separates the 2no. blocks (Block 3A & Block 3B), connecting Henry Street and Henry Place. The proposed blocks comprise: -

Block 3A (Eastern Block) (c. 7,806.3 sq. m gfa), fronting Henry Street, Henry Place and the new Passageway, with modulating building height at 4, 5, 7 and 9 storeys, over single storey basement. Block 3A accommodates: -

- An hotel (c. 7,175.3 sq. m gfa) with 150no. bedrooms from 1st to 7th floor and ancillary facilities at ground floor and basement, including: hotel reception addressing Henry Place.
- 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 138.1 sq. m) at ground floor on the new Passageway and Henry Place; and, 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 194.2 sq. m) and 2no. associated external terraces (c. 38.8 sq. m in total) at 8th floor of the proposed hotel.
- 1no. retail unit for use as a 'shop' or 'licensed restaurant / café unit with takeaway / collection facility' (Unit 1 – c. 127.2 sq. m) at ground floor on the new Passageway.
- 1no. retail unit for use as a 'shop' (Unit 2 – c. 326.5 sq. m) at basement, ground floor and first floor level on the new Passageway and Henry Street.

Block 3B (Western Block) (c. 8,036.1 sq. m gfa), fronting Henry Street, Moore Street, Henry Place and the new Passageway, with modulating building height at 1, 3, 5, 6 and 7 storeys, with top storey set back, over single storey basement. Block 3B accommodates: -

- 79no. 'Build-to-Rent' apartment units (c. 6,451.5 sq. m gfa), including 14no. 1-bed studios, 56no. 1-bed apartments and 9no. 2-bed apartments from 1st to 5th floor, with access from residents' lobby at ground floor on Henry Place.
- Internal residents' amenity areas at ground and 6th floors (c. 325 sq. m in total) and external terrace areas (c. 517.7 sq. m in total) at 6th floor.
- Private residential balconies and 'wintergardens' from 1st to 5th floor inclusive on elevations facing into the open courtyard areas and facing east to the new passageway. Balconies / terraces at 4th floor on west elevation to Moore Street and at 5th floor on south elevation to Henry Street.
- 5no. retail units, each for use as a 'shop', including: Unit 6 (c. 245.2 sq. m) at ground and 1st floor on new Passageway and Henry Street, Unit 7 (c. 382.4 sq. m) at ground and 1st floor on Henry Street and Moore Street, and Unit 8 (c. 182.2 sq. m), Unit 9 (c. 57.2 sq. m) and Unit 10 (c. 52.5 sq. m) at ground floor on Moore Street.
- 4no. retail units, each for use as 'shop' or 'licensed restaurant / café units with takeaway / collection facility', including: Unit 3 (c. 148.9 sq. m), Unit 4 (c. 53.5 sq. m) and Unit 5 (c. 55.1 sq. m) at ground floor on the new Passageway, and Unit 11 (c. 160 sq. m) at basement and ground floor on Moore Street and Henry Place; 1no. 2-storey building for cultural / gallery use with restaurant / café (c. 123.4 sq. m) replacing No. 10 Henry Place.

All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -

- Conservation, repair, refurbishment and adaptive reuse of part of the existing building fabric, including: -
  - Retention of Nos. 36 – 37 Henry Street, with modifications, a vertical extension and new shopfronts; Retention of No. 39 – 40 Henry Street (upper floor façade).
  - Retention of Nos. 8 – 9 Moore Street, with internal and external modifications and new shopfronts.

  - Retention of Nos. 11 – 13 Henry Place, with internal and external modifications and new shopfronts.
  - Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.
- New Passageway linking Henry Street and Henry Place.
- Demolition of all other existing buildings and structures on site (c. 6,701 sq. m), including No. 38 Henry Street to form new passageway linking Henry Street to Henry Place.
- Demolition of boundary wall onto Moore Lane at the rear of properties at Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street.
- 160no. bicycle parking spaces within secure bicycle facility (24no. within Block 3A, 126no. within Block 3B and 10no. in the public realm).
- 1no. external residential courtyard at ground floor in Block 3B.
- Plant at basement and roof level.
- 2no. ESB sub-stations.
- Building signage zones and retractable canopies.
- Removal of existing boundary fence at junction of O'Rahilly Parade / Moore Lane within that part of the site including No. 13 Moore Lane, No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane).

Site 4

Site 4 comprises a mixed-use scheme (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument / Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements comprising 15no. apartment units (c. 1,454 sq. m gfa), café / restaurant use (c. 864 sq. m gfa), retail use (c. 617 sq. m gfa), cultural use (c. 60 sq. m gfa) and office use (c. 295 sq. m gfa).

The proposed development to the north of Nos. 14 – 17 Moore Street consists of: -

- Nos. 20 – 21 Moore Street are refurbished and adapted to provide 1no. café / restaurant / licenced premises with takeaway / collection facility (c. 80 sq. m in total) at ground floor addressing both Moore Street and proposed new public plaza to the rear and 1no. 1-bed apartment and 1no. 2 bed apartment located at 1st and 2nd floor level – 4no. in total (cycle and bin storage at ground floor level).
- No terraces or balconies are proposed to the residential units.
- Provision of a new 3 storey extension at the side of No. 17 Moore Street (National Monument / Protected Structure) to act as an extension for ancillary use to the National Monument – a cultural facility (c. 60 sq. m gfa).
- Provision of an archway between the gable of No. 20 Moore Street and the new 2 storey extension to No. 17 Moore Street (National Monument / Protected Structure) to form an entrance to a new public plaza off Moore Street.
- Provision of a 2 storey building with profiled roof consisting 1no. licenced restaurant / café unit with takeaway / collection facility (c. 250 sq. m gfa). This building sits independently of the northern boundary of No. 9 Moore Lane at the rear of Nos. 14 – 17 Moore Street.
- Provision of part of a new public plaza (1,085 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 5 immediately to the north (1,253 sq. m public plaza overall).

The proposed development to the south of Nos. 14 – 17 Moore Street consists of: -

- 11no. apartment units (7no. 1-bed apartments and 4no. 2-bed apartments), accessed from proposed central courtyard from Henry Place in 2 – 3 storeys buildings (1 storey to rear) contained above ground floor within No. 10 Moore Street (refurbished and adapted), Nos. 11 – 13 Moore Street (replacement buildings with party wall of No. 12 and No. 13 Moore Street retained) and No. 5A Moore Lane (also known as Nos. 15 – 16 Henry Place – replacement building) and Nos. 17 – 18 Henry Place (also known as Nos. 4 – 5 Moore Lane – ground floor façade retained) with associated resident storage area at basement level of No. 10 Moore Street.
- 5no. retail units at ground floor: Unit 6 (c. 149 sq. m gfa) and Unit 7 (c. 128 sq. m gfa) on Moore Lane, Unit 10 (c. 69 sq. m gfa), Unit 11 (c. 149 sq. m gfa – including basement level) and Unit 12 (c. 58 sq. m gfa) on Moore Street; 2no. licenced restaurant / café units with takeaway / collection facility at ground floor: Unit 4 (c. 250 sq. m gfa – including basement level) onto Moore Lane and Unit 7 (c. 130 sq. m gfa – including basement level) onto Moore Street.
- 1no. office unit at first floor (c. 221 sq. m gfa) of 6 – 7 Moore Lane with access from ground on Moore Lane.
- A new courtyard is proposed between the rear of Moore Street buildings and Moore Lane buildings to provide communal open space (c. 155 sq. m) for the residential units.
- All apartment served by terraces / balconies with exception of Unit 13, No. 10 Moore Street.

All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -

- Conservation, repair, refurbishment and adaptive reuse of part of existing building fabric including: -
    - Retention of the buildings facing Moore Street at Nos. 20 – 21 Moore Street with internal and external modifications and new shopfronts.
    - Retention of the building facing Moore Street at No. 10 Moore Street with internal and external modifications and new shopfront.
    - Retention of Nos. 6 – 7 Moore Lane with internal and external modifications and new shopfronts.
    - Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.
- Demolition of rear boundary wall onto Moore Lane at the rear of Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street, Dublin 1.
- Demolition of all other existing buildings and structures on site (c. 4,525 sq. m); 44no. bicycle parking spaces serving residential, retail and office.
- Plant at basement and roof level; 1no. ESB sub-station onto Henry Place; Building signage zone and retractable canopies.
- Ancillary temporary works at No. 13 Moore Lane and No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane), Dublin 1.

Site 5

The development is set out as follows: -

- A mixed-use scheme in a single building (c. 6,478 sq. m gross floor area) ranging in height from 2 – 6 storeys (top floor set back) over single storey localised basement. The building includes office space (c. 5,753 sq. m) from 1st to 5th floor with office lobby at ground floor level, with 3 no. terraces at 2nd, 3rd and 5th floor respectively (c. 401 sq. m in total) addressing Moore

Street and 3no. licenced restaurant / café units with takeaway / collection facility at ground floor (Unit 1 on Moore Lane & O'Rahilly Parade – c. 228 sq. m, Unit 2 on the proposed new public plaza – c. 271 sq. m and Unit 3 on Moore Street, O'Rahilly Parade and the proposed new public plaza – c. 179 sq. m), together with provision of a 'delivery hub' unit at ground floor level (c. 46 sq. m).

All associated and ancillary site development, demolition, landscaping, site infrastructure and temporary works, including: -

- Demolition of all existing buildings and structures on site (c. 2,312 sq. m).
- Provision of part of a new public plaza (168 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 4 immediately to the south (1,253 sq. m public plaza overall).
- 58no. bicycle parking spaces at ground floor level with associated cycling welfare facilities.
- Plant at basement and roof level.
- Building signage zone and retractable canopies.
- A surface water drainage pipe will be laid between Site 5 and existing services in Parnell Street and will be laid in O'Rahilly Parade and Moore Street.

2.5 Examination of Alternatives (Chapter 4)

Potential alternatives to the Proposed Development were considered as the scheme progressed. The 'Do-Nothing' alternative was explored, with a conclusion that a do-nothing approach would be contrary to the Development Plan objectives for the redevelopment of this underutilised, brownfield city centre site to deliver mixed-use development at this highly accessible location.

A number of site layout and alternative designs were considered during the iterative design process in consultation with Dublin City Council. The site's planning history was also considered.

The development as now proposed is considered to have arrived at an optimal solution in respect of making efficient use of zoned, serviceable lands whilst also addressing the potential impacts on the environment relating to residential, visual, natural and environmental amenities and infrastructure.

It is considered that the proposed development is wholly consistent with relevant national and local planning policy, regenerate a key city centre site and minimises the potential for environmental impacts.

2.6 Population & Human Health (Chapter 5)

Chapter 5: Population & Human Health of the EIAR evaluates the impacts if any, of the proposed development on human health, the potential receptors within the environs of the site include commercial businesses, residents and tourists in the area.

The relevant factors where potential human health impacts may occur are due to emissions to air, noise emissions, water, soil, sunlight, material assets, traffic, risk of natural disaster.

The construction of the proposed development will last 15 years and during that time there will be an overall positive impact on local businesses. Local Amenities and businesses will experience greater use by construction employees. With the use of specified mitigation measures access to the O'Connell Street, Parnell Street, Henry Street, and Moore Street areas will be unimpeded, and tourism should not be significantly impacted.

Once operational there will be Positive, Significant, Long-Term Impacts to local businesses, tourism and amenity. The proposed development will provide public open spaces, community meetings areas, and cultural facilities, all of which will have a significant and positive impact on local amenities.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The proposed development will improve tourism resources in Dublin City Centre City, providing increased tourism accommodation (150no. bed hotel) which will be augmented by the provision of retails, cafes, restaurants, and community and cultural provisions.

The development is not predicted to give rise to any material impacts (potable water, sewerage, electricity, gas supply) on the resident populations in the site environs, there is sufficient capacity to absorb this proposed development.

As demonstrated in Chapter 9: Climate (Air Quality & Climate Change) emissions from both the construction and operation of the proposed development for all scenarios will be compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health.

The noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria that have been adopted here for the operation of the proposed development and associated infrastructure. These criteria have been selected with due consideration to avoid any potential for human health to avoid both sleep disturbance and normal day to day resting and concentration. The resultant impact on human health is not significant.

The proposed development will not generate any perceptible levels of vibration during operation and therefore is not predicted impact from vibrations on human health.

Traffic Assessments have shown that once operational that any increases in traffic associated with the proposed development will be insignificant in terms of the projected downturn in traffic use in this area.

The impact of the proposed development on sunlight access to the adjacent properties is defined as Not Significant. This is the second lowest definition of impact taken from the Guidelines on the Information to be Contained in Environmental Impact Statements prepared by the Environmental Protection Agency (2017 Draft).

2.7 Biodiversity (Chapter 6)

The assessment considered the potential direct, indirect and cumulative impacts on biodiversity within the zone of influence of the proposed development. The proposed development consists in the construction of offices, hotels, cultural use in the form of an extension to the National Monument, café/restaurants, residential units, retail units, the inclusion of open space, site development and landscape work, completed across six Sites, on O'Connell Street Upper, Dublin 1. The assessment was undertaken in line with a number of guidance documents including the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018 as updated September 2019).

Baseline ecology surveys were undertaken at the proposed development site in June and July 2020 and included: -

- Habitat and flora surveys.
- Breeding bird surveys.
- Mammal surveys; and
- Bat surveys.

Breeding birds were the only key ecological receptors identified within or occurring within the zone of influence of the proposed development site.

In addition, European and Nationally designated sites were identified as key ecological receptors. The proposed development site does not overlap with any European or nationally designated sites. The nearest European site is South Dublin Bay and River Tolka Estuary SPA, located c. 2.3km to the north east of the proposed development site in Dublin Bay. Surface water drains from the site into the River Liffey, ultimately discharging into Dublin Bay and subsequently South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA, South Dublin Bay pNHA, Dolphins, Dublin Docks pNHA, and North Dublin Bay pNHA. During construction, contaminated surface waters could potentially be transferred

to downstream European and National sites via this drainage connection. Despite this viable connection, as concluded in the Hydrological and Hydrogeological qualitative risk assessment (AWN, 2021), Appropriate Assessment Screening (submitted alongside the planning documents) and Chapter 6: Biodiversity contained in the EIAR, there will be no likely significant effects on any European or National sites arising from this linkage during construction or during the operation of the proposed development.

Potential impacts arising from the proposed development during the construction phase are considered to be; disturbance and displacement of fauna species, and loss of potential nesting/roosting sites. Potential impacts arising from the proposed development during the operational phase are considered to be: disturbance and displacement of fauna species.

The proposed landscape plan has been developed in order to enhance the site as much as possible and provide opportunities for biodiversity in an urban, city centre development. Landscaping elements will include replacement/new tree, hedge, and bulb planting across various levels of the buildings, including on balconies, podiums, courtyards, and roof terraces. As the majority of these areas will be heavily shaded at times, this is echoed in the species proposed for planting. Perimeter planting of evergreen hedges along roof terraces, will offer screening to the residents, whilst also providing nesting opportunities for birds. Green and blue roofs which are proposed, will benefit invertebrate species, birds and the overall biodiversity value of the site, whilst also filtering rainfall before discharging to the local surface water drains.

Mitigation measures have been proposed, in addition to the design considerations summarised above. All of the mitigation measures will be implemented in full and are industry standard, and tried and tested, effective control measures to protect biodiversity and the receiving environment. Considering the elements included within the design of the proposed development, and the implementation of the mitigation measures in the associated planning application documents to avoid or minimise the effects of the proposed development on the receiving environment, no likely long-term significant residual effects on biodiversity are predicted.

2.8 Land, Soil & Geology (Chapter 7)

A desktop study was carried out to assess existing data from the Geological Survey of Ireland (GSI). This information was supplemented by a review of geotechnical Site Investigations carried out within the Dublin Central site by IGSL in 2008. This comprehensive ground investigation assessed the soil, rock and groundwater conditions across the site.

The subject development is located in Dublin City Centre. Topographic survey data shows that the subject site and the surrounding roads are generally flat, at a level of between 4.85m OD Malin and 5.40m OD Malin.

The site is a brownfield site, comprising of numerous buildings including various retail units, restaurants, offices, and derelict buildings. The baseline conditions associated with the Dublin Central Masterplan area are considered to be the same for the individual sites which are subject to this planning application (i.e. Site 3, Site 4 and Site 5). The groundwater vulnerability in the vicinity of the site is low.

Intrusive ground investigations carried out at the site in 2008 by IGSL. Waste Acceptance Criteria (WAC) testing was carried out on soil samples . There was no evidence of significant contamination in any of the samples and the tested parameters, where detected, are at levels generally below the inert WAC.

The removal of topsoil during earthworks and the construction of roads, services and buildings, in particular basements and foundations, will expose subsoil to weathering and may result in the erosion of soils during adverse weather conditions. Surface water runoff from the surface of the excavated areas may result in silt discharges to the River Liffey. Excavations for foundations, remaining

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

roadworks and services will result in a surplus of subsoil. Surplus subsoil will be used in fill areas where applicable.

Dust from the site and from soil spillages on the existing road network around the site may be problematic, especially during dry conditions. Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures.

During the operational stage of the development it is not envisaged that there will be any ongoing impacts on the underlying soil as a result of the proposed development.

Building and road levels are designed to minimise the cut and fill balance. Nonetheless, given the proposed new basement areas it is anticipated that there will be a significant surplus of soil to be removed from the site. Surplus subsoil and rock that may be required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility.

Where contaminated soils are encountered during the works, they will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998-2006, and associated regulations and guidance. Wheel wash facilities at the construction entrances and regular cleaning of the adjoining road network will prevent the build-up of soils from the development site on the existing public roads. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding of standing water within the basement and other excavations. Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage.

After implementation of the above measures, the proposed development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will be minimised.

The proposed development will result in a surplus of excavated material, which may contain contaminants. Any contaminated material will be exported to an approved licensed waste facility.

No significant adverse impacts on the soils and geology of the subject lands are envisaged.

Monitoring during the construction stage is recommended, including monitoring surface water discharging to the existing drainage network, monitoring cleanliness of the adjoining road network and to ensure prevention of oil and petrol spillages.

Trenches opened during construction will be backfilled with subsoil to reinstate existing ground levels. Upon completion no impact is foreseen.

2.9 Water (Chapter 8)

Research for this section included a review of Ordinance Survey and Topographical surveys of the subject site and surrounding area and a review of the existing water supply and drainage layouts from Irish Water / Dublin City Council records for the area.

There are a number of existing interconnected water supply mains in the vicinity of the Dublin Central Masterplan site. Existing buildings at the subject site are currently fed water by various connections to this existing network.

The drainage network surrounding the Dublin Central Masterplan site consists of combined foul and surface water sewers. Foul and surface water currently run uncontrolled / unattenuated from the Dublin Central Masterplan site, discharging to the existing combined network via several connections.

In addition to the combined drainage network, there is a 225mm concrete surface water sewer in Parnell Street and there is a 375mm concrete surface water sewer in Henry Street approximately 110m west of the Dublin Central site's southern boundary.

The site is generally flat, at a level of approximately 5m OD Malin.

During the construction of the new foul sewers there is the potential for surface water to be discharged to the existing public foul sewer system due to pipes and manholes being left open.

There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers.

There will be a net peak foul water flow of 56l/s discharging to the foul water system serving the Dublin Central Masterplan site. Foul and surface water currently flow uncontrolled / unattenuated from the Dublin Central Masterplan site to the existing combined network. The proposal will result in a net reduction in flows to the network.

The development of the Dublin Central Masterplan will result in a net reduction in the runoff volume through the introduction of SuDS devices and in a reduction in the runoff rate through the introduction of flow control devices and attenuation storage.

Mitigation measures will be implemented on a site by site basis in line with best practice standards. A method statement setting out in detail the procedures to be used when working in the vicinity of existing watermains will be produced by the contractor for any construction works within the vicinity of watermains and for roads or services crossing watermains.

All new foul sewers will be tested by means of an approved air test during the construction stage in accordance with Irish Waters Code of Practice and Standard Details. All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements. The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.

Surface water will be attenuated privately within each site of the Dublin Central Masterplan, and will discharge to the public network at a controlled rate limited to 2l/s from each site. The SuDS treatment train will treat the surface water discharging to the public network, removing pollutants form the surface water runoff. Maintenance of these SuDS devices will be required to ensure that they continue to treat the surface water as designed.

No significant adverse impacts are expected to arise during the construction stage if the proposed remedial and reductive measures are implemented.

There will be a water demand for the completed Dublin Central Masterplan of approximately 800m^3 per day. Through the introduction of SuDS measures and by removing surface water flows for Site 5 from the combined network, the implementation of the Dublin Central Masterplan will result in a net decrease in the wastewater flows discharging to the existing combined drainage system.

Monitoring will be implemented on a site by site basis in line with best practice standards. Water usage and potential leakage will be monitored by Irish Water using the water meters which will be installed on the supply pipes so that the development can be monitored in sections. The location of

these meters will be agreed with Irish Water and the meters will be linked to Irish Water's monitoring system via telemetry. The surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation systems) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning shall be incorporated into the safety file/maintenance manual for the Dublin Central Masterplan.

Any existing roads and footpaths that are opened to facilitate water supply, foul water drainage and surface water drainage connections will be reinstated.

2.10 Climate (Air Quality and Climate Change) (Chapter 9)

AWN Consulting Limited has been commissioned to conduct an assessment of the likely impact on air quality and climate associated with the proposed mixed-use Dublin Central development at O'Connell Street, Dublin.

In terms of the existing air quality environment, baseline data and data available from similar environments indicates that levels of nitrogen dioxide, particulate matter less than 10 microns and less than 2.5 microns are generally well below the National and European Union (EU) ambient air quality standards.

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA state that Ireland had total GHG emissions of 59.9 Mt CO2eq in 2019. This 6.98 Mt CO2eq higher than Ireland's annual target for emissions in 2019. Emissions are predicted to continue to exceed the targets in future years.

Impacts to air quality and climate can occur during both the construction and operational phases of the proposed development. With regard to the construction stage the greatest potential for air quality impacts is from fugitive dust emissions impacting nearby sensitive receptors. Impacts to climate can occur as a result of vehicle and machinery emissions as well as embodied carbon in construction materials. In terms of the operational stage air quality and climate impacts will predominantly occur as a result of the change in traffic flows on the local roads associated with the proposed development.

The UK Institute of Air Quality Management guidance was used to assign a high level of sensitivity to dust soiling impacts to the area in the immediate vicinity of the proposed development. The local area is considered of low sensitivity to human health impacts from dust emissions. The scale and nature of the construction works were reviewed, and it was determined that a high level of dust control was required for the demolition and construction phases of the proposed development. Once the dust mitigation measures outlined in Appendix 9.2 of Chapter 9: Climate (Air Quality & Climate Change) are implemented, dust emissions are predicted to be short-term, negative and imperceptible and will not cause a nuisance at nearby sensitive receptors. Construction phase traffic can also impact air quality, particularly due to the number of HGVs accessing the site. Construction phase traffic emissions were modelled as part of the air quality assessment and are predicted to have a short-term, negative, localized and imperceptible impact on air quality. It is not predicted that significant impacts to climate will occur during the construction stage, impacts to climate are predicted to be short-term, neutral and imperceptible.

Potential impacts to air quality and climate during the operational phase of the proposed development are as a result of increased traffic volumes on the local road network. The changes in traffic flows were assessed against the UK Design Manual for Roads and Bridges (DMRB) screening criteria for an air quality assessment. As the changes in traffic did not meet the screening criteria no air quality or climate assessment was required, and it can be determined that the operational phase of the proposed development will have an imperceptible, neutral and long-term impact on air quality and climate. In addition, the proposed development has been designed to minimise the impact to climate where possible during operation.

The best practice dust mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient

air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be short-term, localised, negative and imperceptible with respect to human health. Operational phase predicted concentrations of pollutants are predicted to be significantly below the EU standards, the impact to human health is predicted to be imperceptible, neutral and long term.

No significant impacts to either air quality or climate are predicted during the construction or operational phases of the proposed development.

2.11 Climate (Sunlight & Sunlight) (Chapter 10)

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact that the proposed mixed-use developments at Site 3, Site 4 and Site 5 of Dublin Central will have on the surrounding environment in relation to daylight, sunlight and overshadowing.

This chapter was completed by Patrick Kavanagh of Building Design Partnership. Patrick is a Chartered Engineer with a BE Hons degree in Building Services Engineering. Patrick is an SEAI Energy Auditor, BER Assessor, LEED Green Associate, BREEAM and WELL Accredited Professional.

The assessment of daylight was prepared using the methodology outlined in BS 8206-2: 2008 '*Lighting for Buildings Part 2*', whilst the impact of overshadowing was prepared using the methodology set out in BRE 209, '*Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*', Second Edition 2011, by P. J. Littlefair. This is the non-statutory guide referred to in the Dublin City Council Development Plan 2016 – 2022, and sets out guidelines that are most commonly used in Ireland and the UK to assess the impacts of development on daylight, sunlight and overshadowing.

A Daylight, Sunlight and Overshadowing assessment is normally carried out with particular regard to potential impacts on the living spaces and private open spaces of residential properties. In the case of the proposed development, there are no existing residential properties impacted by overshadowing due to the site location and orientation to other existing buildings. This is illustrated in the shadow plans included within the body of the technical report.

The BRE 209 guide recommends that in all relevant amenity spaces; at least half of the area should receive at least **two hours** of sunlight on 21st March. The amenity space within Site 3 is at roof level and receives well in excess of 2 hours of direct sunlight on over 50% of the area. In fact the space receives almost 6 hours on 80% of the amenity space on the 21st March. The proposed development will have a slight overshadowing impact on the new Dublin Central Site 4 amenity space. The residential amenity space within Site 4 is at 1st floor level in a courtyard and receives at least 2 hours of direct sunlight on over 80% of the designated amenity area for residents. The new public squares created in Dublin Central south of Site 5 and Site 2AB also receive high levels of sunlight throughout the year with over 90% and 70% of the spaces respectively achieving 2 hours of direct sunlight on the 21st March and the existing Moore Street Public Streetscape still meets the BRE 209 guidelines post developments.

It is therefore demonstrated that new and existing amenity spaces will receive high levels of sunlight and the BRE 209 guidelines are met.

The extent of the impact of a development is usually proportional to the extent to which that development is large in scale and/or height and its proximity to the location. This proportionality may be modified by the extent to which the development is seen as culturally or socially acceptable, and on the interaction between the proposed development, the character of the existing shadow environment and the land use pattern of the receiving environment.

The impact of the proposed development on sunlight access to the adjacent properties is therefore defined as **Not Significant:** *An effect which causes noticeable changes in the character of the environment but without significant consequences.* This is the second lowest definition of impact taken from the *Guidelines on the Information to be Contained in Environmental Impact Statements prepared* by the Environmental Protection Agency (2017 Draft).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The definition is chosen because the scale of the development at Sites 3, 4 & 5 will have a minor impact on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

No mitigation measures are proposed as the impact of Sunlight and Daylight is relatively insignificant and considered consistent with development within a city centre environment.

The residual impact on the development is minor as the scale of the development at Sites 3, 4 & 5 will have a minor impact on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

2.12 Air (Noise & Vibration) (Chapter 11)

Chapter 11: Air (Noise & Vibration) of the EIAR provides information on the assessment of noise and vibration impacts on the surrounding environment during the construction and operational phases of the proposed mixed-use Dublin Central development at O'Connell Street, Dublin.

When considering the potential impacts, the key sources will relate to the short to medium term construction and the long-term impacts associated with the development as a whole once operational.

The existing noise and vibration environments across the development site and in the vicinity of the nearest existing NSLs are dictated by transportation sources in the study area including the existing surrounding road network and luas line.

In the proposed development the nearest existing residential NSLs to the proposed development are those located at Greeg Court Apartments, to the northwest site boundary along Moore Street. The Rotunda Hospital is located to the north of the site boundary on Parnell Street. Apart from the receptors identified above, there are protected buildings identified at 14 to 17 Moore Street to the northwest of the site boundary. Commercial NSLs include Jurys Inn Hotel Parnell Street and Lynams Hotel, which are located beyond the northern boundary on O 'Rahilly Parade and eastern boundary on Henry Place respectively. Other hotels in close proximity to the eastern site boundary are Holiday Inn Express and The Gresham Hotel on O'Connell Street. The existing noise climate in the vicinity of the proposed development has been surveyed. The prevailing noise levels at roadside positions are mainly contributed by traffic on the busy main road and pedestrian activity, while at positions further from main roads, individual vehicle movements and pedestrian activity are the dominant noise sources.

During the construction stage of the proposed development, the construction activities will involve intrusive works, utilities and structural works and general site works. The assessment has determined that there is the potential for the recommended construction threshold value (75 dB LAeq) to be exceeded when instructive works and utilities and structural works are undertaken respectively within 20m and 15m of the immediate site boundary, for commercial and clinical receptors. At residential receptors there is the potential for the recommended construction threshold value (70 dB LAeq) to be exceeded when instructive works and utilities and structural works are undertaken within 30m and 15m respectively of the immediate site boundary. The only significant source of vibration is expected to be due to excavations, piling and foundation activities. Due to the distance between the aforementioned works, the vibration transmission would be expected to be below the recommended guidelines criteria.

The use of best practice noise control measures including screening, hours of operation, scheduling of works within appropriate time periods, strict construction noise limits, liaising with the public and noise monitoring during this phase will aim to minimise impact of construction noise experienced at nearby receivers. Similarly, vibration impacts during the construction phase will be well controlled through the use of low impact equipment and adherence to strict limit values which will be subject to monitoring at the nearest sensitive buildings.

Following implementation of mitigation measures the residual construction noise impact will be negative, moderate to significant and short-term when intrusive site works are undertaken within 10m of commercial and clinical receptors, and within 15m of residential receptors. At distances

between 10m to 15m of the commercial receptors the residual noise impacts are negative, slight to moderate and short-term noise impact. At distances greater than 20m, the residual noise impacts are neutral, not significant and short-term. When utilities and structural construction works are within 10m of commercial receptors the residual construction noise impact will be negative, slight to moderate and short-term. At distances greater than 15m, the residual noise impacts are neutral, not significant and short-term. There will be a neutral, not significant and short-term noise impact during general construction work activities at the closest noise sensitive receptors. Furthermore, these occurrences at closest boundaries will only be short-term and the vast majority of the construction works will take place at distances from the receptors where no significant impacts are predicted and the construction noise and vibration criteria will be below the recommended construction threshold value.

During the operational stage of the proposed development the outward noise impact to the surrounding environment will be include any servicing traffic on surrounding roads and plant noise from the residential and commercial buildings as part of the development.

The impact assessment has concluded that additional servicing traffic associated with the proposed development on local roads will have an insignificant impact on the surrounding noise environment.

Mechanical plant items will be designed to ensure any noise and vibration impacts during this phase will not exceed the recommended limit values at receptors outside the proposed development. The resulting impact is of neutral, permanent and imperceptible impact.

The impact of noise on the development itself has been assessed. Traffic noise along the surrounding roads is the primary noise source making up the noise levels across the development site. Mitigation measures have been recommended to facades overlooking the local road network so that appropriate internal noise levels are achieved.

2.13 Landscape and Visual Impact Assessment (Chapter 12)

Recently approved developments in the area of the Dublin Central site are very large in scale, including developments on O'Connell Street, Parnell Square, Parnell Street, Henry Street and Abbey Street; demonstrating that the surrounding area has a high capacity to absorb development. The scale and height of the approved development at the Jervis Centre is much greater and much taller than anything proposed as part of the Dublin Central Project, and existing developments along Parnell Street West, taken together, are far greater in extent that the whole of the Dublin Central Project.

ARC Consultants carried out an analysis of the potential visibility of development on Sites 3, 4 and 5 from the surrounding urban area, including from 22 representative view locations, and found that from 7 of the locations there was no potential for development on these sites to be visible; and that from only 7 of the representative locations would development on these sites be openly visible.

From the remaining 8 view locations, ARC has assessed that the likely landscape and visual effects arising from the existence of development on Sites 3, 4 and 5 would range from imperceptible to moderate. From the 7 locations where development would be openly visible, along Moore street and Henry Street, ARC has assessed that the likely landscape and visual effects as ranging from moderate to significant.

2.14 Material Assets (Transportation) (Chapter 13)

The Transport Assessment is a comprehensive review of all the potential transport impacts of the development including a detailed assessment of the transportation systems provided and the impact of the proposed development on the surrounding environment and transportation network.

The site for the proposed development comprises four city blocks. The blocks include a number of discreet buildings some of which are partly or totally vacant, a number of vacant plots, a number of car parks, van parks and depots and a diverse collection of 3 – 6 storey buildings accommodating a

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

mix of land uses including convenience shops, retail outlets, financial institutions, offices, and other non-retail uses.

The surrounding area is a well-established city centre with a high provision of public transport including bus services and the LUAS Green Line.

Construction of the Parnell Square Contraflow Cycle Facility is in progress in March 2021.

Public transport improvements proposed include the Bus Connects upgrade of the city network and the provision of a Metrolink station under the proposed development.

The development will also include Metro Enabling Works for the future underground station at O'Connell Street Upper envisaged or planned at Sites 2AB and 2C as part of the Dublin Central Master Plan and to be undertaken by DCGP Ltd on behalf of TII / NTA in advance of tunnelling and station construction works.

The National Transport Agency (NTA) and Transport Infrastructure Ireland (TII) approached the Applicant in 2018 with a view to locating a future MetroLink Station serving O'Connell Street Upper within the Dublin Central site, in an effort to avoid locating the Station within the central median of O'Connell Street Upper. TII is in the process of finalizing the design of the MetroLink project. TII is expected to make an Application for a Railway Order for the MetroLink project, including the O'Connell Street Upper Station, in Q2 / Q3 2021.

The Applicant has agreed a Memorandum of Understanding with the NTA/TII to complete the enabling works that would accommodate the future station, but which would also ensure that the Applicant's project was structurally independent of, and not prejudicial to, the MetroLink project. These enabling works comprise the provision of a structural 'box' positioned below ground, within which the MetroLink project can be positioned and above which the Applicant's project can be constructed. The provision of this structural box (sometimes referred to as the "Station Box") and its ancillary works below ground are known collectively as the Metro Enabling Works (MEW) in the context of the Applicant's overall Dublin Central project.

The provision of the MetroLink O'Connell Street Upper Station and its associated tunnel works would be completed by the NTA/TII once ready to do so and subject to the required consents being in place. It is envisaged that the MEW works would be completed in advance of the NTA/TII tunnel boring machines reaching the area.

The overall development of Dublin Central is programmed to commence in 2022 with completion some ten years in 2032.

During the Construction and Operational Stages, the trips expected to be generated by the proposed development will not exceed the 5% of the traffic on the adjoining roads which is the traffic threshold for a Transport Assessment. As a result, there will be minimal traffic impact on the surrounding road network during and post construction.

Servicing and deliveries will be managed during the Operational Stage under the *Servicing Strategy for Dublin Central*.

Traffic and other movements on the road network during the Construction Stage will be managed under the *Construction Traffic Management Plan* and by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

During the Operational Stage, transportation movements will be managed by the Travel Plan promoting best practise mobility management and travel planning to provide for the necessary mobility via sustainable transport modes.

The residual impact of the Construction Stage on the transportation environment in the area of the subject site is predicted to be temporary, short-term, slight, and negative.

The residual impact of the Operational Stage on the transportation environment in the area of the subject site is predicted to be permanent, long-term, slight, and positive.

2.15 Material Assets (Waste) (Chapter 14)

AWN Consulting carried out an assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by Dublin County Council as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

During the demolition and construction phase, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Construction of basements, construction of new foundations and the installation of underground services will require the excavation of estimated 163,490m^3 of material. There is limited chance for reuse of material onsite and it is envisaged that all material, will need to be removed offsite due to the limited opportunities for reuse on site. Excavated material which is to be taken offsite will be taken for offsite reuse, recovery, recycling and/or disposal.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (Appendix 14.1) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible.

During the operation phase, waste will be generated from the residents as well as the commercial tenants. Dedicated waste storage areas have been allocated throughout the development for residents and commercial tenants. The waste storage areas have been appropriately sized to accommodate the estimated waste arisings in both residential and commercial units. The waste storage areas have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste, glass, cardboard and plastic, as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil, furniture and abandoned bicycles (Appendix 14.2). The Plan complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Provided the mitigation measures outlined in Chapter 14: Material Assets (Waste) are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible.

Site 3, 4 and 5

AWN Consulting carried out an assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by Dublin County Council as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

During the construction phase, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Constructions of basements, new foundations and the installation of underground services will require the excavation of c.15,165m^3 excavated material will need to be removed offsite from Site 3, c. 132m^3 from Site 4 and c. 5,593m^3 from Site 5. The excavated materials will be required to be exported off site due to the limited chances for reuse on site. Excavated material which is to be taken offsite will be taken for offsite reuse, recovery, recycling and/or disposal.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (Appendix 14.1) during the construction phase will ensure that the effect on the environment will be long-term, imperceptible and neutral.

During the operation phase, waste will be generated from the residents as well as the commercial tenants. Dedicated waste storage areas have been allocated throughout the development for residents and commercial tenants. The waste storage areas have been appropriately sized to accommodate the estimated waste arisings in both residential and commercial units. The waste storage areas have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste, glass, cardboard and plastic, as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil, furniture and abandoned bicycles (Appendix 14.2). The Plan complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Provided the mitigation measures outlined in Chapter 14: Material Assets (Waste) are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, imperceptible and neutral.

2.16 Cultural Heritage (Architectural) (Chapter 15)

The Dublin Central Masterplan Area is divided into six sites intended to be developed by Dublin Central GP Limited, who acquired the area in 2016 with a view to redesigning a permitted large-scale redevelopment within a renewed masterplan notwithstanding an inherited permission to develop the site under DCC Reg. Ref. 2479/08/ An Bord Pleanála Reg. Ref. PL29N.232347. The masterplan area broadly reflects the red line boundary of the permitted development, with some notable deviations; the State ownership of Nos 14-17 (and 18a) Moore Street; the addition of Patrick Conway's Public House at No.70 Parnell Street and No.61 O'Connell Street.

Chapter 15 primarily reviews the proposed development of Sites 3, 4 and 5, yet broadly considers their development in context with the intended future development of Sites 1, 2AB and 2C.

The combined Sites 3, 4 and 5 do not contain protected structures. Site 3 is within the O'Connell Street Architectural Conservation Area. Sites 4 and 5 are positioned to the west of the ACA. Site 4 is dissected by Nos.14-17 Moore Street, protected structures and a National Monument. There are a range of protected structures and facades within Sites 1, 2AB and 2C. The Dublin Central Masterplan Area abounds and is in proximity to protected structures and forms a considerable mass within the ACA.

In recognition of the cultural and architectural complexity of the masterplan area, a Dublin Central Masterplan Area Conservation Plan has been prepared, to set site-specific objectives and recommended policies as a mechanism to frame its appropriate redevelopment. The Plan and its extensive research has informed the development and provides a framework for assessing impacts.

Chapter 15 summarises the identification of structures of heritage significance within and in the environs of the development site. It refers to the recording of all building fabric on the site and observes the qualification of the significance of each building as informing a strategy of viable and purposeful retention and adaptive re-use. These baseline assessments have led to the retention of multiple structures within Sites 3 and 4, with origins spanning the 18th- 20th centuries. It is proposed to demolish and redevelop all other structures in the urban blocks in the provision of replacement buildings, new pedestrian links and a public square.

The chapter reviews aspects of change arising from the physical, visual or morphological impacts for architectural and cultural heritage as a consequence of the proposed development, using a number of resources including the Record of Monuments and Places, the Dublin City Development Plan, cartographic and documentary sources and visual inspections of the building fabric.

The chapter examines predicted inter-relationships between the development and its singular and collective interactions with architectural heritage in the vicinity of the site, assessing potential impacts for the fabric, character and morphological setting of that heritage.

The assessment acknowledges the characteristics of the integrated and enclosing designated Architectural Conservation Area to the development site and reviews potential impacts the development may present for its character.

Ameliorative measures are proposed where necessary to safeguard features of interest within and adjoining Sites 3,4 and 5. The implementation of other mitigation measures detailed in the Chapter will ensure that the effect during the construction phase is neutral and imperceptible.

2.17 Cultural Heritage (Archaeology) (Chapter 16)

The Dublin Central Masterplan area lies in the heart of Dublin City on the northern side of the River Liffey. The site is low lying and occupies ground that gently slopes south towards the Liffey. It lies partly within the statutory zone of archaeological potential (ZAP) for the Historic City of Dublin, RMP No. DU018-020. It is outside the medieval precinct walls of St. Marys Abbey in the area of the city that was predominantly developed in the early 18th century. It is south of Parnell Street (formerly 'Great Britain Street') which runs along the line of an ancient routeway / road that dates from at least the Late Medieval period. It is entirely urban in nature, composed of hard standing, buildings, and artificial surfaces. Since the 18th century the area has been subject to sequences of construction, infill, some demolition, and reconstruction within each property plot.

The surviving upstanding properties and relict remains of historic and architectural heritage merit are examined in detail in the Chapter 15: Cultural Heritage (Architectural).

Archaeological Potential

There are two RMP sites in immediate proximity to the Dublin Central Masterplan area, the National Monument of Nos. 14 – 17 Moore Street (RMP DU018-390) and a brickworks site (DU018- 020506). Whilst the RMP location for the brickworks is outside the area of the proposed development excavation and cartographic sources shows that it is likely to have been located in an area defined by Parnell Street, Moore Street, Moore Lane and Henry Place, and potentially may have extended as far as O'Connell Street. The brickworks site is also recorded in the Dublin City Industrial Heritage Record (DCIHR Ref. 18_07_110). The excavations at Nos. 14 – 17 Moore Street suggests that the brickfield had been opened up as a municipal dump (it was out of use by 1756) before the houses were built there in the 1770s. It would appear that after the clay was extracted, the quarry pit was deliberately infilled with layers of domestic refuse in much the same way as the modern dockland was partially reclaimed today, the quarry pit proving a very convenient dumping place for the general population of north Dublin. The site of the quarry was eventually developed, the infill material removed along the street frontage in preparation for the construction of a new terrace of houses, Moore Street. By the time of Scale's 1773 revised map edition, the brickfield area was entirely developed.

The proposed development is also located immediately south of an area of scattered burials identified in the late 18th century and dated to the Viking period which is considered to represent a possible Viking cemetery site (DU018–020495). The burials are thought to have stretched from Dominick Street to the west to Mountjoy Square to the east and from Dorset Street to the north to Parnell Street to the south. The findspots are located on a ridge that overlook the former river estuary, a topographical setting was much favoured by the Vikings. In 2015 further disarticulated human remains were identified at No. 23 – 28 Parnell Square north of the Rotunda, these dated to the 8th and 10th centuries AD, reinforcing the evidence of Viking activity in the area. Given the profile of the individuals represented in the remains (late adolescents, adults two young children and an infant) it is likely that these remains represent clearance of a nearby burial area, rather than a battlefield site. There is a potential that further scattered burials may be uncovered within the proposed development area, however recent excavations in the vicinity of the proposed development area did not reveal additional burials.

Historic and cartographic sources indicate that the sub-division of the property plots, construction and occupation of the proposed development area commenced in the 18th century. This has been verified by excavations on the corner of Parnell Street and Moore Street and on the corner of O'Connell Street and Henry Street which identified series of plot boundaries, structural walls, cellars and associated structures. Since then, the area has been subject to a sequence of construction, demolition and reconstruction.

Nos. 14 – 17 Moore Street is a National Monument in State care, it is subject to a preservation order (PO) made under the National Monuments Acts 1930 to 2014 (PO No. 1/2007). In addition to this designation, it is also listed in the Record of Monuments and Places (RMP DU018-390) and in the Record of Protected Structures in the Dublin City Development Plan 2016-22 (RPS Nos 5282-5285). It is located to the north and south of Site 4, on the western side off the masterplan area. The buildings at Nos. 14 – 17 Moore Street date from the mid-18th century. The cultural significance of the terrace lies in the fact that, during the 1916 Rising and after the GPO fell to the British forces, the rebel leaders or the 'GPO Garrison' retreated from the GPO and fought their way to Moore Street where they burrowed their way through the terrace, from No. 10 as far as No. 16 before ultimately setting up the last headquarters of the Provisional Government of the Irish Republic. These men included five of the signatories of the Proclamation, Pádraig Pearse, Joseph Mary Plunkett, Thomas Clarke, Sean Mac Diarmada and James Connolly, the latter of whom was badly injured. They eventually surrendered from No. 16 on the 29 April, signalling the end of the Rising. The physical impact of the 1916 Rising is visible within the fabric of the buildings in the form of creep-holes punched through the walls as the rebel leaders moved from one house to another before finally stopping and setting up their base at No. 16.

Though not designated, associated with the events of the 1916 Rising are the laneways surrounding the monument, comprising Henry Place, Moore Lane and O'Rahilly Parade which formed the evacuation route from the GPO. These streets significantly aid the interpretation of the events of the Rising and are being retained within the Masterplan area. Stone setts and granite kerbing survive on Moore Lane and O'Rahilly Parade beneath a tarmac surface.

A GPR survey carried out for the development, it has identified what appears to be the substantial survival of stone setts along Moore Lane and O'Rahilly Parade and the complete absence of stone setts on Henry Place. When the GPR results are overlain with existing services it is clear that the setts were lifted and re-laid on several occasions (see Chapters 15: Cultural Heritage (Architectural)). There is a potential that earlier fabric, or the build-up of surfaces associated with 'Old Brickfield Lane' may survive beneath this surface.

Impact on Archaeological Potential

The Dublin Central Masterplan area is located in the ZAP for the historic city of Dublin (RMP DU018-020). This is a zone of high archaeological potential relating to the development of the city since the earliest of times. The archaeological assessment through the review of previous excavations, of designated sites and of written and cartographic sources has assisted in clarifying the nature, location and significance of the archaeological remains that are likely to be encountered within the Dublin

Central Masterplan area. It has facilitated the confident assessment of the potential impact of the scheme on the archaeological resource. Despite the intensive development of the area during the 18th to 20th centuries, which may have truncated or removed entirely the archaeology in its wake, the assessment has revealed the possibility for earthmoving works in this part of the city to encounter archaeological sites, soils or features associated with the following: -

Early Medieval and Medieval Potential

- The findspots of scattered burials associated with a Viking cemetery site (DU018–020495) is concentrated on the northern side of Parnell Street. The Viking burials have been found at 3.50m below present ground level in subsoil. Topographically the burial site is likely to have taken advantage of a high ridge overlooking the former Liffey estuary and a major routeway that ran along Parnell Street. The excavation of two large sites south of Parnell Street and north of O'Rahilly Parade adjacent to the Masterplan area did not identify any human remains.
- The site lies outside the walled precinct of St. Mary's Abbey, which in medieval times dominated the eastern lands of the northern suburb of the historic core. It is considered unlikely given the distance from the walled precinct that any structural remains associated with the abbey would be identified in the Masterplan area. Should features survive it is likely to be in the form of medieval cultivated soils and/or agricultural features, such as ditches, and boundaries.

  Whilst the potential to reveal medieval remains is generally low, there may be undisturbed clays to the rear of the properties in the various blocks, which do not have cellars/basements. These are depicted as open yards in Rocque's 1756 and Scale's 1773 maps, it is in these locations were the highest potential lies to reveal these remains should they be present.

Post Medieval Potential

- There is a significant potential that features associated with the 18th century 'site of' a brickworks (DU018-020506) might be encountered during the earthmoving works. In addition to this, the former brickfield quarry pit was backfilled in the 18th century with up to 2m of reclamation deposits representing domestic refuse from the city, this infill material was mostly organic but also contained ceramics, glass and metal.
- Archaeological testing was undertaken in two vacant plots within the Masterplan area, at Nos. 40 – 41 O'Connell Street and Nos. 50 – 51 O'Connell Street (Licence Number 20E0649) and full excavation has taken place on two sites on Parnell street, north of the western side of the Masterplan Area. The results of these excavations indicate the possible and most representative archaeological findings for the development lands, they would potentially include a complex of house foundations, walls, vaults, drains, cobbled surfaces, and other features dating from the early 18th century and later. They are likely to extend across the entire site.

Nos. 14 – 17 Moore Street

There will be a potential impact on the National Monument PO boundary where its boundaries are shared with Site 4. Proposed works in proximity to the National Monument, will include those associated with the demolition of existing buildings at Nos. 18 and 19 Moore Street back to Moore Lane (Nos. 10 – 11 Moore Lane), No. 13 Moore Street and its rear yard, and the retention works associated with Nos. 6 – 8 Moore Lane. The assessment of the potential impact on the physical fabric of the structures are described in Chapter 15: Cultural Heritage (Architectural)).

From an archaeological perspective there is a potential that demolition of the adjacent structures or earthmoving works might reveal material remains associated with the 1916 Rising, for example, guns or other munitions buried or otherwise concealed around the monument or backfilled into cellars in areas that are not currently visible or accessible. The discovery of such material would add to our

knowledge of the battle and would ultimately form part of the national collection and interpretation of the site.

Site preparation, enabling and earthmoving works in the vicinity of the National Monument has the potential to impact on below ground in-situ archaeological remains predating both the Georgian terrace and the development of the urban block. Test excavation of archaeological deposits in proximity to and within the national monument, has revealed infill organic deposits up to 2m in depth which are consistent with the recorded archaeological profiles found in this area of the ZAP for the Historic City of Dublin. This material, though of archaeological interest will not be critical to our understanding of the 1916 Rising event, and the significance attached to the buildings on Moore Street (Nos. 14 – 17). The findings will enhance our knowledge of the eastern development of the city in the 18th century.

The development of the Masterplan area preserves the grid of laneways within the block and as such the key views that support the interpretation of the 1916 events i.e., the existing sight lines along Moore Lane and the lack thereof along Henry Place. In addition, based on a full understanding of the historic fabric of the structures facing the lanes the proposed development will retain structures of historic interest (i.e. No. 10 Moore Street, Nos. 20 – 21 Moore Street, Nos. 6 – 8 Moore Lane and No. 17 Moore Lane). The historic kerbs and stone sett pavements on O'Rahilly Parade and Moore Lane will be recorded in-situ, reworked and re-laid in suitable locations along the laneway (see Chapter 15: Cultural Heritage (Architectural)). The retention of these historic elements will have an overall positive effect on the National Monument and its future use as a commemorative centre. They will enhance the experience of the public realm and will assist in the legibility of the 1916 events and how they unfolded, thus reinforcing the interpretation and experience of the national monument.

Cumulative Impacts

Considering the predicted impacts on archaeology, the mitigation measures proposed to identify and record the archaeological resource and the receiving environment, and the protective policies and objectives of the City Development Plans that will direct future development locally, significant cumulative negative effects on archaeology are not predicted.

General Mitigation

The following archaeological mitigation measures will be carried out within the Dublin Central Masterplan area under licence to the DHLGH:

Monitoring

A programme of archaeological monitoring will take place at the pre-construction, site preparation and enabling works/ early stages of construction where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

Test Excavation

Given that the development is within the ZAP for Dublin (DU018-020), an archaeological assessment and test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

Excavation

In the event that archaeological features or deposits exist, the mitigation for development impact will involve an archaeological excavation which will be integrated into the early phases of the site's development programme.

Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

The results will be compiled in detailed reports which will be submitted to Dublin City Council and to DHLGH and the National Museum of Ireland in compliance with the awarding of a licence.

All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the City Archaeologist.

Licencing

Archaeological testing, monitoring and excavation will be carried out under licence from the DHLGH and the National Museum of Ireland, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

Works in the vicinity of the National Monument No. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the National Monument (see Chapter 15: Cultural Heritage (Architectural)). The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument for the development of Site 4 in the Masterplan area will require ministerial consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy. The archaeological mitigation in the vicinity of the National Monument will as a minimum include archaeological monitoring of site investigation works, site preparation and temporary works as required including site clearance, post demolition testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street to establish the depth and nature of the infill material associated with the backfilling of the brickfield quarry. Archaeological excavation of archaeological soils or features that are encountered and impacted by the proposed development and the archaeological monitoring of earthmoving works.

General

These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

All archaeological issues shall be resolved to the satisfaction of the DHLGH and the National Museum of Ireland.

2.18 Risk Management (Chapter 17)

This assessment describes the proposed development in respect of its potential vulnerability to major accidents/ disasters. It also considers the potential for the development to give rise to major accidents/ disasters.

The scope and methodology of this assessment is based on the understanding that the proposed development will be designed, built and operated in line with best international current practice. As such, major accidents resulting from the proposed development would be very unlikely.

A risk analysis-based methodology that covers the identification, likelihood and consequence of major accidents and/or disasters has been used for this assessment. There are no Seveso sites in the vicinity of the site.

No potential scenarios during the construction phase were identified as requiring further assessment.

Two scenario with the highest risk score for a major accident and / or disaster was an 'incident at nearby Luas Station' and 'incident on future MetroLink'. These were identified as being 'very unlikely' to occur, but which would have 'very serious' consequences should it do so. This indicated a 'medium risk scenario'.

The Global Terrorism Index (GTI) is a comprehensive study analysing the impact of terrorism for 163 countries and which covers 99.7 per cent of the world's population. In 2018, Ireland ranked as the 65th country most impacted by terrorism of the 163 countries. Whilst the National Risk Assessment 2019 has identified the risk to Ireland from both domestic and international terrorism, there are no similar 'recorded incidents or anecdotal evidence' of attacks of this magnitude in Ireland. No mitigation is put forward specifically to deal with major accidents, however the mitigation proposed in other EIAR Chapters, along with the Outline Construction & Demolition Management Plans (per Site) will collectively mitigate the risk of major accidents and disasters.

2.19 Summary of Mitigation Measures (Chapter 18)

This Chapter provides a summary of all the mitigation and monitoring measures proposed throughout the EIAR document for ease of reference for the consent authority and all other interested parties.

2.20 Summary of Residual Impacts (Chapter 19)

This Chapter provides a summary of all the residual impacts identified throughout the EIAR document for ease of reference for the consent authority and all other interested parties.

2.21 Summary of Cumulative Impacts & Interactions (Chapter 20)

This Chapter identifies the principle interactions between the potential impacts of the environmental factors identified in Chapters 5 – 17 inclusive, and as well as cumulative impacts arising based on best scientific knowledge.

All potential interactions have been addressed as required throughout the EIAR. During each stage of the assessment contributors have liaised with each other (where relevant) to ensure that all such potential interactions have been addressed.

DCC PLAN NO.2861/21
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DCC PLAN NO.2861/21
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3 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Introduction

This chapter of the Environmental Impact Assessment (EIAR) provides a Description of Proposed Development which will be assessed as part of the EIA process.

The phrase 'Proposed Development' is used to describe the entire of the proposed development within 3no. separate and concurrent planning applications for each of Site 3, 4 & 5. This use of the phrase 'Proposed Development' within the EIAR should not be confused with the separate proposed development that is the subject of each of the 3no. separate and concurrent planning applications.

The description of the Proposed Development provides details of this project which requires planning consent. It includes a description of the location of the project and its physical and environmental characteristics. The description of development as set out in this chapter is also set out in the following chapters prepared by consultants specialising in the environmental topics subject of the chapters. Detail of the Dublin Central Masterplan which underpins the Proposed Development is set out below also.

In line with the EIA Directive a description of the application site, design, size and scale of development are also discussed within this chapter. Consideration is also given to all relevant phases of development from construction through to operation. This chapter provides a broader summary description of the proposed development that is subject of this EIAR. The environmental impacts of the proposed development are then examined for each of the prescribed environmental topics discussed in turn under Chapters 5 – 17. A summary of the proposed mitigation measures are set out in Chapter 18: Summary of Mitigation Measures. The residual impacts of the proposed development are summarised under Chapter 20: Summary of Residual Impacts.

This chapter of the EIAR has been prepared by Stephen Little & Associates Chartered Town Planners & Development Consultants. The Description of Development in Section 3.6 should be read in conjunction with the plans and particulars submitted with the Planning Application.

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years' professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

3.2 Site Context & Location

The Proposed Development sits within the context of the Dublin Central Masterplan which extends to c. 2.2 ha. The Dublin Central Masterplan almost entirely encompasses three urban blocks, bounded generally by O'Connell Street Upper and Henry Place to the east, Henry Street to the south, Moore Street to the west, and O' Rahilly Parade and Parnell Street to the north. Moore Lane extends south from Parnell Street through the centre of the Masterplan, as far as its junction with Henry Place.

The site of the Dublin Central Masterplan accommodates a disparate collection of single to six storey buildings of varied vintage and quality. The area is characterised by a mix of uses including retail, financial services, office, food and beverage services. It is also characterised by a number of unoccupied or underutilised buildings, plots, car parking and storage depots, service lanes and back lane workshops. Many of the buildings are afforded some level of legal heritage protection (particularly along O'Connell Street) and many others are not. There is significant potential to revitalise this central urban quarter of Dublin city centre through redevelopment and adaptive reuse, and in turn to act as a catalyst to stimulate the regeneration of the surrounding areas including the cultural quarter at Parnell Square.



Figure 3.1: Extract from Google Earth showing the Proposed Development location in red (Site 3, 4 and 5) and the Masterplan area in orange (indicative overlay by SLA). Please refer to Architects Drawings for definitive site boundaries including associated offsite construction and infrastructural works.

For avoidance of doubt, the following properties are also excluded from the Dublin Central Masterplan: -

- Nos. 37 – 39, the front portion of No. 59 & 60 O'Connell Street and Nos. 62 – 69 O'Connell Street.
- Nos. 31 – 35 Henry Street.
- Nos. 73 – 75 Parnell Street.
- Nos. 1 – 2 Henry Place.

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Dublin Central is located at the heart of the commercial and historic core of Dublin city centre. O'Connell Street is regarded as one of the principal thoroughfares of the capital and has historic associations with the 1916 Easter Rising and War of Independence. Moore Street is well known for its street market and Henry Street is one of the busiest shopping streets in the country.

Within the same general district exists Arnotts, the ILAC, Jervis Centre, Penneys and Marks & Spencer retail stores and shopping centres. Permission has recently been granted for the significant redevelopment of the Jervis Centre. The former Clery's building, situated on the east side of O'Connell Street, also has plans for substantial mixed-use development including retail, office and leisure uses that is presently being implemented.

Moore Street borders the western side of the Masterplan (including Site 3, Site 4 and Site 5), linking Dublin Central to the ILAC Centre. The street is occupied by a long-established street market, operating on a daily basis (not a part of the proposed development).

The site is proximate to several well-known cultural and historical and landmarks. It is located c. 250m north of O'Connell Bridge and the River Liffey and next to the GPO and the Spire. The Gresham Hotel and the former Clery's building are located on the opposite side of O'Connell Street.

The Savoy Cinema and Cineworld are both within 130m and 350m respectively of the Masterplan and are located on O'Connell Street and Parnell Street, respectively. Parnell Square terminates O'Connell Street immediately to the north of Dublin Central. The Gate Theatre and the Ambassador music venue are located at Parnell Square. The Hugh Lane Gallery (Charlemont House), the Irish Writer's Museum, the Abbey Presbyterian Church, the Rotunda and the Parnell Monument are located at Parnell Square North. A new City Library and Cultural Quarter has been permitted at Parnell Square North, at the site of the former Scoil Mhuire and adjoining buildings. Nos. 14 – 17 Moore Street (a National Monument) are proposed to be developed into a cultural facility by the Office of Public Works. The James Joyce Centre, the Abbey Theatre and the Liberty Hall Theatre are also located within walking distance of Dublin Central making the site a focal point for tourism.

In terms of significant open spaces, the site is situated c. 200m from the Garden of Remembrance on Parnell Square, c. 2.4km from Phoenix Park, which is the largest enclosed urban park in Europe, just over 1km from St. Stephen's Green to the south and c. 1.3km from Smithfield Square

The area is exceptionally well located in terms of accessibility by foot, by bicycle and to public transport, as generally described below: -

- Many of the streets in the immediate area have cycle lanes which provide direct access to the Dublin Strategic Cycle Network.
- There are several Dublin Bikes Stations in the vicinity at Jervis Street, Parnell Square North, Parnell Street, Princes Street and Cathal Brugha Street which are all within a 3 – 6 minute walk from the application site.
- The Luas Green line operates between Brides Glen at Cherrywood in Sandyford and Broombridge. The Luas Red Line operates between Saggart / Tallaght and the 3Arena / Connolly. The two lines intersect at the junction of O'Connell Street and Abbey Street adjacent to the south-east of the site due to the introduction of Luas Cross City. Red Luas and cross city Luas lines serve stops at Heuston Station, O'Connell Street and Parnell Square, which act as termini for numerous Dublin Bus services.
- Connolly Train Station is located c. 800 m (c. 10 – 12 minute walk) east of the site which allows interchange with DART services and Iarnrod Eireann commuter services.
- Extensive bus services are available on O'Connell Street including Dublin Bus (31no. routes), private interurban routes and airport services. Aircoach operate a 24-hour service at 10-20 minute intervals through O' Connell Street from Sandyford, Greystones, Cork and Belfast. Citylink provides hourly services from Bachelor's Quay (c.200m) and Aston Quay (c. 400m) in each direction from Dublin Airport to Galway and Limerick. Wexford Bus operates frequent return services from Dublin Airport to Wexford via Custom House Quay (c. 700m) and George's Quay (c. 550m).

- O'Connell Street, Parnell Square East, Parnell Street and Parnell Square West to the north and east of the site are four of the essential primary links included in the proposed Bus Connects network.
- BusÁras is located c. 600m (c. 8 – 10 minute walk) east of the application site, which allows interchange with Dublin Bus services, Córas Iompair Éireann (CIÉ) regional bus services and private intercity bus services.
- A proposed Metro line (Metrolink Project – at project design stage) will provide for a high-capacity, high-frequency rail service between Dublin Airport and the LUAS Green Line at Charlemont, with stops proposed at both ends of O'Connell Street. Metrolink proposes a stop under Site 2AB and Site 2C, the design of which will allow Metrolink to be developed independently by TII. The future development of Site 2AB and Site 2C will include Metrolink Enabling Works (MEW) to facilitate the future implementation of the Metrolink Station (see Section 6 for further detail).

This level of accessibility supports the development of a sustainable high density community in the North Inner City that is connected both locally and to the wider Dublin environs.

3.3 Dublin Central Masterplan

As noted above, the Proposed Development sits within the context of the Dublin Central Masterplan which extends to c. 2.2 ha.

The Dublin Central project is an expansive (c. 2.2 Ha) and complex urban regeneration project. It needs to be delivered in multiple separate projects to overcome site and project constraints.

A site wide cumulative masterplan has been prepared by the Applicant to set out the overall development vision for the Dublin Central project.

ACME Architects are the Masterplan Architect for the Dublin Central regeneration project. ACME has prepared a detail Masterplan Design Statement, which set out the design framework for the wider envisaged redevelopment at this significant, strategic location within the heart of Dublin city centre. The Dublin Central Masterplan is accompanied by a suite of documents which help to explain how the combined Masterplan will be built and function.

The Dublin Central Masterplan represents the full development envisaged by the Applicant for the entire of these urban blocks. Those elements outside the planning application site boundaries for Dublin Central Site 3, Site 4 and Site 5 are not completely fixed and remain simply an aspirational part of the Dublin Central Masterplan overall vision at this time.

For the purpose of making the planning applications for the Proposed Development (Site 3, Site 4 and Site 5), and considering the cumulative effect of the proposed and planned project, the Dublin Central Masterplan represents the interim design for Site 1, Site 2AB and Site 2C (March 2021). This is notwithstanding that further progress on planning design continues to be worked up in the meantime and ongoing.

The Dublin Central Masterplan has been divided into six identifiable sites (Sites 1, 2AB, 2C, 3, 4 and 5) for the purpose of making planning applications – see Figure 3.2 below.

DCC PLAN NO.2861/21
REC'D: 01/06/2021



Figure 3.2: The Proposed Development (Site 3, Site 4 and Site 5) shown within the context of the Dublin Central Masterplan.

Broadly each site is described as follows: -

Site 1: Located in the north east of the Masterplan. Site 1 is bounded generally by O'Connell Street to the east, Parnell Street to the north, Moore Lane to the west and 'Site 2C' to the south. It includes Nos. 40 – 42 O'Connell Street Upper (including O'Connell Hall) and Nos. 70 – 71 Parnell Street (including Conway's pub).

Site 1 contains the following protected structures No. 42 O'Connell Street (including O'Connell Hall) and No.70 Parnell Street, and lies within the O'Connell Street ACA and partially within the Conservation Area.

Site 2: Located in the east of the Masterplan. Site 2 is subdivided into Site 2AB and Site 2C. It is bounded generally by O'Connell Street to the east (the front portion of No. 59 & 60 O'Connell Street is excluded), No. 62 O'Connell Street and Henry Place to the south, Moore Lane to the west and Site 1 to the north. It includes Nos. 43 – 59 O'Connell Street Upper (including the Carlton Cinema site), the rear of No. 59 & 60 O'Connell Street and No. 61 O'Connell Street.

The planned Metrolink Project, to be subject of a separate consent process and delivered independently by Transport Infrastructure Ireland (TII), proposes a future underground stop under the site of Site 2AB and Site 2C. The extent of the subterranean 'Station Box' as understood is outlined in red in the figure above. Site 2AB and Site 2C will include Metro Enabling Works (MEW).

Site 2AB and Site 2C contain the following protected facades (excluding ground floor facades): Nos. 43, 44, 52 – 54, 57, 58, and 61 O'Connell Street, and lie within the O'Connell Street ACA and Conservation Area.

Site 3: Located in the southwest corner of the Masterplan, Site 3 is bounded by Henry Street to the south, Moore Street to the west and Henry Place to the north and east. Site 3 includes Nos. 36 – 41 Henry Street, Nos. 1 – 9 Moore Street and Nos. 3 – 13 Henry Place (formerly known as Nos. 2 – 13 Henry Place), Clarke's Court and Mulligan's Lane.

Site 3 lies within the O'Connell Street Architectural Conservation Area.

Site 4: Located in the west of the Masterplan, Site 4 is bounded by Moore Street to the west, Moore Lane to the east, Henry Place to the south and Site 5 to the north. Site 4 includes Nos. 10 – 13 and Nos. 18 – 21 Moore Street, No. 5A Moore Lane (also known as Nos. 15 – 16 Henry Place), Nos. 6 – 7 and Nos. 10 – 12 Moore Lane and Nos. 17 – 18 Henry Place (also known as Nos. 4 – 5 Moore Lane).

Site 4 excludes the site of the National Monument and its protection zone at No. 14 – 17 Moore Street (protected structures) and the open area to the rear at Nos. 9 & 10 Moore Lane.

Site 5: Located in the west of the Masterplan, Site 5 is bounded by Moore Street to the west, Moore Lane to the east, O'Rahilly Parade to the north and Site 4 to the south. Site 5 includes Nos. 22 – 25 Moore Street, Nos. 1 – 8 O'Rahilly Parade and Nos. 13 – 15 Moore Lane.

For avoidance of doubt, the following properties are also excluded from the Masterplan: -

- Nos. 37 – 39, the front portion of No. 59 & 60 O'Connell Street and Nos. 62 – 69 O'Connell Street.
- Nos. 31 – 35 Henry Street.
- Nos. 73 – 75 Parnell Street.
- Nos. 1 – 2 Henry Place.

For the avoidance of doubt, the only development 'proposed' at this time is that subject of 3no. concurrent planning applications for Site 3, Site 4 and Site 5. The detail of the Proposed Development is set out in Section 3.6 of this chapter.

The following table sets out, broadly, the gross floor area of the uses proposed in each site: -

	Site 1	Site 2AB	Site 2C	Site 3	Site 4	Site 5	Total
	sq. m	sq. m	sq. m	sq. m	sq. m	sq. m	sq. m
Office	3,610	17,484	17,029	-	295	5,799	**44,217**
Hotel	8,094	-	-	7,175	-	-	**15,270**
Residential	-	-	-	6,452	1,454	-	**7,906**
Retail	-	1,876	1,255	1,954	617	-	**5,672**
Café / Restaurant	-	625	150	138	864	679	**2,456**
Cultural / Gallery / Cafe	-	-	-	123	-	-	**123**
Extension to National Monument for ancillary use to National Monument – a cultural facility	-	-	-	-	60	-	**60**
Metro Enabling Works	-	555	831	-	-	-	**1,386**
Total	**11,704**	**20,541**	**19,235**	**15,842**	**3,290**	**6,478**	**77,090**

DCC PLAN NO. 2861/21
RECD: 01/06/2021

3.3.1 Metrolink

The Metrolink Project is the most significant planned transport infrastructure affecting the Masterplan. Its route and design are being progressed by Transport Infrastructure Ireland (TII).

For the avoidance of doubt, consent for the Metrolink Project will be applied for by TII under a separate planning mechanism called an Application for a Railway Order under the Transport (Railway Infrastructure) Act, 2001 (as amended).

It is our understanding that the Metrolink Project is proposed to consist of a total of 16no. stations, of which 11no. will be newly located along a partially over- and under-ground track measuring a total of 19km long. The route is planned to descend underground just north of Dublin Airport and continue underground as far as Charlemont immediately south of the Grand Canal.

Metrolink Enabling Works

The Applicant has agreed a Memorandum of Understanding with the NTA/TII to complete the enabling works that would accommodate the planned future Metrolink O'Connell Street station under Dublin Central Site 2AB and Site 2C. This would also ensure that the Applicant's project is structurally independent of, and not prejudicial to, the TII Metrolink Project.

The enabling works comprise the provision of a structural 'box' positioned below ground, within which the Metrolink project can be positioned and above which the Applicant's project can be constructed. The provision of this structural box (sometimes referred to as the 'Station Box' or 'Metro Box') and its ancillary works below ground are known collectively as the Metro Enabling Works (MEW) in the context of the Applicant's overall Dublin Central Project.

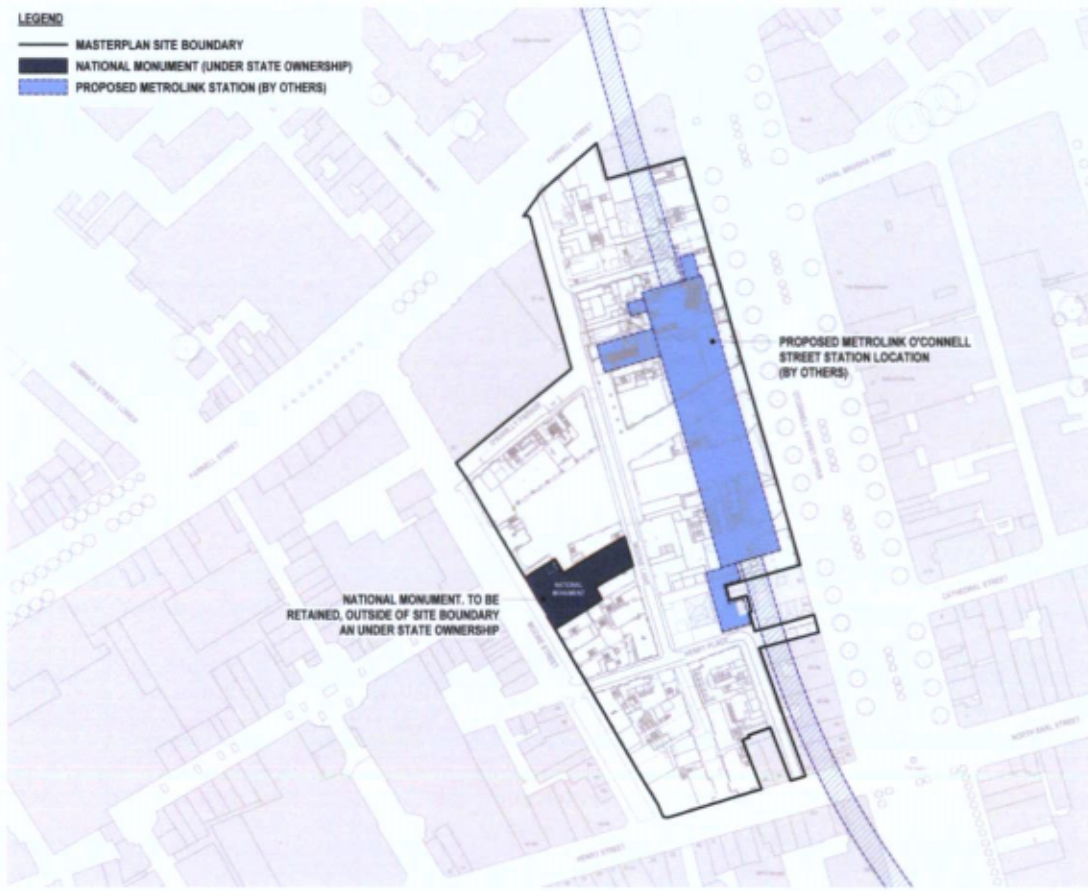

Figure 3.3: Outline of the MEW structural box in the context of the Dublin Central Masterplan.

The provision of the O'Connell Street Station and its associated tunnel works will be proposed and completed by the NTA/TII once they are ready to do so and subject to the required consents being in place. It is envisaged that the MEW will be completed at Dublin Central in advance of the NTA/TII tunnel boring machines reaching the area.

The current NTA/TII proposal for the future subterranean Metrolink station at O'Connell Street is located under Site 2AB and Site 2C of the Dublin Central Masterplan (Figure 3.3). Future Planning Applications for development at Site 2AB and Site 2C will include the MEW.

The 'Station Box' to be constructed under the Site 2AB and Site 2C combined basement will facilitate the independent provision of the TII's Metrolink Station. The 'Station Box' is envisaged to measure c. 120m in length, c. 26m in width and c. 29m in depth. It will require the excavation of c. 111,900m^3 of soil.

The Applicant's Masterplan proposals for development at Site 2AB and Site 2C have been designed to then make further allowances for future integration with the TII Metrolink project. For example, there are two entrances to the Metrolink Link Station envisaged; one from O'Connell Street and one from Moore Lane. In addition, allowances are made for the provision by TII of future fire escapes, air intake and air extract flues and other ancillary operational requirements of a Metrolink Station, within the design of the buildings envisaged in the Dublin Central Masterplan for Site 2AB and Site 2C.

However, for avoidance of doubt, the use of these areas as part of the Metrolink project will be subject of an application to be made by TII in due course. The planning drawings being submitted by the Applicant where relevant, and also as part of the Dublin Central Masterplan and as part of planning applications for Site 2AB and Site 2C in due course, will clearly highlight this point of clarification.

Consultation between the Applicant's Design Team and TII is ongoing, to ensure that the proposed future Metrolink works, including any tunnel and station infrastructure underneath Site 2AB and Site 2C is fully understood and co-ordinated.

The developments proposed at Sites 3, 4 and 5 do not include any enabling works relating to the emerging TII proposals for Metrolink.

For full detail relating to the Dublin Central Masterplan, we refer the Planning Authority to the following documents: -

- Masterplan Design Statement, prepared by ACME Architects.
- Masterplan Schedule of Accommodation, prepared by ACME Architects.
- Masterplan Conservation Plan, prepared by Molloy & Associates Conservation Architects.
- Masterplan Landscape Planning Report and Masterplan Landscape Drawings, prepared by GrossMax Landscape Architects.
- Masterplan Servicing Strategy Report, prepared by SWECO.
- Overall Development Transport Assessment – Vol. 3, prepared by Waterman Moylan Consulting Engineers.
- Masterplan – Preliminary Construction & Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.
- Masterplan – Outline Construction Traffic Management Plan, prepared by Waterman Moylan Consulting Engineers.
- Overall Development – Basement Impact Assessment, prepared by Waterman Structures Limited.
- The Dublin Central Masterplan, Scenario Testing & Design Development, prepared by Space Syntax.

DCC PLAN NO. 2861/21
01/06/2021

3.4 General Description of Proposed Development

The Proposed Development consists of 3no. separate and concurrent planning applications. The following is an summary of the development proposed within each of the Sites.

3.4.1 Site 3

The proposed development comprises a mixed-use scheme (c. 15,842.4 sq. m gross floor area) accommodated in 2no. blocks, ranging in height from 1 – 9 storeys over 2no. new independent single level basements. A proposed new Passageway separates the 2no. blocks (Block 3A & Block 3B), connecting Henry Street and Henry Place. The proposed blocks comprise: -

- Block 3A (Eastern Block) (c. 7,806.3 sq. m gfa), fronting Henry Street, Henry Place and the new Passageway, with modulating building height at 4, 5, 7 and 9 storeys, over single storey basement.
    - Block 3A accommodates: - An hotel (c. 7,175.3 sq. m gfa) with 150no. bedrooms from 1st to 7th floor and ancillary facilities at ground floor and basement, including: hotel reception addressing Henry Place.
    - 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 138.1 sq. m) at ground floor on the new Passageway and Henry Place; and, 1no. licensed hotel restaurant / cafe with takeaway / collection facility (c. 194.2 sq. m) and 2no. associated external terraces (c. 38.8 sq. m in total) at 8th floor of the proposed hotel.
    - 1no. retail unit for use as a 'shop' or 'licensed restaurant / café unit with takeaway / collection facility' (Unit 1 – c. 127.2 sq. m) at ground floor on the new Passageway.
    - 1no. retail unit for use as a 'shop' (Unit 2 – c. 326.5 sq. m) at basement, ground floor and first floor level on the new Passageway and Henry Street.
- Block 3B (Western Block) (c. 8,036.1 sq. m gfa), fronting Henry Street, Moore Street, Henry Place and the new Passageway, with modulating building height at 1, 3, 5, 6 and 7 storeys, with top storey set back, over single storey basement.
    - Block 3B accommodates: - 79no. 'Build-to-Rent' apartment units (c. 6,451.5 sq. m gfa), including 14no. 1-bed studios, 56no. 1-bed apartments and 9no. 2-bed apartments from 1st to 5th floor, with access from residents' lobby at ground floor on Henry Place.
    - Internal residents' amenity areas at ground and 6th floors (c. 325 sq. m in total) and external terrace areas (c. 517.7 sq. m in total) at 6th floor.
    - Private residential balconies and 'wintergardens' from 1st to 5th floor inclusive on elevations facing into the open courtyard areas and facing east to the new passageway. Balconies / terraces at 4th floor on west elevation to Moore Street and at 5th floor on south elevation to Henry Street.
    - 5no. retail units, each for use as a 'shop', including: Unit 6 (c. 245.2 sq. m) at ground and 1st floor on new Passageway and Henry Street, Unit 7 (c. 382.4 sq. m) at ground and 1st floor on Henry Street and Moore Street, and Unit 8 (c. 182.2 sq. m), Unit 9 (c. 57.2 sq. m) and Unit 10 (c. 52.5 sq. m) at ground floor on Moore Street.
    - 4no. retail units, each for use as 'shop' or 'licensed restaurant / café units with takeaway / collection facility', including: Unit 3 (c. 148.9 sq. m), Unit 4 (c. 53.5 sq. m) and Unit 5 (c. 55.1 sq. m) at ground floor on the new Passageway, and Unit 11 (c. 160 sq. m) at basement and ground floor on Moore Street and Henry Place.
    - 1no. 2-storey building for cultural / gallery use with restaurant / café (c. 123.4 sq. m) replacing No. 10 Henry Place.
- All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -

- Conservation, repair, refurbishment and adaptive reuse of part of the existing building fabric, including: - Retention of Nos. 36 – 37 Henry Street, with modifications, a vertical extension and new shopfronts; Retention of No. 39 – 40 Henry Street (upper floor façade); Retention of Nos. 8 – 9 Moore Street, with internal and external modifications and new shopfronts; Retention of Nos. 11 – 13 Henry Place, with internal and external modifications and new shopfronts; Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.
- New Passageway linking Henry Street and Henry Place.
- Demolition of all other existing buildings and structures on site (c. 6,701 sq. m), including No. 38 Henry Street to form new passageway linking Henry Street to Henry Place.
- Demolition of boundary wall onto Moore Lane at the rear of properties at Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street.
- 160no. bicycle parking spaces within secure bicycle facility (24no. within Block 3A, 126no. within Block 3B and 10no. in the public realm).
- 1no. external residential courtyard at ground floor in Block 3B.
- Plant at basement and roof level.
- 2no. ESB sub-stations.
- Building signage zones and retractable canopies.
- Removal of existing boundary fence at junction of O'Rahilly Parade / Moore Lane within that part of the site including No. 13 Moore Lane, No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane).

3.4.2 Site 4

The proposed development comprises a mixed-use scheme (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument / Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements comprising 15no. apartment units (c. 1,454 sq. m gfa), café / restaurant use (c. 864 sq. m gfa), retail use (c. 617 sq. m gfa), cultural use (c. 60 sq. m gfa) and office use (c. 295 sq. m gfa).

- The proposed development to the north of Nos. 14 – 17 Moore Street consists of: -
  - Nos. 20 – 21 Moore Street are refurbished and adapted to provide 1no. café / restaurant / licenced premises with takeaway / collection facility (c. 80 sq. m in total) at ground floor addressing both Moore Street and proposed new public plaza to the rear and 1no. 1-bed apartment and 1no. 2 bed apartment located at 1st and 2nd floor level – 4no. in total (cycle and bin storage at ground floor level). No terraces or balconies are proposed to the residential units.
  - Provision of a new 2 storey extension at the side of No. 17 Moore Street (National Monument / Protected Structure) to act as an extension for ancillary use to the National Monument – a cultural facility (c. 60 sq. m gfa).
  - Provision of an archway between the gable of No. 20 Moore Street and the new 2 storey extension to No. 17 Moore Street (National Monument / Protected Structure) to form an entrance to a new public plaza off Moore Street.
  - Provision of a 2 storey building with profiled roof consisting 1no. licenced restaurant / café unit with takeaway / collection facility (c. 250 sq. m gfa). This building sits independently of the northern boundary of No. 9 Moore Lane at the rear of Nos. 14 – 17 Moore Street.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- Provision of part of a new public plaza (1,085 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 5 immediately to the north (1,253 sq. m public plaza overall).

- The proposed development to the south of Nos. 14 – 17 Moore Street consists of: -
  - 11no. apartment units (7no. 1-bed apartments and 4no. 2-bed apartments), accessed from proposed central courtyard from Henry Place in 2 – 3 storeys buildings (1 storey to rear) contained above ground floor within No. 10 Moore Street (refurbished and adapted), Nos. 11 – 13 Moore Street (replacement buildings with party wall of No. 12 and No. 13 Moore Street retained) and No. 5A Moore Lane (also known as Nos. 15 – 16 Henry Place – replacement building) and Nos. 17 – 18 Henry Place (also known as Nos. 4 – 5 Moore Lane – ground floor façade retained) with associated resident storage area at basement level of No. 10 Moore Street.
  - 5no. retail units at ground floor: Unit 6 (c. 149 sq. m gfa) and Unit 7 (c. 128 sq. m gfa) on Moore Lane, Unit 10 (c. 69 sq. m gfa), Unit 11 (c. 149 sq. m gfa – including basement level) and Unit 12 (c. 58 sq. m gfa) on Moore Street.
  - 2no. licenced restaurant / café units with takeaway / collection facility at ground floor: Unit 4 (c. 250 sq. m gfa – including basement level) onto Moore Lane and Unit 7 (c. 130 sq. m gfa – including basement level) onto Moore Street.
  - 1no. office unit at first floor (c. 221 sq. m gfa) of 6 – 7 Moore Lane with access from ground on Moore Lane.
  - A new courtyard is proposed between the rear of Moore Street buildings and Moore Lane buildings to provide communal open space (c. 155 sq. m) for the residential units; All apartment served by terraces / balconies with exception of Unit 13, No. 10 Moore Street.

- All associated and ancillary site development, conservation, demolition, landscaping, site infrastructure and temporary works, including: -
  - Conservation, repair, refurbishment and adaptive reuse of part of existing building fabric including: - Retention of Nos. 20 – 21 Moore Street with internal and external modifications and new shopfronts; Retention of No. 10 Moore Street with internal and external modifications and new shopfront; Retention of Nos. 6 – 7 Moore Lane with internal and external modifications and new shopfronts; Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance.
  - Demolition of rear boundary wall onto Moore Lane at the rear of Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street, Dublin 1.
  - Demolition of all other existing buildings and structures on site (c. 4,525 sq. m).
  - 44no. bicycle parking spaces serving residential, retail and office.
  - Plant at basement and roof level.
  - 1no. ESB sub-station onto Henry Place.
  - Building signage zone and retractable canopies.
  - Removal of existing boundary fence at junction of O'Rahilly Parade / Moore Lane within that part of the site including No. 13 Moore Lane, No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane).

3.4.3 Site 5

- The proposed development comprises: -
  - A mixed-use scheme in a single building (c. 6,478 sq. m gross floor area) ranging in height from 2 – 6 storeys (top floor set back) over single storey localised basement. The building includes office space (c. 5,753 sq. m) from 1st to 5th floor with office lobby at ground floor level, with 3no. terraces at 2nd, 3rd and 5th floor respectively (c. 401 sq. m in total) and 3no. licenced restaurant / café units with takeaway / collection facility at ground floor (Unit 1 on Moore Lane, O'Rahilly Parade and the proposed new public plaza – c. 228 sq. m, Unit 2 on the proposed new public plaza – c. 271 sq. m and Unit 3 on Moore Street, O'Rahilly Parade and the proposed new public plaza – c. 179 sq. m), together with provision of a 'delivery hub' unit at ground floor level (c. 46 sq. m).
- All associated and ancillary site development, demolition, landscaping, site infrastructure and temporary works, including: -
  - Demolition of all existing buildings and structures on site (c. 2,312 sq. m);
  - Provision of part of a new public plaza (168 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 4 immediately to the south (1,253 sq. m public plaza overall).
  - 58no. bicycle parking spaces at ground floor level with associated cycling welfare facilities.
  - Plant at basement and roof level.
  - Building signage zone and retractable canopies.
  - Laying of underground drainage infrastructure from O'Rahilly Parade to connect with existing drainage network on Parnell Street via Moore Street.

3.5 Statutory Planning Context

The lands on which the Proposed Development and the Masterplan is located is subject to national, regional, sub-regional, county and local planning policy. The following outlines high level planning policy of relevance to the future development of the Proposed Development. This section will not address the detailed policies and objectives contained in the various plans which are relevant to 'the Proposed Development'. These policies and objectives are addressed separately in the respective Site 3 – Planning Application Report, Site 4 – Planning Application Report and Site 5 – Planning Application Report, prepared by Stephen Little & Associates, Chartered Town Planners & Development Consultants which accompanies the Planning Application.

3.5.1 National Planning Framework – Ireland 2040

The National Planning Framework (NPF) encourages consolidating growth within the M50 and canals to create a more compact urban form. The NPF marks a shift away from allowing urban sprawl, to a more urban public transport focussed development that will deliver a far denser compact urban form.

This means encouraging more people, jobs and activity generally within our existing urban areas, rather than mainly 'greenfield' development and requires a change in outlook. In particular, it requires well-designed, high quality development that can encourage more people, and generate more jobs and activity within existing cities, towns and villages.

It is recommended that development meets appropriate design standards to achieve targeted levels of growth. It also requires active management of land and sites in urban areas.

Chapter 4 – Making Stronger Urban Places of the NPF sets out a framework for urban development which aims to enhance people's experience of living and working in and visiting urban places in Ireland. The NPF targets: -

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

"...a significant proportion of future urban development on infill / brownfield development sites within the built footprint of existing urban areas." (pg. 65).

Dublin is targeted for significant growth over the period of the NPF. The NPF confirms that: -

"At a metropolitan scale, this will require focus on a number of large regeneration and redevelopment projects, particularly with regard to underutilized land within the canals and the M50 ring and a more compact urban form, facilitated through well designed higher density development."

The delivery of the MetroLink project is identified as a "Key Growth Enabler" in terms of Dublin meeting its growth targets. Specifically, the NPF confirms this key growth enabler to be: -

"Delivering the key rail projects set out in the Transport Strategy for the Greater Dublin Area including Metro Link, DART expansion and the Luas green line link to Metro Link."

The Proposed Development on its own and in the context of the Dublin Central Masterplan, is wholly consistent with the NPF. It provides appropriate, sustainable mixed-use urban regeneration (including residential, retail, café / restaurant, hotel and cultural uses) and will result in the intensification of use of an underutilised, brownfield city centre site, which is highly accessible by walking, cycling or use of existing and planned public transport.

The NPF also sets out a number of National Policy Objectives (NPO) that seek to ensure that the over-riding intent of the NPF is delivered. In the context of the Proposed Development the Masterplan intent, it is considered that the following NPOs are worthy of note: -

National Policy Objective 2a

"A target of half 50% of future population and employment growth will be focused in the existing five Cities and their suburbs."

National Policy Objective 3b

"Deliver at least half (50%) of all new homes that are targeted in the five Cities and suburbs of Dublin, Cork, Limerick, Galway and Waterford within their existing built-up footprints."

National Policy Objective 6

"Regenerate and rejuvenate cities, towns and villages of all types and scale as environmental assets, that can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area."

National Policy Objective 11

"In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth."

National Policy Objective 13

"In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high quality outcomes in order to achieve targeted growth. These standards will be subject to a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected."

National Policy Objective 33

"Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location."

National Policy Objective 35

"Increase residential density in settlements, through a range of measures including reductions in vacancy, re-use of existing buildings, infill development schemes, area or site-based regeneration and increased building heights."

The Proposed Development is consistent with the national policy objectives of the NPF in achieving sustainable mixed-use development (including residential, retail, café / restaurant, office, hotel and cultural uses) appropriate to the regeneration and rejuvenation of this city block and the wider Dublin Central Masterplan, in the heart of Dublin City Centre.

3.5.2 Eastern and Midlands Regional Spatial & Economic Strategy

The Eastern and Midlands Regional Spatial and Economic Strategy (RSES) came into effect on 28 June 2019. The RSES includes the Dublin Metropolitan Area Strategic Plan (DMASP), which covers Dublin City and Metropolitan Area.

This document sets out the regional level strategic planning policy for the eastern and midland region, and Dublin Metropolitan Area, in line with the national strategy and policy objectives for managing housing and employment development to support projected population growth set out in the NPF.

The RSES contains the following elements: -

- **Spatial Strategy** – to manage future growth and ensure the creation of healthy and attractive places to live, work, study, visit and invest in.
- **Economic Strategy** – that builds on the region's strengths to sustain a strong economy and support the creation of quality jobs that ensure a good living standard for all.
- **Metropolitan Plan** – to ensure a supply of strategic development areas for the sustainable growth and continued success and competitiveness of the Dublin metropolitan area.
- **Investment Framework** – to prioritise the delivery of key enabling infrastructure and services by government and state agencies.
- **Climate Action Strategy** – to accelerate climate action, ensure a clean and healthy environment and to promote sustainable transport and strategic green infrastructure

The RSES objectives promote the intensive consolidation of development at infill and brownfield sites in built up urban areas in 'Dublin City & suburbs'. Regional Policy Objective (RPO) 4.3 states: -

> *"**RPO 4.3:** Support the **consolidation and reintensification of infill / brownfield sites** to provide **high density and people intensive uses** within the **existing built up area of Dublin city** and suburbs and ensure that the development of future development areas is co-ordinated with the delivery of key water infrastructure and public transport projects."*

The Proposed Development is representative of the consolidation of the sustainable compact redevelopment and revitalisation of an underutilised brownfield urban site. It will accommodate a greater resident and working population, in a well-designed urban environment. The site is linked to high quality public transport and easily accessible to other city centre amenities and attractions. It is therefore wholly consistent with strategic objective RPO 4.3.

3.5.3 Dublin City Development Plan 2016 – 2022

3.5.3.1 Core Strategy

The Council's proposed development strategy for Dublin is to promote: -

- A compact, quality, green well-connected city.
- A smart city facilitating real economic recovery.
- A city of good neighbourhoods and socially inclusive communities.

The Core Strategy states that Dublin City is the 'gateway core' for high-intensity clusters, brownfield development, urban renewal and regeneration. The Development Plan places an emphasis on quality compact urban neighbourhoods near public transport corridors, with the intention of bringing about a modal shift from private cars to more sustainable modes of transport such as walking, cycling and public transport.

It is further recognised that the Core Strategy Principles include: -

- **Economic**: Developing the city as a national gateway and focus for employment and creativity.
- **Social / Residential**: Developing a network of compact sustainable urban neighbourhoods, offering a range of facilities and house types.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- **Cultural / Built Heritage**: making provision for cultural facilities, raising awareness of cultural heritage and promoting safe and active streets through design of buildings and public realm, as part of the city's build and natural heritage and unique identity.
- **Urban Form**: Creating a connected and legible city based on active streets and quality public spaces, with a distinct sense of place.
- **Movement**: Supporting modal shift to more sustainable transport modes of walking, cycling and use of public transport.

The Proposed Development includes the redevelopment of underutilised, brownfield lands, which will result in high quality renewal and regeneration, at a highly accessible location in the heart of Dublin City Centre, is consistent with the Council's Core Strategy.

3.5.3.2 Land Use Zoning

Under the Dublin City Development Plan 2016-2022, as may be seen from the zoning map extract below, the site is subject to the zoning objective, *"Z5 – City Centre"*, in common with much of the city centre area in the immediate vicinity of the application site.

The land use objective for the Z5 zoning seeks: -

> *"To consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity."*

Section 14.8.5 of the City Development Plan includes further guidance on Z5 zoned lands. The following points are of note: -

- The primary purpose of this use zone is to sustain life within the centre of the city through intensive mixed-use development.
- The strategy is to provide a dynamic mix of uses which interact with each other, help create a sense of community, and which sustain the vitality of the inner city both by day and night.
- Ideally, this mix of uses should occur both horizontally along the street frontage and vertically through the floors of the buildings. While a general mix of uses e.g. retail, commercial, residential etc. will be desirable within the overall scheme, retail should be the predominant use at ground floor levels on the principal shopping streets.
- As a balance and in recognition of the growing residential communities in the city centre, adequate noise reduction measures must be incorporated into development, especially mixed-use development, and regard should be given to the hours of operation.

The Development Plan indicates that a wide range of uses is to be provided in this zoning area, which is sustainable and within easy reach of services, open space, facilities and public transport.

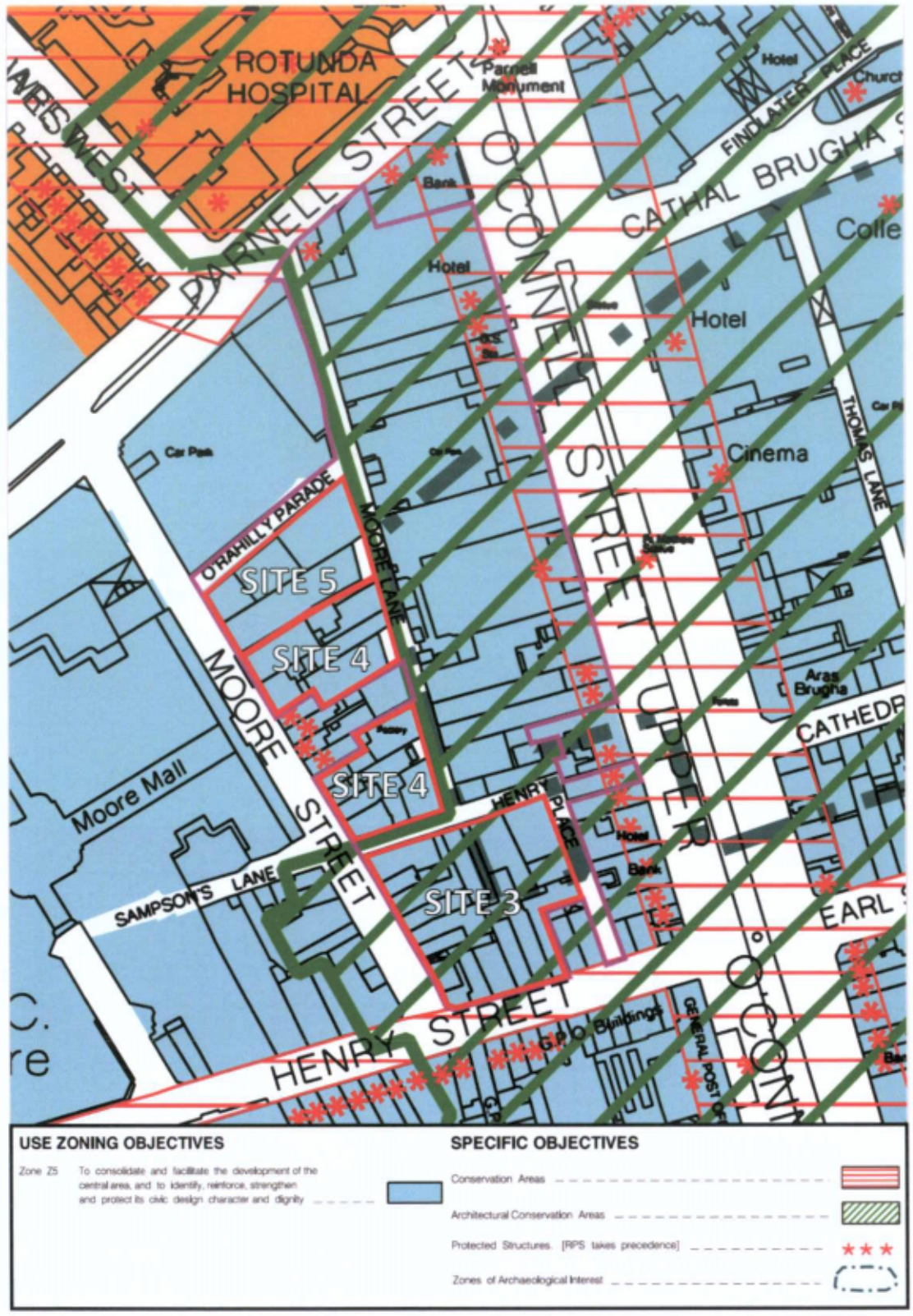

Figure 3.4: The indicative site outline of the Proposed Development outlined in red within the context of the Masterplan outlined in purple (Approximate Overlay by SLA). Please refer to Please refer to Architects Drawings for the definitive red line boundary of the individual site of the Proposed Development.

The following uses are considered 'Permissible' and 'Open for Consideration' under the Z5 land use zoning.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Permissible Uses
Amusement / leisure complex, bed and breakfast, betting office, buildings for the health, safety and welfare of the public; car park, car trading, childcare facility, civic offices, community facility, conference centre, **cultural, creative, artistic, recreational building and uses**, delicatessen, education, embassy office, enterprise centre, funeral home, guest house, home-based economic activity, hostel, **hotel**, industry (light), internet café, live-work units, media-associated uses, medical and related consultants, motor sales showroom, nightclub, **office**, off- licence, **open space**, part off-licence, place of public worship, public house, public service installation, **residential**, **restaurant**, science and technology-based industry, **shop (district)**, **shop (neighbourhood)**, **shop (major comparison)**, take-away, training centre, veterinary surgery, warehousing (retail / non-food) / retail park.
Open for Consideration Uses
Advertisement and advertising structures, civic and amenity / recycling centre, financial institution, household fuel depot, outdoor poster advertising, petrol station, transport depot.

The Proposed Development comprises residential, retail, café / restaurant, office, cultural, and hotel uses, which are all permissible in principle under the Z5 land use zoning.

3.6 Characteristics of the Proposed Development

The 3no. concurrent planning application are accompanied by detailed Planning Drawings and a detailed Design Statements, which provides a rationale for the design of each proposed scheme. We refer the Planning Authority to the following for further detail: -

- **Masterplan:** Masterplan Design Statement – Dublin Central Masterplan, prepared by ACME Architects.
- **Site 3:** Architectural Design Statement – Dublin Central Site 3 and associated Planning Drawings, prepared by MOLA Architects.
- **Site 4:** Architectural Design Statement – Dublin Central Site 4 and associated Planning Drawings, prepared by ACME Architects.
- **Site 5:** Architectural Design Statement – Dublin Central Site 5 and associated Planning Drawings, prepared by ACME Architects.

3.6.1 Layout & Design

3.6.1.1 Site 3

The proposed design is divided into 2no. urban blocks (Block 3A and Block 3B), separated by a new north south passageway connecting Henry Street and Henry Place. The new buildings range in height from 1 – 9 storeys, over existing and new single storey basement areas.

The conservation, repair and adaptive reuse of part of existing building fabric at Site 3 includes: basement to third floors (including façade retention) at Nos. 36 – 37 Henry Street; basement to second floors (including façade retention) at Nos. 8-9 Moore Street; ground and first floor (including façade retention) at Nos. 11 – 13 Henry Place; façade retention at Nos. 39 – 40 Henry Street.

Volume and building mass are effectively broken down by this stepping of floors and the modulation of building height across the two blocks. Each step up in building height corresponds with a decreased floorplate. This avoids a monolith appearance and ensures that light and ventilation penetrate deep into the core of the block.

The ground floor generally consists of shop / retail and licenced café / restaurant units in Block 3A and 3B are entered through doorways onto the Henry Street or Moore Street frontages, or directly from the new passageway.

Block 3A contains a hotel with reception and foyer facing onto Henry Place at ground floor and hotel room from 1st to 7th floor. A licenced restaurant is located on the 8th floor.

Block 3B contain 79no. 'Build-to-Rent' apartment units and associated residential amenity space. Block 3B also includes the reimagining of No. 10 Henry place ('White Building') to provide a cultural space / gallery (with café use) and to act as landmark structure or 'beacon'.

3.6.1.2 Site 4

The proposed design is divided into 2no. urban blocks, separated by Nos. 14 – 17 Moore Street, a National Monument and Protected Structure. The proposed new public plaza will be permeable for pedestrians and dismounted cyclists (and capable of accommodating emergency and servicing vehicles). This will create a link between O'Connell Street and Moore Street and the wider Masterplan area. This simple urban design intervention, allied to an appealing use-mix and the locating of a future Metrolink Station within the overall Dublin Central site, will encourage pedestrian movement to filter through the streets and lanes, revitalising and shifting the centre of activity northwards.

The buildings heights range from Nos. 1 – 3 storeys over existing separated single storey basements in line with the existing built form on Moore Street and Moore Lane. The parapet height set by the National Monument (Nos. 14 – 17 Moore Street) is maintained. In line with this, No. 10 and Nos. 20 – 21 Moore Street are proposed to be retained and Nos. 11 – 13 will be replaced by a terrace of 3no. three storey high buildings with pitched roofs and gables, matching the National Monument. The proposed building heights addressing Moore Lane are predominantly 1 and 2 storeys in line with the existing buildings being retained (Nos. 17 – 18 Henry Place and Nos. 6 – 7 Moore Lane) as part of the proposed development. The lower building heights here also contributes to maintaining the proportions characteristics of the existing lane.

The design and layout of the proposed development has been informed by the surrounding context and on-site constraints. The layout responds to the immediate context and character of the streets which adjoin the proposed development. It also has regard to the aspirations and context of the wider Dublin Central Masterplan which accompanies the application.

The built form of the proposed development responds to its historical context in a respectful and complimentary manner. The architectural design seek to regenerate and refurbish any existing building fabric where possible. Where new buildings are proposed, they seek to replicate the architectural design of the existing buildings and in particular Nos. 14 – 17 Moore Street, National Monument and Protected Structures.

3.6.1.3 Site 5

The proposed design is for a single building which ranges in height from 2 – 6 (over single storey partial basement) incorporating café / restaurant and office uses.

It also includes widening of O'Rahilly Parade to allow for service and disabled parking, cafe and restaurant uses at ground floor to take advantage of the south facing square, as well as at ground floor facing onto Moore Street, to provide commercial activity to support the existing shops and Market and office use above, part of the mix of uses within the Masterplan, contributing to the mix of uses and increasing activity across the site and wider area.

The access to the proposed building is from the proposed new public plaza. The primary entrance to the office at 1st to 5th floor and the cafe / restaurant units at ground floor are on the south-eastern aspect of the building.

The cafe / restaurant units at ground floor also have entrances onto Moore Street, O'Rahilly Parade and Moore Lane to ensure there is activity onto each street adjoining Site 5. In the context of the Masterplan these cafe / restaurant units will provide activity on the northern side of the proposed new public plaza. As part of the concurrent planning application of Site 4 cafe / restaurant units are proposed at ground floor level to activate both the southern and western side of the proposed new plaza.

3.6.2 Materials Strategy

We refer the Planning Authority to the accompanying Architects Design Statements and Elevational Drawings, prepared by MOLA and ACME Architects for preliminary details of materials and finishes of the Proposed Development. A palate of materials and colours has been chosen to provide a robust, quality finish to the scheme while referencing the existing developments in the area.

3.6.3 Proposed Uses

DCC PLAN NO.2861/21
RED: 01/06/2021

3.6.3.1 Site 3

Residential

The following tables identifies the extent of apartment accommodation proposed within Site 3: -

Type	No. of Units	%
Studio	14	18
1-Bed	56	71
2-Bed (3P)	2	2.5
2-Bed (4P)	7	9
Total	**79**	**100**

The studio and 1-bedroom units range in size from c. 37.5 sq. m to 66.4 sq. m and the 2-bedroom (3-person and 4-person) units range in size from c. 67.97 sq. m to 92.18 sq. m. The overall gross floor area of residential accommodation proposed amounts to c. 6,451.5 sq. m.

Hotel

Block 3B provides a high quality, professionally managed and fully serviced hotel accommodation and ancillary services.

The proposed hotel accommodates 150no. bedrooms and housekeeping services, from 1st to 7th floor in Block 3A. The rooms are provided in a range of sizes (c. 16.9 sq. m – 46.4 sq. m) including 8no. universally accessible bedrooms.

Retail & Licenced Café / Restaurant

11no. retail units (c. 1,954 sq. m) are proposed between Block 3A and 3B. A varying range of units sizes are proposed to encourage a vibrant mix of retailers including indigenous operators. These typologies are strategically placed to influence pedestrian movement routes through the block, as well as creating a vibrant mixed-use environment with character and active frontages. Broadly, the units are broken down as follows: -

<u>Block 3A (eastern block): -</u>

- 1no. retail unit (Unit 2) for use as 'shop' proposed at basement, ground and first floor level of No. 36 Henry Street and ground floor of No. 37 accessible from both Henry Street and new north-south passageway.
- 1no. unit (Unit 1) for use as 'shop' or 'licensed restaurant / café unit with takeaway / collection facility' proposed at ground level fronting the new passageway.
- 2no. licenced hotel restaurant/café units are proposed, one at ground floor and the other at 8th floor (rooftop) with outdoor terrace.

Block 3B (western block): -

- 5no. retail units (Unit 6 and Unit 7) for use as 'shop' at ground and first floor level of Nos. 39 – 41 Henry Street accessible from Henry Street, new north-south passageway and Moore Street and 3no. retail units (Units 8, 9 & 10) for use as 'shop' at ground level of Nos. 1 – 7 Moore Street.
- 4no. retail units for use as 'shop' or 'licensed restaurant / café unit with takeaway / collection facility' (Units 3, 4, 5) proposed at ground level fronting the new north-south passageway and at basement and ground level (Unit 11) at the junction of Nos. 8-9 Moore Street and Henry Place.

Cultural / Gallery Use at No. 10 Henry Place ('White Building' or 'White House')

A cultural use is proposed at No. 10 Henry Place ('White Building' or 'White House'). The proposed use envisages a cultural / gallery venue, with the café at ground floor and exhibition space extending to 1st floor. This would create a destination, interpretative and exhibition centre and place of interest for the general public, visitors and local residents.

3.6.3.2 Site 4

Residential

The following tables identifies the extent of apartment accommodation proposed within Site 3: -

Type	No. of Units	%
1-Bed	11	73%
2-Bed (3P)	2	7%
2-Bed (4P)	3	20%
Total	**15**	**100%**

The 1-bedroom units range in size from 48 sq. m to 63 sq. m and the 2-bedroom (3-person and 4-person) units range in size from 73 sq. m to 80 sq. m. The overall gross floor area of residential accommodation proposed amounts to 1,454 sq. m.

Retail & Licenced Café / Restaurant

Site 4 provides for 5 no. retail units (c. 617 sq. m), all of which are located in the block south of the National Monument. The proposed retail units vary in size and range between 75 and 150 sqm. All of which are serviced directly from the street. Retail uses are spread across a mix of retail typologies in the form of medium sized units and smaller shop units. These typologies are strategically placed throughout in order to create a vibrant mixed-use environment with character and active frontages.

4 no. café / restaurant units are proposed to provide a variety of dining and social opportunities. At ground floor level, the block located to the north of the National Monument includes 2 no. café / restaurants. Both of these units front onto the new proposed public plaza which will contribute to activating the space. At ground floor level, the block located to the south of the National Monument includes 2 no. café/restaurant units. These have frontages onto Moore Lane and Moore Street and are accessed for these streets.

2 no. of the café / restaurant units (1 no. south and 1 no. north of the National Monument) have floor space on the upper floors as well as at ground floor level.

Cultural Use – Extension to the National Monument

A three storey extension (c. 60 sq. m) to the National Monument is proposed as part of Site 4 at No. 18A Moore Street. This is owned by the Department of Housing, Local Government and Heritage. A letter of consent have been provided by the Department of Housing, Local Government and Heritage to include these works as part of Site 4.

The extension to the National Monument will be constructed in two phases. The first phases, also referred to as the interim phase is subject to the development at Site 4. The purpose of the extension is to provide an ancillary space for the National Monument with an independent entrance from the proposed public plaza.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Office

Site 4 includes 1no. office unit on the first floor at Nos. 6 – 7 Moore Lane. The proposed office unit is accessed from a ground floor lobby entrance at Nos. 6 – 7 Moore Lane.

3.6.3.3 Site 5

Office

Site 5 provides for c. 5,753 sq. m. of office use from 1st to 5th floor of the proposed buildings. The building layout has been designed to accommodate either a single or multiple tenants.

Licenced Café / Restaurant

3no. café / restaurant units (c. 679 sq. m) are proposed to provide a variety of dining and social opportunities at ground floor level of Site 5. These units proposed are: -

- **Unit 1:** A licensed café / restaurant with takeaway / collection facility (c. 228 sq. m) with frontage onto the O'Rahilly Parade, Moore Lane and the new public plaza.
- **Unit 2:** A licensed café / restaurant with takeaway / collection facility (c. 271 sq. m) with frontage onto the new public plaza.
- **Unit 3:** A licensed café / restaurant with takeaway / collection facility (c. 179 sq. m) with frontage onto the O'Rahilly Parade, Moore Street and the new public plaza.

Delivery Hub

A 'delivery hub' is proposed in Site 5. It is located on O'Rahilly Parade adjacent the service bay for convenient access for deliveries.

The 'delivery hub' is proposed to cater for non-bulky, non-food items to 2AB, Site 3 and Site 4. The 'hub' will essentially operate as a point of receipt for parcel deliveries to Sites 2AB, Site 3 and Site 4, arriving after 11am.

Goods will be delivered from the hub via either cargo bike (if permitted) or via goods trolly with electric hand tug. Such facilities will be stored within the hub.

No goods will be stored in the delivery hub overnight, but instead delivered to the appropriate location as and when the goods arrive, after 11am daily. Therefore, the hub does not need to cater for long term storage of goods.

3.6.4 Density

The Proposed Development been designed to respond to the existing context in terms of height, massing and residential density. The Proposed Development is located within a highly accessible area of Dublin City Centre, adjacent to LUAS and bus services and planned Metrolink.

The Site 3 mixed-use development includes 79no. BTR apartment units on a net site area of 0.3 ha. This results in a net residential density of approximately 198no. dwellings per hectare.

The Site 4 mixed-use development includes 15no. apartment units on a net site area of 0.26 ha. This results in a net residential density of approximately 57no. dwellings per hectare.

Comparable residential densities achieved in Dublin City include, for example, Poolbeg West SDZ (238no. dwellings per hectare), 'Capital Dock' at City Block 3, North Lotts and Grand Canal Dock SDZ (305no. dwellings per hectare) and Connolly Station Quarter (257no. dwellings per hectare).

Site 5 does not include any residential units.

3.6.5 Building Height

The Proposed Development includes a range of building heights which respond to the surrounding context as well as responding to the changing nature of the built environment have regard fore recently permitted developments in proximity. The buildings heights proposed within each site are broadly as follows: -

- **Site 3:** 1 – 9 storeys.
- **Site 4:** 1 – 3 storeys.
- **Site 5:** 2 – 6 storeys.

3.6.6 Conservation Works & Adaptive Reuse

3.6.6.1 Site 3

Site 3 does not contain any Protected Structures. It does lie within the O'Connell Street & Environs Architectural Conservation Area (ACA).

A number of non-protected structures and façades on Henry Street, all of which post-date 1916, are considered significant collectively and in their representation of retail / residential development typologies dating from the early 20th century in Ireland. A number of buildings on Moore Street and Henry Place are also significant from a heritage perspective.

The scheme therefore proposes to retain and integrate the building fabric of No. 36 and No.37 Henry Street, in addition to Nos. 8 – 9 Moore Street and Nos. 11 – 13 Henry Place, into the scheme in a manner which seeks their meaningful, purposeful and adaptive re-use. The façades of No. 39 and No. 40 Henry Street are also retained and integrated into the proposed scheme.

In summary, conservation, refurbishment, repair and adaptive reuse of the existing structures include: -

- **Nos. 36 and 37 Henry Street:** Block 3A incorporates the existing buildings at Nos. 36 and 37 Henry Street, where the existing basement and four floors above are to be retained and upgraded. A new set-back level at 4th floor allows the original buildings to be read beneath. The hotel is then significantly set back at the northern end of Block 3B, where it steps up from 6 to 8 storeys before rising to 9 storeys (30m to parapet) at the north east corner.
- **Nos. 39 and 40 Henry Street:** Within Block 3B the facades of Nos. 39 & 40 Henry Street are retained and restored at upper levels from 1st to 3rd floor. The new residential building is set back at 4th and 5th floor levels to allow the original facades to be read beneath.
- **Nos. 8 and 9 Moore Street:** At the north western corner or Block 3B it is proposed to incorporate the existing basement and 3 storey buildings at Nos. 8 – 9 Moore Street, including façades and internal walls and floors. An existing staircase to the rear of 8-9 Moore Street, currently serving ground and 1st floors will be extended to provide access to the upper floors.
- **Nos. 11 – 13 Henry Place:** Immediately adjoining Nos. 8 – 9 Moore Street, it is proposed to retain and restore the existing ground and 1st floor facades and the floor area at 1st floor level.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

3.6.6.2 Site 4

Application Site 4 does not contain any Protected Structures. Site 4 does not lie within the O'Connell Street & Environs Architectural Conservation Area (ACA), however it is positioned directly adjacent to Site 3 (concurrent planning application) which is situated inside the ACA. Site 4 also directly adjoins Nos. 14 – 17 Moore Street, a National Monument and Protected Structure. For avoidance of doubt, no works are proposed to the National Monument as part of this development.

Site 4 therefore proposes to retain and integrate the existing building fabric of significance within No. 10 Moore Street, Nos. 20 to 21 Moore Street, Nos. 17 to 18 Henry Place and Nos. 6 to 7 Moore Lane.

In summary conservation, refurbishment, repair and adaptive reuse of the existing structures include: -

- **No. 10 Moore Street:** This building is retained almost in its entirety as part of the proposed development, with the exception of the later extension at ground floor level to the rear of the building.
- **Nos. 20 – 21 Moore Street:** The buildings located at this address fronting Moore Street are completely retained as part of the proposed development. However, the building that extends to the rear of the plot becoming 12 Moore Lane has been removed. A café fronting onto the new public plaza and Moore Street is proposed at the ground floor, with the upper floor being converted into residential apartment units accessed from Moore Street.
- **Nos. 17 – 18 Henry Place:** The building currently located at this address has a truncated façade and was originally 3 storeys. As part of this proposed development it is proposed to retain the façade and build a one storey extension above to restore the building to its original height. The proposed uses are a retail unit on the ground floor and residential units above, accessed from the podium courtyard.
- **Nos. 6 – 7 Moore Lane:** The building at this location is retained as part of the proposed development and will be restored to accommodate a retail unit connected to 5 ½ Moore Lane, a bar on ground and basement levels and an office for the developer on the upper level, accessed from a small reception on the ground floor.
- The party wall of No. 12 and No. 13 Moore Street is also to be retained an integrated as part of the new buildings proposed.

3.6.6.3 Site 5

Site 5 does not contain any Protected Structures. The site is outside within the O'Connell Street & Environs Architectural Conservation Area (ACA).

To Moore Street, it is proposed to retain the building line, plot widths, and building heights, following the historic precedent to rise up towards the Jury's Inn. The existing buildings at Nos. 22 – 25 Moore Street are not original, and date from 1965 and the 1990s. They have been replaced with new buildings which maintain the historic plot widths, storey heights, material and draw on the historic character, to reinforce the character of Moore Street.

Facing south across the square and maintaining the existing building line along Moore Lane, Site 5 proposes to create a contemporary building, as a key landmark within the Masterplan.

3.6.7 Demolition & Excavation

3.6.7.1 Site 3

Other than those buildings identified in Section 3.6.6.1 above, Site 3 includes the demolition of all other existing basements and buildings on the site (c. 6,701 sq. m gfa), including those fronting Henry Street (No. 38, Nos. 39 & 40 (behind façade) and No.41), Moore Street (Nos. 1 – 7) and Henry Place (Nos. 3 – 10).

The removal of No. 38 Henry Street facilitates a new north-south laneway to permeate the site, linking to the north with Moore Lane and enhancing permeability to the wider Masterplan area beyond to Parnell Square Cultural Quarter. This would encourage greater movement and street activity through this part of the city, and relieve some pressure on O'Connell Street. We refer the Planning Authority to the Architectural Heritage Impact Assessment (AHIA), prepared by Molloy & Associates Conservation Architects. The impact of the loss of No. 38 Henry Street is considered in detail within the AHIA. It concludes that the removal of this building, which is not a protected structure, is balanced by the socio-economic benefits and that increased permeability is integral to the success of the wider Dublin Central development and the wider retail core of the north inner city and is mitigated by the comprehensive record that has already been completed.

No. 41 Henry Street is a modest, compromised, infill building. It contains multiple subdivisions on all levels and low internal ceiling height. Removal of No. 41 Henry Street allows for a strong architectural set-piece on a significant corner at the junction of Henry Street and Moore Street. This provides an effective transition between the retained fabric on Henry Street and the proposed new building on Moore Street.

3.6.7.2 Site 4

Other than those buildings identified in 3.6.6.2 above, the proposed development includes the demolition of all other existing buildings on the site (c. 4,525 sq. m gfa).

The removal of the existing buildings Nos. 11 – 13 Moore Street is proposed with the exception of the party wall between No. 12 and No. 13 Moore Street. These buildings are not of historical significance and are not the original buildings and date from the 1960s or later. It is proposed to replace this building with 3no. three storey terrace buildings which maintain the historic plot width, height and material, drawing on the historical character of Moore Street.

No. 18 and No. 19 Moore Street are being demolished are proposed to be demolished and replaced by the archway between the extension to the National Monument (No. 17) and No. 20 Moore Street. The proposed archway marks the entrance into the proposed public plaza from Moore Street and links Moore Street with O'Connell Street. These buildings are not the original. No. 18 was constructed post 1916 and No. 19 dates from the 1930s.

The buildings located at Nos. 10 and 11 Moore Lane are located at the rear of No. 17 Moore Street. It is proposed to replace these by part of the new public plaza and a 2 storey building along the southern side, adjacent to No. 9 Moore Lane.

3.6.7.3 Site 5

Site 5 includes the demolition of all existing buildings on the site (c. 2,312 sq. m gfa). The wall of No. 14 Moore Lane to the south of the plot, built from the calp stone will be taken down by hand and stored for reuse within Site 4.

We refer the Planning Authority to the Chapter 14: Material Assets (Waste) and associated Appendix 14.1: Construction and Demolition Waste Management Plan, prepared by AWN Consulting for preliminary information on how the demolition and construction waste will be managed as part of this development.

Appendix 3.2 – 3.4 of this EIAR contain the Outline Construction & Demolition Management Plan for Site 3, 4 & 5 respectively, prepared by Waterman Moylan Consulting Engineers. These provide further information regarding the management of the construction stage of this development, including mitigation and/or management of typical associated nuisance factors. The Outline Construction & Demolition Management Plans also outline measures being taken to monitor and protect neighbouring properties for the duration of the proposed development works.

We also refer the Planning Authority to the Structural Report, Subterranean Construction Method Statement, Basement Impact Assessment (BIA) by Waterman Structure Limited, which is included as part of the planning documents.

The Ground Movement Analysis considered each stage of the development including demolition, piling, bulk excavation and construction of each phase of the development. Predicted ground movements resulting from the works shall be monitored against baseline readings prior to commencing the works. Monitoring of noise and vibration shall be undertaken for all protected structures during the construction works.

Prior to demolition of any existing buildings, an external survey control system is to be established around the site, including all protected structures, retained buildings, retained facades and the National Monument. This will be carried out using traditional closed traverse surveying techniques and will involve the setting up of sufficient external control stations to allow monitoring of the neighbouring structures during and after demolition.

3.6.8 Drainage Infrastructure & Flood Risk

3.6.8.1 Site 3

Wastewater

It is proposed to provide two new 225mm connections to the existing public network, one for Block 3A and one for Block 3B. The Block 3A connection will be made to the existing sewer in Henry Street, to the south of the site, while the Block 3B connection will be to the 300mm sewer to the north. A new manhole will be constructed at each of the two connection points. Any existing drainage connections at the site are to be decommissioned, with the existing drain capped from within the site to decommission the pipe.

Surface Water

It is proposed to drain surface water from the development to the existing public combined water sewer adjacent to the site in Moore Lane. Surface water will be discharged at a controlled rate limited to the practical minimum rate of 2 l/s.

A mixture of hard and soft landscaping is proposed which will incorporate a range of permeable material and water attenuation measures. Sustainable Urban Drainage systems (SuDS) for managing stormwater for Site 3 include: -

- Green and Blue Roofs.
- Underground Attenuation and Flow Control.

The existing site is almost entirely hardstanding, without such SuDS features, and as such the introduction of any SuDS features will result in a net reduction in the surface water discharging from the site compared to the current scenario.

Water Supply

It is proposed to provide two new metered water supply connections to serve the development, one for Block 3A and one for Block 3B. The Block 3A connection will be made to the existing 12" main in Henry Street, to the south of the site. To serve Block 3B, it is proposed to construct a new loop in Henry Place connected to the existing 200mm main in Moore Street.

3.6.8.2 Site 4

Wastewater

It is proposed to provide two new 225mm connections to the existing public network, one for each block located north and south of the National Monument. The northern block will connect to an existing 300mm vitrified clay sewer to the south of the site. A new manhole is proposed as part of the Site 3 development, and it is proposed to connect to this manhole. The block located to the north of the National Monument will discharge wastewater to the existing sewer on Moore Street via a new connection. A new manhole will be constructed at the two connection points.

Surface Water

It is proposed to drain surface water from the development to the existing public combined water sewer adjacent to the site in Moore Lane. Surface water will be discharged at a controlled rate limited to the practical minimum rate of 2 l/s.

A mixture of hard and soft landscaping is proposed which will incorporate a range of permeable material and water attenuation measures. Sustainable Urban Drainage systems (SuDS) for managing stormwater for Site 3 include: -

- Green and Blue Roofs.
- Underground Attenuation and Flow Control.

The existing site is almost entirely hardstanding, without such SuDS features, and as such the introduction of any SuDS features will result in a net reduction in the surface water discharging from the site compared to the current scenario.

Water Supply

It is proposed to provide two new metered water supply connections to serve the development, one for each block located north and south of the National Monument. The main block, located to the south of the National Monument, will connect to a new loop in Henry Place connected to the existing 200mm main in Moore Street, which is proposed as part of the Site 3 application (concurrent planning application). The smaller block, located to the north of the National Monument will connect directly to the existing 200mm ductile iron main in Moore Street.

3.6.8.3 Site 5

Wastewater

It is proposed to provide one new 225mm connection to the existing public network in O'Rahilly Parade. A new manhole will be constructed at the connection point. Any existing drainage connections at the site are to be decommissioned, with the existing drain capped from within the site to decommission the pipe. Although the existing drainage infrastructure consists of combined foul and surface water sewers, private foul and surface water drainage will be drained on completely separate systems throughout the development.

Surface Water

It is proposed to drain surface water from the development to the existing drainage network on Parnell Street via a new pipe to be laid from O'Rahilly Parade to Parnell Street via Moore Street. Surface water will be discharged at a controlled rate limited to the practical minimum rate of 2 l/s.

A mixture of hard and soft landscaping is proposed which will incorporate a range of permeable material and water attenuation measures. Sustainable Urban Drainage systems (SuDS) for managing stormwater for Site 3 include: -

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- Green and Blue Roofs.
- Underground Attenuation and Flow Control.

The existing site is almost entirely hardstanding, without such SuDS features, and as such the introduction of any SuDS features will result in a net reduction in the surface water discharging from the site compared to the current scenario.

Water Supply

It is proposed to provide one new metered water supply connection to serve the development, at the location of the existing connection to the 110mm main in O'Rahilly Parade.

3.6.8.4 Flood Risk

The combined sites of the Proposed Development not located on the edge of an inland waterway or marine frontage and there has been no recorded flooding at the site or immediate surrounding area. The combined sites of the Proposed Development are at a low risk of flooding.

We refer the Planning Authority the Flood Risk Assessment, prepared by Waterman Moylan Consulting Engineers.

3.6.9 Landscape Proposal

3.6.9.1 Site 3

The street pattern and figure ground at Site 3 is generally being maintained. However, the principal new element of public realm included in Site 3 is the creation of a new passageway through the block. This extends northwards through the centre of the site from Henry Street to Henry Place at its junction with Moore Lane. The new passageway will create further permeability through Site 3, while also remaining subordinate to the surrounding historic street pattern of primary importance.

To facilitate the creation of the proposed new passageway, it is proposed to remove No. 38 Henry Street. It will be flanked by existing Nos. 36 and 37 Henry Street and the existing facades of Nos. 39 and 40 Henry Street.

The proposed new passageway is similar in width to Moore Lane, but widens and narrows at points to add a level of visual interest and accentuate the enjoyment of moving along a street through a city block.

3.6.9.2 Site 4

The street pattern and figure ground at Site 4 is generally being maintained. However, the principal new element of public realm included in the proposed development is the new public plaza that will link O'Connell Street and Moore Lane. The entrance to this proposed public plaza is marked by a proposed archway. To facilitate the construction of the archway and the public plaza, it is proposed to demolish No. 18 and 19 Moore Street.

Part of a new public plaza (1,085 sq. m) is proposed in Site 4. The balance (168 sq. m public plaza overall) is included in the planning application for Site 5 (concurrent planning application). The overall public plaza will be 1,253 sq. m in area.

The proposed public plaza has been designed to maximise southern exposure to café and restaurant terraces to enable outdoor activities all year round, enhancing the usability of the space.

3.6.9.3 Site 5

Site 5 will include the provision of part of the new public plaza (168 sq. m). The portion of the new public plaza proposed will fronted onto by a number of café / restaurant units and the main office floors above. This will ensure the space proposed is passively overlooked to ensure the space is welcoming and safe.

Site 5 includes the provision of 3no. terraces at 2nd, 3rd and 5th floor of the proposed building.

3.6.10 Open Space Provision

Public Open Space

A new public plaza will be provided between Site 4 and Site 5 (1,253 sq. m public plaza overall). Site 4 will deliver 1,085 sq. m and Site 5 will deliver 168 sq. m.

Private Open Space

In Site 3, private amenity space will be provided in the form of balconies or winter gardens. Not all apartments will have their own balcony, however all units will have easy access to communal internal and external private residents' amenities within Site 3

In Site 4, private amenity space will be provided in the form of individual terraces for the 11no. proposed apartments located to the south of the National Monument. The proposed apartments located to the north of the National Monument do not have any private or communal amenity space. Due to these units close proximity to the new public plaza proposed as part of the development, the proposed residential units have ample access to open space.

Communal Open Space

Site 3 Block 3B, residents' communal amenity and ancillary support facilities are provided at Ground Floor Level in the form of a residential lobby accessed from Henry Place with adjacent residential support facilities including a post room, changing facilities and an office. A reception area, also at this level, is accessed through a landscaped external courtyard. Storage areas are provided at Level 01, Level 02 and Level 03. In addition to this, the roof level of Block 3B (Level 06) has been entirely designated to providing high quality generous communal amenity space with views over the city. The proposed rooftop pavilion (c. 142.3 sq. m) provides an internal amenity space which opens out on to extensive landscaped external communal amenity space (c. 517.7 sq. m).

In Site 4 new courtyard is proposed between Moore Street buildings and Moore Lane buildings to provide communal open space (c. 157 sq. m) for the residential units. All apartment served by terraces / balconies.

Site 5 is a commercial office building, accessible terraces are provided at three levels (2,3 and 5) for office workers

3.6.11 Car Parking

A Transportation Assessment (TA) Report, prepared by Waterman Moylan Consulting Engineers is included with this application. The TA is accompanied by a Travel Plan and a Preliminary Construction Traffic Management Plan (PCTMP).

The subject site is within walking distance of a range of transport options including LUAS Red Line stops, Connolly Train Station, Bus Aras and various interurban and Dublin Bus routes which allows greater flexibility with regard to accessibility and encouraging a modal shift toward sustainable modes of transport.

Given the highly connected city centre location, no car parking is proposed as part of the Proposed Development.

We refer the Planning Authority to the Traffic & Transport Assessment, prepared by Waterman Moylan Consulting Engineers.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

3.6.12 Bicycle Parking

The following in the bicycle parking provided for each individual Site of the Proposed Development: -

- **Site 3:** 160no. spaces.
- **Site 4:** 44no. spaces.
- **Site 5:** 58no. spaces.

We refer the Planning Authority to the Traffic & Transport Assessment, prepared by Waterman Moylan Consulting Engineers for further detail in relation to the provision of bicycle parking.

3.6.13 Energy Efficiency

A number of sustainable design features have been included in Site 3, Site 4 and Site 5 to ensure that energy efficiency standards are met and / or exceeded. Such measures assist in reducing the overall CO_2 emissions over the lifetime of the building with subsequent positive impacts on the environment and comfort and wellbeing of prospective residents. A summary of the key environmental performance targets that have been set for the development are as follows: -

- The building is aspiring to meet a Net Zero Carbon strategy to align with the aspirations set out by Dublin City Council within Section 16.2 (Design, Principles & Standards) of the DCC Development Plan.
- The design intent at present for the developments hot water, heating and cooling system designs are based on a combination of highly efficient air source and water to water heat pumps with no fossil fuels being consumed throughout the entire project, avoiding the production of large amounts of local pollution within an urban environment.
- The buildings will meet and exceed the new NZEB (Nearly Zero Energy Buildings) requirements set out in the revised Part L document
- The building will achieve a BER "A" rated energy certificate for all buildings.
- The building will target a reduction in mains water consumption of more than 50% when compared to similar developments and this will be further explored post planning.
- The building has set progressive targets for embodied carbon in its brief, based on recently published LETI (London Energy Transformation Initiative) targets for 2030.
- The building has benchmarked itself against up to planning against Sustainability Assessments including; BREEAM, LEED, WELL Building Standard, WIRED Score where applicable. As a minimum, the scheme will adopt the principles of all and pursuing the formal rating and certification will be subject to cost/benefit feasibility post planning.

3.6.14 Refuse & Collection

The refuse stores are designed to allow sufficient space for waste separation. Dedicated communal Waste Storage Areas (WSAs) have been allocated within the development design of each Site. Separate refuse stores for the different uses are provided at grade as follows: -

- **Site 3:** The WSA for Blocks 3A and 3B are located at ground floor level.
- **Site 4:** Separate WSAs for the different uses are provided at grade with collection point on Moore Street and Henry Place. The commercial refuse store located in the block to the south of the National Monument will have a waste compactor.
- **Site 5:** A WSA is provided at grade with the collection point onto O'Rahilly Parade.

We refer the Planning Authority to the Chapter 14: Material Assets (Waste) and associated Appendix 14.2: Operational Waste Management Plan, prepared by AWN Consulting for preliminary information on how waste from the operational phase of the Proposed Development will be managed.

3.7 Project Life Cycle

The purpose of this section is to provide a description of the proposed development and consider all relevant aspects of the project life cycle both during construction and post construction. These include the following: -

- Construction Stage (Land Use Requirements, Construction Activity & Significant Effects).
- Operation Stage (Processes, Activities, Materials Used).
- Secondary and Off-Site Developments.

3.7.1 Construction Phase

We refer the Planning Authority, in the first instance, to the Outline Construction & Demolition Management Plan prepared by Waterman Moylan Consulting Engineers which outlines the overall construction programme for the Masterplan.

The Masterplan needs to be delivered in stages to suit the constraints of the site. The five major constraints that have dictated the strategy are as follows: -

1. Restricted access arising from the surrounding road network and the narrow existing lanes within the Overall Site.
2. Restricted access arising from two major pedestrianised streets flanking the Overall Site.
3. Protected Structures and non-protected structures proposed to be retained.
4. Neighbours including residents and local businesses.
5. The scale and nature of construction works to be undertaken.

A construction phasing strategy envisages a future build out from south to north, progressing generally from Henry Street towards Parnell Street. The following sets out the broad programmes for each individual Site: -

Site 1: The construction phasing programme for Site 1 is notional only at this time, as it is dependent on commercial considerations subject on on-going consultation with the prospective end user / operator.

Site 2AB & 2C: The construction of Site 2AB and 2C are dictated by the construction of a capping slab to the subterranean MEW (or Metrolink Box) and liaison with TII in respect of its Metrolink project (including tunnel connections to Metrolink Box and station fit out).

The envisaged MEW works within (under) Sites 2AB and 2C are necessary to avoid delays to their construction arising from any delay to the TII's overall Metrolink planning approval and construction programme. It is expected that MEW works would be completed by 2027, allowing the remainder of the envisaged development at Sites 2AB and 2C to be completed by 2029.

A construction programme of at least 11 years is expected for Sites 2AB & Site 2C to allow for complexities related to significant basement excavation, the conservation of Protected Structures and the accommodation of planned delivery by TII of Metrolink. As such planning permission with a life of min. **11 years** will have to be sought for Site 2AB and **11 years** for Site 2C.

Sites 3 & 4: It is anticipated that Site 3 and Site 4 would be developed first, as the direction of construction moves from south to north with construction traffic utilising Moore Lane.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Both sites are capable of standalone development, with access to existing infrastructure and independent of MEW.

Within Site 4 it will be necessary to protect the National Monument, located at Nos. 14 – 17 Moore Street.

A construction programme of 5 years is expected for Sites 3 and 4. However a contingency of a further 2 years is considered prudent, in the potential absence of a mechanism to extend the appropriate period. As such planning permission with a life of min. **7 years** is sought.

Sit 5: Site 5 is expected to be the last to be constructed, being located at the main arterial connection for construction traffic to access / egress the Masterplan area. It will act as the site compound to facilitate the development of the other Sites. Given the 11 year construction programme envisaged for Sites 2AB & Site 2C, permission for Site 5 with a life of **15 years** is sought. This timeframe will facilitate demolition at Site 5, enable it to function as a site compound for the duration of construction of all other Sites, and to then allow for its development.

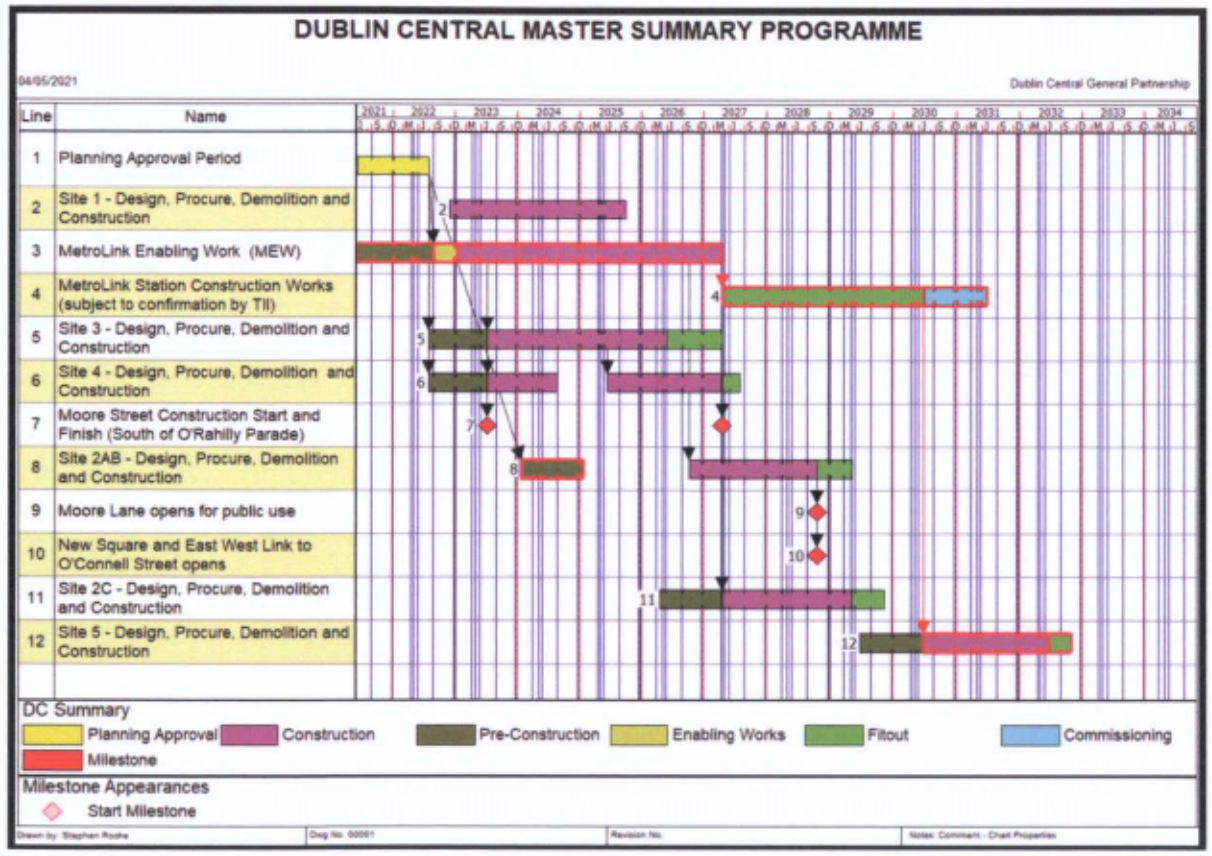

Figure 3.5: Extract from the Dublin Central Masterplan Outline Construction & Demolition Management Plan showing the timeline for the development of each Site and the expected construction timeframe of the TII Metrolink Station.

We refer the Planning Authority also to the Masterplan Outline Construction & Demolition Management Plan (See Appendix 3.1), prepared by Waterman Moylan Consulting Engineers which sets out how the construction of the Dublin Central Project will be appropriately managed on site.

Appendix A of this report contains the Programme Report prepared by Certo Project Management showing the timeline for the development of each Site and the expected construction timeframe of the Metrolink Station.

3.7.1.1 Construction Activities

There are a number of construction activities involved in a project such as this. The activities (independent of phasing) can be divided into six general categories: -

- **Demolition:** Demolition of existing building on site, where relevant, and removal of demolition waste off-site.
- **Excavation:** This includes remaining site clearing post demolition and earthworks – soil / rock removal – required to prepare the site for basements, where relevant, the foundations and structures above.
- **Structure:** Structure includes the foundations and the physical frame of the structures above.
- **Enclosures:** The enclosures for the buildings will be formed from concrete / steel frame, brick, block work, timber, and glass, with pitched and flat roofs, all with the required levels of insulation and waterproof membranes.
- **Services:** The requisite services will be provided including drainage and lightning.
- **Landscaping:** The landscaping works include hard landscaping, street furniture and tree planting.

For the avoidance of doubt, each individual 'Site' application are accompanied by a standalone Outline Construction & Demolition Management Plan, prepared by Waterman Moylan, Consulting Engineers, to demonstrate that the management of the individual 'Site' is also appropriately considered (See Appendix 3.2 – 3.4 for the Outline Construction & Demolition Management Plan for Site 3, 4 & 5 respectively).

Each of the Outline Construction & Demolition Management Plan consider the following as part of the management of the construction process: -

- **Site Setup** including but not limited to location of hoarding, location of site compound, access and egress into individual sites, cranage strategy, parking provisions, services for the construction site (drainage, power etc.) and on site facilities (wheel washing, security etc.)
- **Construction Methodology** including but not limited to surveys required, approach to enabling works (demolition, excavation etc.), basement / foundations, superstructure and retention of existing building fabric where relevant.
- **Construction & Demolition Waste** including the management of all waste generated from the demolition and construction of each site.
- **Protection of Existing Buildings** including the retention of buildings / façade where relevant, exclusion zones (in particular adjacent No. 14 – 17 More Street – National Monument / Protected Structure) and movement monitoring programme.
- Control of **Noise, Dust and Vibration** including all appropriate mitigation measures.
- Approach to **Archaeological Monitoring**.

3.7.1.2 Construction Access

A Masterplan Preliminary Construction Traffic Management Plan (PCTMP) has been prepared by Waterman Moylan Consulting Engineers.

Two construction routes to the site have been identified both to Parnell Street. One would be via Summerhill and Parnell Street and the second preferred route via Dorset Street and Dominick Street Lower as shown in Figure 3.6.

Traffic and other movements on the road network during the construction Site will be managed by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 3.6: Emerging Haul Routes for Construction Traffic (Inbound in green and outbound in red) – See Chapter 13: Material Assets (Transportation) also.

Two alternative scenarios were developed in detail based on clockwise and anti-clockwise circulation around the block bounded by Moore Street, O'Rahilly Parade and Moore Lane.

The preferred option is the anticlockwise circulation included the local traffic management proposals presented in Figure 3.7. Inbound access for the majority of construction vehicles is proposed from Parnell Street to Moore Street / O'Rahilly Parade and outbound departures from Moore Lane to Parnell Street.

This preferred option was selected on the basis of a number of local constraints including: -

- The lack of a stacking lane on Parnell Street in advance of the left turn into Moore Lane should there be a delay entering Moore Lane for whatever reason.
- The restricted width of the left turn from Parnell Street around Conway's public house into Moore Lane which could cause delays due to the slow deliberate turning for vehicles across a busy restricted area.
- The relatively easy right (and left) turns from Parnell Street to Moore Street.
- The availability of a stacking area for the right (and left) turns from Parnell Street into Moore Street.
- Local traffic management on Moore Lane would require the presence of temporary traffic signals and/or flagmen at different locations and at different times to facilitate vehicles passing depending on the movements in progress.

Arrivals are proposed from Parnell Street via Moore Street and O'Rahilly Parade. Some limited departures are proposed to O'Connell Street Upper via Henry Street up to 11h00 after which Henry Street is restricted to pedestrians only. The remaining departures are proposed to Parnell Street via Moore Lane.

For further detail on the Outline Construction & Demolition Management Plan for Site 3, Site 4 & Site 5, we refer to Appendix 3.2 – 3.4 respectively of this EIAR where greater detail can be found.

Alternative Access for Long Vehicles to Site 3

Arising from the restricted junctions at both ends of O'Rahilly Parade, an alternative part time access to Site 3 from Parnell Street via Moore Lane is also proposed. This access would be for long vehicles only and would operate in the mornings up to 11h00 as illustrated in Figure 3.7.

Long vehicles travelling south on Moore Lane would require the presence of temporary traffic signals and/or flagmen at different locations at different times depending on the movements in progress.

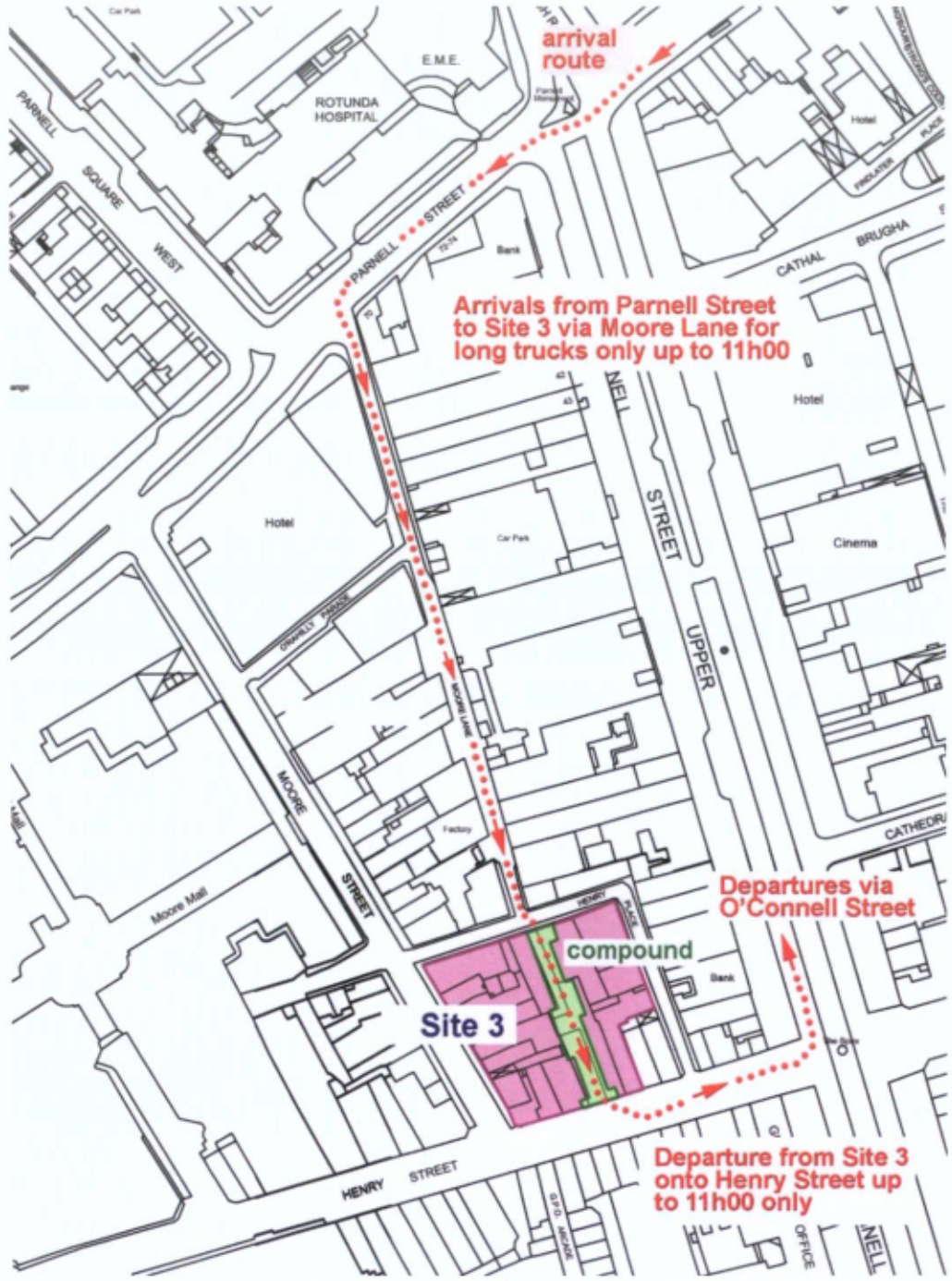

Figure 3.7: Alternative Access for Long Vehicles to Site 3 – See Chapter 13: Material Assets (Transportation) also.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

3.7.1.3 Air Quality – Dust & Dirt

The appointed Contractor shall put in place a regime for monitoring dust levels in the vicinity of the Site during the Construction Phase. The level of monitoring and adoptions of mitigation measures will vary throughout the Construction Phase depending on the type of activities being undertaken and the prevailing weather conditions at the time

The potential impacts associated with air quality during the Construction Phase are addressed in Chapter 9: Climate (Air Quality & Climate Change).

3.7.1.4 Noise & Vibration

The potential impacts associated with noise and vibration during the Construction Phase, are addressed in Chapter 12: Air (Noise & Vibration).

3.7.1.5 Waste

Chapter 14: Material Assets (Waste) of this EIAR includes details regarding the anticipated amounts of waste generated from the project, the subsequent potential impacts and the mitigation measure proposed to ameliorate any anticipated negative impacts. An Outline Construction and Demolition Waste Management Plan has been prepared also (contained in Appendix 14.1 of this EIAR) and sets out how the demolition and construction waste will be managed as part of the Proposed Development.

In summary, all waste generated during the construction and operational periods is proposed to be appropriately disposed of in accordance with the Waste Management Plans.

3.7.1.6 Health & Safety Issues

The development will comply with all Health & Safety Regulations during the construction of the project. Where possible potential risks will be omitted from the design so that the impact on the construction phase will be reduced.

3.7.2 Operational Phase

The Proposed Development is a mixed-use development comprises residential, retail, café / restaurant, office, cultural, and hotel uses.

The primary direct significant environmental effects will arise during the Construction Phase. As a result, the Operational Phase of the Proposed Development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on human beings, flora and fauna, soils, water, air and climate.

The primary likely significant environmental impacts of the Operational Phase as a result of the Proposed Development are fully addressed in the relevant specialist chapters of this EIAR.

The Proposed Development also has the potential for cumulative, secondary and indirect impacts (i.e. traffic) and can be difficult to quantify due to complex inter-relationships.

However, all interactions and cumulative impacts are unlikely to be significant, have been addressed in Chapter 20: Summary of Cumulative Impacts and Interactions of this EIAR.

3.8 Related Development and Cumulative Impacts

Each Chapter of the EIAR includes a cumulative impact assessment of the Proposed Development with other planned projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposed.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other planned developments will be minimal.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

4 EXAMINATION OF ALTERNATIVES

4.1 Introduction

This Chapter of the EIAR sets out the reasonable alternatives that have been considered for the Proposed Project and provides an indication of the main reasons for the final scheme choice, taking into account the effects on the environment in the context of the characteristics of the site (receiving environment). Article 5(1)(d) of the EIA Directive requires Environmental Impact Assessment Reports (EIAR) to include the following: -

> *"a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment".*

Paragraph 2 of Annex IV elaborates the requirement, as follows: -

> *"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

Pursuant to Section 3.4.1 of the Draft Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017), the consideration of alternatives also needs to be cognisant of the fact that: -

> *"...in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'..."*

In accordance with Draft EPA Guidelines (EPA, 2017), different types of alternative may be considered at several key phases during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The Draft EPA Guidelines (EPA, 2017) states: -

> *"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."*

Thus, the reasonable alternatives studied by the project design team and in the context of the associated Regulations, the alternatives of the proposed project in this EIAR Chapter as follows: -

- Alternative Locations.
- 'Do Nothing' Alternative.
- Alternative Processes.
- Alternative Mitigation Measures.
- Alternative Layouts & Designs.

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

4.2 Development Rationale

The proposed development seeks to provide a mixed-use development and related facilities on lands zoned *"Z5 – City Centre"*. The nature of the development proposed is actively promoted at this location by Dublin City Council (DCC), through its Development Plan and having regard to other strategic plans and guidance.

The assessment of the proposed scheme in this EIAR has had regard to the detailed design as described and illustrated in the accompanying plans & particulars which accompany the 3no. separate and concurrent planning applications to DCC. This includes the relevant drawings and reports prepared by the Design Team.

4.3 Main Alternatives Studied

The main alternatives considered during the development of this project comprise alternative design solutions and layouts for a mixed-use development at the subject site.

4.3.1 Alternative Locations

Under the Dublin City Development Plan 2016 – 2022, the site is subject to the zoning objective, *"Z5 – City Centre"*, in common with much of the city centre area in the immediate vicinity of the application site. The land use objective for the Z5 zoning seeks: -

> *"To consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity."*

The proposed development represents a sustainable, compact redevelopment, regeneration and revitalisation of an underutilised brownfield site at a city centre location. The proposed development is expected to generate the critical mass that will make a significant contribution to developing a strong city core.

National, regional and local policy emphasise the importance of reinforcing the primacy of Dublin city centre within the retail hierarchy, of encouraging the redevelopment of brownfield sites in city centre locations and encouraging residential and other development proximate to public transportation.

As such it is considered that the site is entirely suitable for the nature of development as proposed in the Planning Application. It is not therefore necessary to consider an alternative site location for the proposed development.

4.3.2 'Do-Nothing' Alternative

In the event of a 'do-nothing' scenario, the site would remain 'as-is' with the site remaining as a brownfield urban regeneration opportunity site in the city of Dublin City Centre. It would remain a hugely under-utilised part of the City that has been identified for regeneration/redevelopment since the Integrated Area Plan for O'Connell Street in 1997.

The subject site has been zoned for *"Z5 – City Centre"* which promotes mixed-use development to consolidate and strengthen the role of the city centre.

A do-nothing approach would be contrary to the Council's objectives to promote compact urban development and the regeneration of brownfield lands at this site, in accordance with national, regional and local planning policy and guidance. It would potentially result in a failure to meet the key requirements of the Core Strategy – to promote economic growth; to achieve a compact, integrated city and promote socially inclusive communities; to increase awareness of cultural heritage; to create a safe, connected, legible and active city centre; to encourage greater use of sustainable transport. An opportunity to achieve efficient and compact development which will benefit from a significant degree of public transport connectivity (Luas, Bus, bicycle and future Metro Station) will be lost. A 'do nothing' approach would be considered inappropriate from a planning, employment, housing and tourism perspective.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

From an environmental perspective, beyond impact on human health from a failure to deliver compact urban form (mix of uses on brownfield, underutilised, city centre lands); socially inclusive communities (mix of uses including residential units); further sustainable development based on alternatives to travel by private car (development in a highly accessible location); and sense of cultural identity and civic pride (awareness, conservation and adaptive reuse of cultural heritage), a 'do nothing' approach is otherwise likely to result in a neutral impact on the environment in respect of material assets, land, water, air, climate and biodiversity.

4.3.3 Alternative Processes

Alternative processes for the proposed housing, supporting facilities, amenities and infrastructure, at construction and operational phase of the development, are discussed below: -

- **Construction Phase:** The proposed construction works comprise relatively standard building construction processes. As such there are no specific alternative construction processes identified in this EIAR.
- **Operational Phase:** No new, unusual or technically challenging operational techniques are required, as such no alternative operational processes have therefore been considered at this point.

4.3.4 Alternative Mitigation Measures

The mitigation measures outlined in the various chapters of this EIAR are considered appropriate to the location, nature and extent of the project and its potential impacts. Where relevant, any alternative mitigation measures have been considered within the various chapters of this EIAR.

4.3.5 Alternative Layouts & Designs

The most important of the reasonable alternatives considered are alternative layouts and designs, so these are considered in a little more detail.

This section provides an overview of how the proposed development has evolved to date by way of consideration of alternative designs and how the final scheme within the 3no. separate and concurrent planning applications made to DCC has been reached. Various options were considered as each of the 3no. Sites progressed and key considerations and amendments to the design were incorporated, having regard to the environmental issues pertaining to the lands.

The main alternative layouts and designs related to the developments being proposed on Site 3 and Site 4. In the case of Site 5, the alternatives considered related primarily to the actual material and colour to be used in the treatment of the façade addressing the new civic square and are not considered as a main, or significant alternative design as a result.

The EIAR provides reasonable evidence that the proposed development can be accommodated at this location without predicted risk of significant adverse impact on the environment, subject to implementation of the identified mitigation measures at construction and operational stages.

No specific further alternatives in respect of the nature, design and layout of the proposed development have been identified in the recommended EIAR mitigation measures.

4.3.5.1 Permitted Scheme – DCC Reg. Ref. 2479/08 (ABP Ref. PL29N.232347)

On 24 April 2008 planning permission was sought by Chartered Land Limited (the Applicant's predecessor) for commercial-led mixed use redevelopment of lands amounting to c. 2.17 Ha. That site did not conclude the Patrick Conway's Public House, which now forms part of the Dublin Central Masterplan.

That proposed development comprised a mixed-use development (c. 158,026 sq. m) with five basement levels and rising to 13no. storeys (from Level -5 to Level +12). A new east-west street connecting O'Connell Street and Moore Street and another New Street connecting with Henry Street was also proposed.

The uses proposed on site included retail, including a major anchor store, office, residential, cultural, restaurants, bars and open space. A large roof top garden, with a visitor attraction in the form of a Sky Lift and observation deck was proposed at roof level or Level +13.

The decision by DCC was appealed to An Bord Pleanála by a number of parties (ABP Ref. PL29N.232347). In April 2009, An Bord Pleanála held an Oral Hearing of the project.

By letter dated 11 August 2009, An Bord Pleanála issued a Section 132 letter inviting the Applicant to address particular concerns raised by the Board in the form of a revised scheme. That Section 132 Letter sought to address the concerns of the Inspector (16no. items).

In March 2010, the Board made an Order to Grant Permission for the revised development, subject to Conditions.

The revised permitted proposal ultimately comprises a retail-led mixed use development (total gross floor area c. 122,892 sq. m), including retail, restaurant / cafe, office, gallery, commemorative centre and residential uses, in buildings ranging from 3 to 6 storeys, over three levels of enclosed basement parking, with an associated network of open, sheltered and enclosed streets and spaces, and associated site development works including building demotion and retention.

An Extension of Duration was granted by Dublin City Council on 21 July 2016 for a further 5 years up to 6 May 2022 for the permitted scheme outlined above (DCC Reg. Ref. 2479/08 x1).

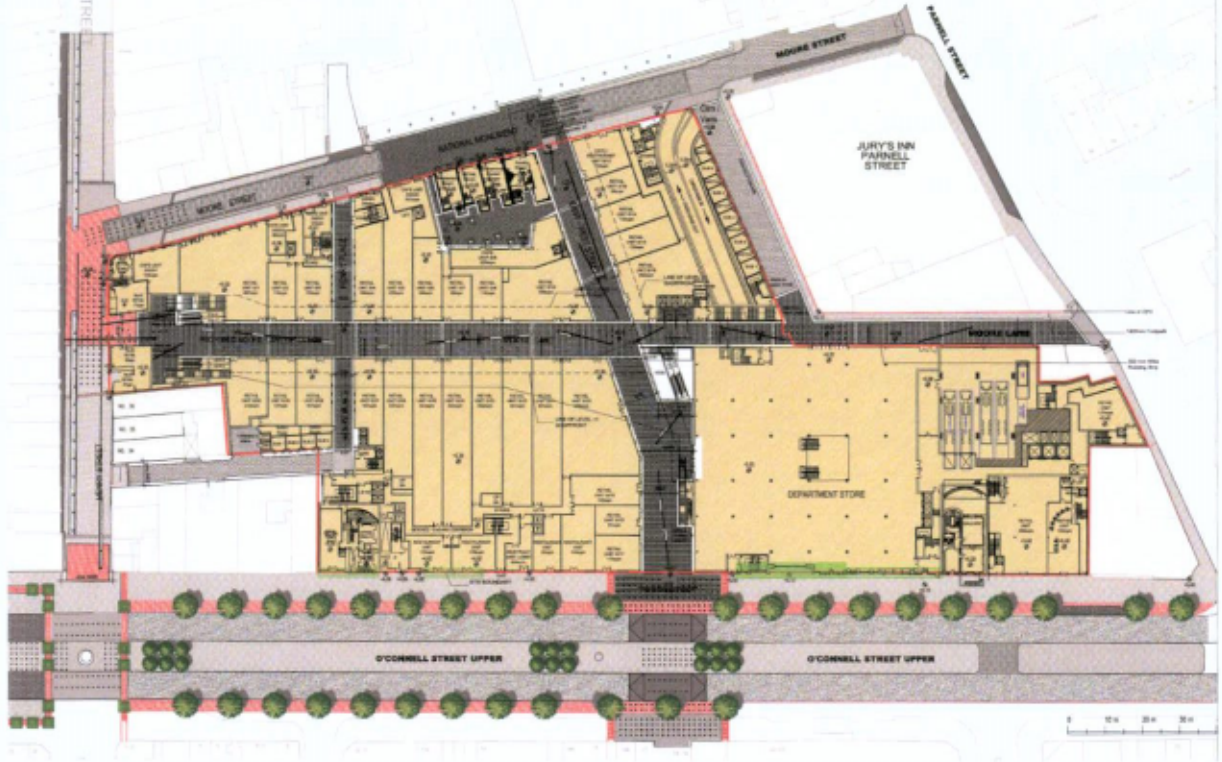

Figure 4.1: Layout of the permitted scheme granted by An Bord Pleanála – DCC Reg. Ref. 2479/08 (ABP Ref. PL29N.232347).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The permitted scheme outlined above comprises the entire of the Masterplan area. The Proposed Development now being proposed comprises part only, within Site 3, 4 and 5. While still possible to implement the permitted scheme outlined above, the already permitted layout and design does not facilitate the future MetroLink Project being designed by Transport Infrastructure Ireland (TII).

As set out in Chapter 3: Description of Proposed Development the Applicant has agreed a Memorandum of Understanding with the National Transport Agency (NTA) / TII to complete the enabling works that would accommodate the future station, but which would also ensure that the Applicant's project was structurally independent of, and not prejudicial to, the MetroLink project (Metro Enabling Works – MEW). There is on-going design co-ordination between the Applicant's Design Team and TII with regard the future station interface with Site 2AB and Site 2C.

As such, the permitted scheme is no longer considered a viable option as the design and layout does not cater for the implementation of the MetroLink Station – a key piece of national public transport infrastructure.

Environmental Effects of the Final Proposed Development compared to Permitted Scheme			
Environmental Factor	**Headings Under which the Environmental Factors were assessed**	**Topic**	**Comparative Effect of preferred option**
Population and Human Health		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Biodiversity		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Land, Soil & Geology		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Water	Surface Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Water Supply	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Flood Risk	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Climate	Air Quality & Climate Change	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Sunlight / Daylight	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Air	Noise and Vibration	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

Material Assets	Traffic and Transport	Construction Phase	Neutral, imperceptible, temporary Site works will be largely identical.
		Operational Phase	Negative, significant and long-term MetroLink station not facilitated to provide significant public transport hub in Dublin City centre.
	Waste	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Landscape and Visual	Visual Impact	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Cultural Heritage	Architectural Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Archaeological Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

4.3.5.2 Dublin Central Masterplan – Mid. 2020

To date, multiple meetings have been held with the Planning Department of DCC in relation to the re-development proposals for the Dublin Central. On each occasion the Conservation Department has been part of these discussions.

A proposal was included in the earlier stages of the Masterplan to include a canopy made up of a series of individual structures (single column with a pad on top) to give the sense of a sheltered, or covered street. Furthermore, a modest projection of these structures into O'Connell Street was proposed to mark the entrance of the New Street (similar to that of the Carton Cinema). The width of this new street and how the proposed buildings addressed the street varied north and south.

DCC raised concerns at Pre-Planning consultation stage that the canopy would impact on the views along O'Connell Street and would potentially 'compete' with the portico projection of the GPO. DCC also raised concerns regarding how the proposed buildings addressed the street varied north and south of it and also that the new street was too wide in the context of how this impacted on O'Connell Street.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

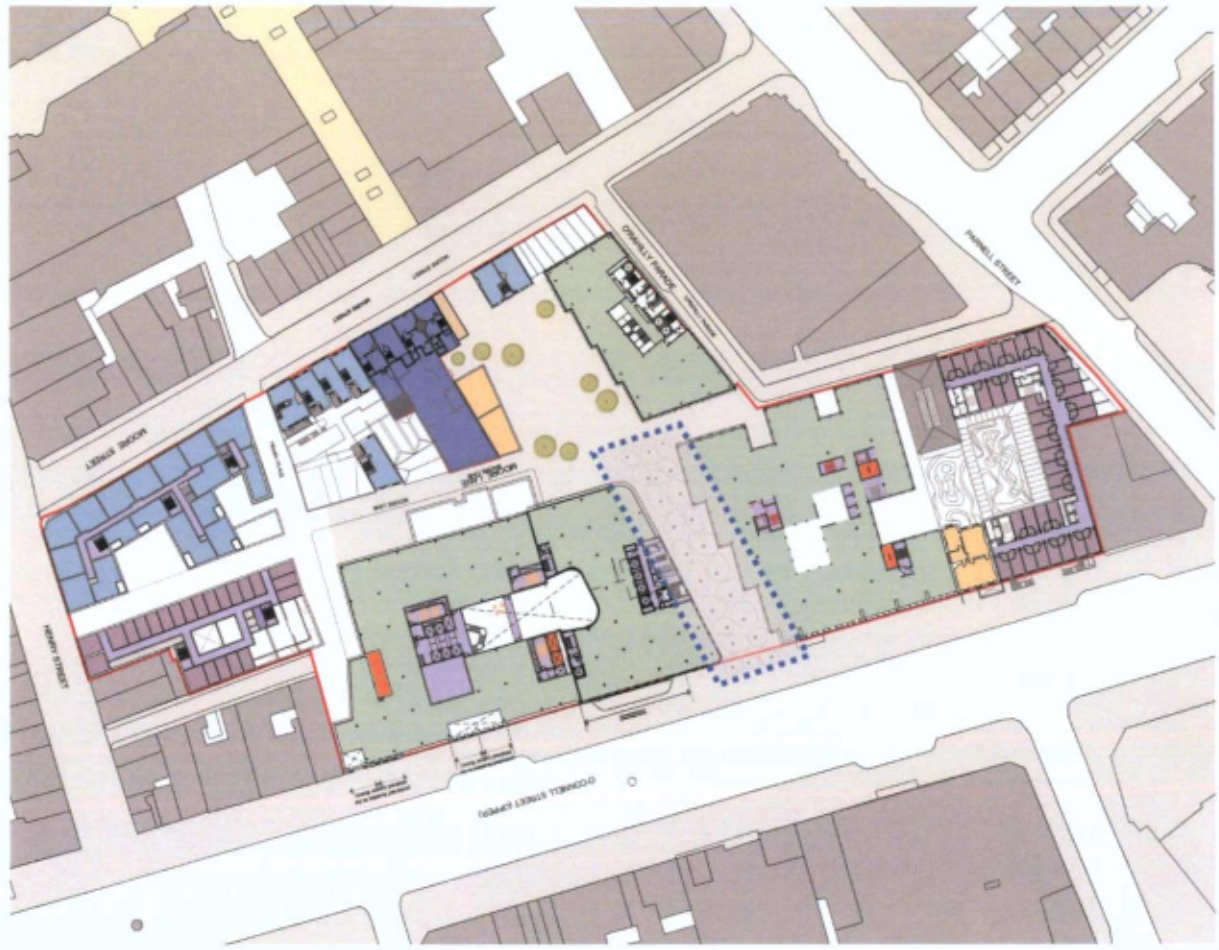

Figure 4.2: Iteration of the Masterplan from July 2020 showing the inclusion of a canopy within the New Street proposed between O'Connell Street and Moore Street – outlined by a blue dashed line – Overlay by SLA.

As such, having considered the matter further the proposal to include the canopy was omitted from the Masterplan, the new street was narrowed and a more complimentary and coherent approach to the building frontages along either side of the street were introduced following the comments provided by DCC.

Environmental Effects of the Final Proposed Development compared to Masterplan (Mid. 2020)			
Environmental Factor	**Headings Under which the Environmental Factors were assessed**	**Topic**	**Comparative Effect of preferred option**
Population and Human Health		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Biodiversity		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Land, Soil & Geology		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

Water	Surface Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Water Supply	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Flood Risk	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Climate	Air Quality & Climate Change	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Sunlight / Daylight	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Air	Noise and Vibration	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Material Assets	Traffic and Transport	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Landscape and Visual	Visual Impact	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Cultural Heritage	Architectural Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Archaeological Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

4.3.5.3 Dublin Central Masterplan – December 2020

The Applicant's Design Team and TII have been liaising closely with regard the future station interface with Site 2AB and Site 2C.

The NTA and TII have also been engaging with DCC with regard the development of MetroLink station at O'Connell Street. DCC sought to have the location of the station beneath Site 2AB and Site 2C to be adjusted such that No. 59 – 60 O'Connell Street could be retained. Under the original design for the station, No. 59 – 60 O'Connell Street would have been demolished with the exception of the protected facades.

TII amended the design of the station location beneath Site 2AB and Site 2C (essentially this reduced the length of the station) so that that No. 59 – 60 O'Connell Street could be retained. It is noteworthy that neither No. 59, not No. 60 Upper O'Connell Street are owned, or controlled, by the Applicant.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

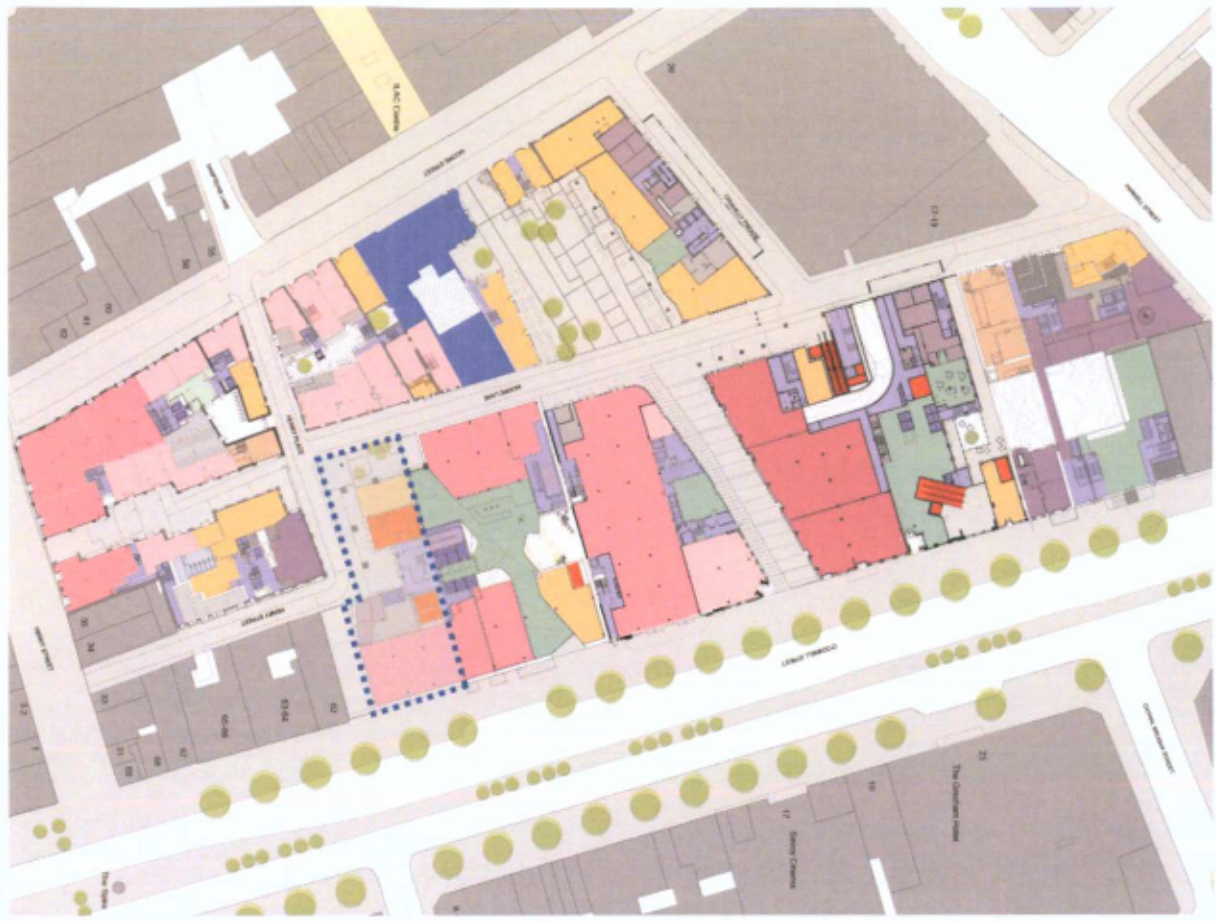

Figure 4.3: Dublin Central Masterplan based on design and layout as of December 2020. Location of No. 59 – 60 shown indicatively by a blue dashed line – Overlay by SLA.

In effect, the Masterplan has been amended. The houses at No. 59 – 60 O'Connell Street are not under the Applicant's control and have been omitted as part of the overall proposal. The rear plot of No 59 – 60 O'Connell Street has been included in the current Masterplan, in order to retain No. 60A O'Connell Street (or No. 19 Henry Place)– known as the 'Reading Room' and facilitate fire escape stair from the future Metro station below.

Environmental Effects of the Final Proposed Development compared to Masterplan (December 2020)			
Environmental Factor	**Headings Under which the Environmental Factors were assessed**	**Topic**	**Comparative Effect of preferred option**
Population and Human Health		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Biodiversity		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Land, Soil & Geology		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

Water	Surface Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Water Supply	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Flood Risk	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Climate	Air Quality & Climate Change	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Sunlight / Daylight	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Air	Noise and Vibration	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Material Assets	Traffic and Transport	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Landscape and Visual	Visual Impact	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Cultural Heritage	Architectural Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Archaeological Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

4.3.5.4 Site 3 – Retention of Existing Fabric

As noted above, multiple meetings have been held with the Planning Department of DCC in relation to the re-development proposals for the Dublin Central. On each occasion the Conservation Department has been part of these discussions.

With regard Site 3 DCC Planning Department and Conservation Department raised concerns regarding the extent of existing building fabric being retained. In particular concerns were raised about the approach on Henry Street.

Following a review of the proposal by MOLA Architects, Molloy & Associates Conservations Architects and Waterman Structures Ltd., the conservation, refurbishment, repair and adaptive reuse of the existing structures in Site 3 now include: -

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- **Nos. 36 and 37 Henry Street:** Block 3A incorporates the existing buildings at Nos. 36 and 37 Henry Street, where the existing basement and four floors above are to be retained and upgraded. A new set-back level at 4th floor allows the original building to be read beneath. The hotel is then significantly set back into the northern end of Block 3B before rising to 9 storeys.
- **Nos. 39 and 40 Henry Street:** Within Block 3B the facades of Nos. 39 & 40 Henry Street are retained and restored at upper levels from 1st to 3rd floor. The new residential building is set back at 4th and 5th floor levels to allow the original facades to be read beneath.
- **Nos. 8 and 9 Moore Street:** At the north western corner or Block 3B it is proposed to incorporate the existing basement and 3 storey buildings at Nos. 8 – 9 Moore Street, including façades and internal walls and floors. An existing staircase to the rear of 8-9 Moore Street, currently serving ground and 1st floors will be extended to provide access to the upper floors.
- **Nos. 11 – 13 Henry Place:** Immediately adjoining Nos. 8 – 9 Moore Street, it is proposed to retain and restore the existing ground and 1st floor facades and the floor area at 1st floor level.



Figure 4.4: Extract from a First Floor Plan for 'Site 3' based on proposal c. February 2021 – Greater extent of No. 36 – 37 Henry Street retained as part of current 'Site 3' iteration.

Environmental Effects of the Final Proposed Development compared to Site 3 – Retention of Existing Fabric			
Environmental Factor	**Headings Under which the Environmental Factors were assessed**	**Topic**	**Comparative Effect of preferred option**
Population and Human Health		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Biodiversity		Construction Phase Operational Phase	Neutral, imperceptible and permanent

			No perceived additional adverse effects during construction / operational phase.
Land, Soil & Geology		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Water	Surface Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Water Supply	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Flood Risk	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Climate	Air Quality & Climate Change	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Sunlight / Daylight	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Air	Noise and Vibration	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Material Assets	Traffic and Transport	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Landscape and Visual	Visual Impact	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Cultural Heritage	Architectural Heritage	Construction Phase Operational Phase	Positive, significant and permanent No perceived additional adverse effects during construction / operational phase.
	Archaeological Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

4.3.5.5 Site 4 – National Monument Extension

As part of Site 4 the subject of the concurrent Planning Application, works adjacent No. 17 Moore Street (part of the National Monument) were not originally to be included as part of the proposals.

The existing Ministerial Consent (Ref. C494) for extension to the National Monument was to be implemented by the Office of Public Works and the proposal for Site 4 would make the appropriate provisions to integrate with the consented proposal for the National Monument.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The Applicant has been engaging closely with the Department of Housing, Local Government & Heritage. In March 2020, the Applicant was requested to include the consented extension to the National Monument as part of the 'Site 4' proposal.

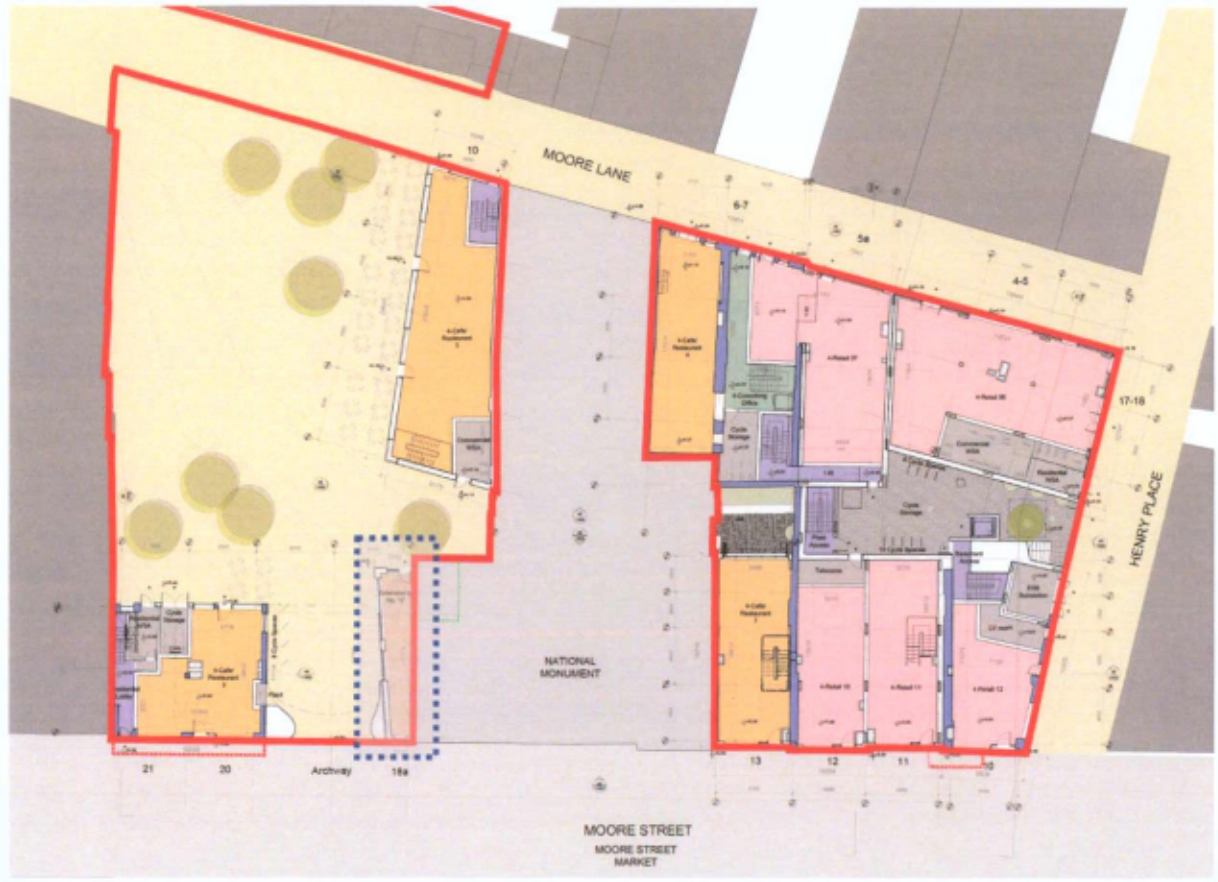

Figure 4.5: Layout for Site 4 with Extension to National Monument (No. 14 – 17 Moore Street) outlined by a blue dashed line – Overlay by SLA.

Site 4 will include as part of the Planning Application the previously approved extension of the National Monument under the Ministerial Consent within No. 18 Moore Street. No. 18 Moore Street lies outside of the National Monument. The Office of Public Works will be responsible for undertaking the balance of development already consented within the National Monument itself. The Applicant's Design Team is continuing to liaise with the Office of Public Works and the Department of Housing, Local Government and Heritage. The proposed works around or in proximity to the National Monument will be addressed under the National Monuments Acts as required.

Environmental Effects of the Final Proposed Development compared to Site 4 – National Monument Extension			
Environmental Factor	**Headings Under which the Environmental Factors were assessed**	**Topic**	**Comparative Effect of preferred option**
Population and Human Health		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Biodiversity		Construction Phase Operational Phase	Neutral, imperceptible and permanent

			No perceived additional adverse effects during construction / operational phase.
Land, Soil & Geology		Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Water	Surface Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste Water	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Water Supply	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Flood Risk	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Climate	Air Quality & Climate Change	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Sunlight / Daylight	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Air	Noise and Vibration	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Material Assets	Traffic and Transport	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
	Waste	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Landscape and Visual	Visual Impact	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.
Cultural Heritage	Architectural Heritage	Construction Phase Operational Phase	Positive, significant and permanent No perceived additional adverse effects during construction / operational phase.
	Archaeological Heritage	Construction Phase Operational Phase	Neutral, imperceptible and permanent No perceived additional adverse effects during construction / operational phase.

4.3.5.6 Final Proposed Development

The final design of each of Site 3, Site 4 and Site 5 presents the most effective utilisation of this significant site, fulfils Dublin City Council objectives to deliver compact urban form (mix of uses on brownfield, underutilised, city centre lands), integrate built and cultural heritage where possible (protected and non-protected structures), and achieve socially inclusive communities (mix of uses including residential units, and safe and legible network of city streets). In the case of Site 5, the alternatives considered related primarily to the actual material and colour to be used in the treatment of the façade addressing the new civic square and are not considered as a main, or significant alternative design as a result.

To summarise it is considered that the final design of each Site: -

- Advances the strategic and statutory objectives applicable to these lands and the wider area.
- Optimises development space within the overall site, in an efficient and sustainable manner.
- Provides a range of uses including residential, hotel, retail, café restaurant and cultural in close proximity to existing public transport.
- Facilitates additional permeability within the urban block (Site 3).
- Avoids significant environmental impacts.
- Enables extensive economic development through both employment created at construction and operational stages, and also under future phases of development.
- Avoids the necessity to utilise in a non-sustainable manner other greenfield lands, particularly those in the Greater Dublin Area.
- Encourages the use of public transport and provides pedestrian and cycle links throughout and within the Masterplan to minimise car usage within the scheme.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The final iteration of the Sites is not considered to give rise to any significant adverse environmental impacts. Mitigation measures to be implemented at construction and operation stages of the project are summarised in Chapter 18: Summary of Mitigation Measures of the EIAR.

The designs for Site 1 and Sites 2AB and 2C are in ongoing discussions with Dublin City Council.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5 POPULATION & HUMAN HEALTH

5.1 INTRODUCTION

This chapter evaluates the impacts of the Dublin Central Masterplan and the Proposed Development (as defined in Chapter 3: Description of Proposed Development) on population and human health.

This chapter was prepared by Paul Conaghan an Environmental Consultant with AWN Consulting Ltd. Paul has over 9 years experience in environmental consulting and engineering and holds a BSc. in Enviroenmtnal Science from the University of Limerick and a MSc in Environmental Engineering from Queens University Belfast. He is a specialist in geo-environmental assessment, assessment for human health in environmental impact assessment, hydrogeological assessment andcontaminated land investigation Paul is a member of the Internation Association of Hydrogeologists (Irish Chapter).

In accordance with the *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2017), and *Draft Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015), this chapter has considered the *"existence, activities and health of people"* with respect to *"topics which are manifested in the environment such as employment and housing areas, amenities, extended infrastructure or resource utilisation and associated emissions"*. Risk of Major Accidents is covered in Chapter 17: Risk Management (Major Accidents & Disasters) of this Environamental Impact Assessment Report (EIAR). Issues examined in this chapter include: -

- Demography.
- Population.
- Employment.
- Social Infrastructure.
- Landscape, Amenity and Tourism.
- Natural Resources.
- Air Quality.
- Noise & Vibration.
- Material Assets.
- Traffic.
- Health and Safety.

Where these topics are dealt with in further detail elsewhere in this EIAR, the relevant chapters have been cross referenced in this chapter.

5.2 ASSESSMENT METHODOLOGY

In accordance with the *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2017), this chapter has considered that: -

> *"in an EIAR the assessment of impacts on population and human health should refer to the assessment of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g., under environmental factors of air, water soil etc".*

As per Article 3 of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU: -

> *"1) The environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:-*
>
> *a) population and human health;*

b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

c) land, soil, water, air and climate;

d) material assets, cultural heritage and the landscape;

e) the interaction between the factors referred to in points (a) to (d).

2) The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."

The 2017 publication by the European Commission (EC), *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*, considered that: -

"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

This chapter will follow these EC guidelines and will examine the health effects relevant to the Proposed Development as they relate to a relevant, defined study area. The effects of the Proposed Development on the population and human health are analysed in compliance with the requirements of the EPA Guidelines.

5.2.1 Assessment of Significance & Sensitivity

The assessment of significance is a professional appraisal based on the sensitivity of the receptor and the magnitude of the effect.

Within any area, the sensitivity of individuals in a population will vary. As such, it would be neither representative of the population, nor a fair representation of the range of sensitivities in a population was an overall sensitivity classification assigned to the population in question. As such, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a uniformly high sensitivity.

5.2.2 Magnitude of Impact

The magnitude of predicted impacts has been quantified in this assessment using the terms outlined in Table 5.1 below.

Magnitude	Description of Magnitude
High	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a major change to existing baseline conditions (adverse or beneficial)
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a moderate change to existing baseline conditions (adverse or beneficial)
Low	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a minor change to existing baseline conditions (adverse or beneficial)
Negligible	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would not result in change to existing baseline conditions at a population level, but may still result in an individual impact (adverse or beneficial)

No change	No change would occur as a result of the Proposed Development which would alter the exiting baseline conditions (adverse or beneficial)

Table 5.1: Description of magnitude of predicted impacts.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5.2.3 Significance of Effects

The assessment of significant effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of effects (Section 5.2.2) and the sensitivity of the receptor. Table 5.2 below provides a matrix on the measure of the significance of effects as determined by the relationship between the magnitude of impact and the sensitivity of receptors

		Magnitude of Impact			
		Negligible	**Low**	**Medium**	**High**
Sensitivity of Receptor	**Negligible**	Negligible	Negligible or minor	Negligible or minor	Minor
	Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Medium	Negligible or minor	Minor	Moderate	Moderate or major
	High	Minor	Minor or moderate	Moderate or major	Major

Table 5.2: Significance of effects and the sensitivity of the receptor.

5.2.4 Study Area

The Dublin CentralMasterplan area is located within Dublin City centre. The Dublin Central Masterplan consists of a mixed-use development at the heart of Dublin City Centre and associated public realm, contributing towards the enhancement of Dublin City. The O'Connell Street Metrolink stop (being delivered separately by Transport Infrastructure Ireland – TII) will create a transport interchange. As such, the key population catchments (study areas) to consider are the 'City Area' and the 'ED Area'. The Dublin Central Masterplan area adjoins the existing O'Connell Street, Moore Street, Parnell Street and Henry Street. The area selected for the assessment of the impact on human health has been defined as the Electoral Divisions (ED) of North City (ED 02075) Rotunda B (02089), Rotunda A (02088), Mountjoy A (02073), Mansion House A (02117), Royal Exchange A (02144), and North Dock C (02078). These areas have been considered in this chapter to provide a representative overview of the area within which the site is located. Therefore, the assessment in this chapter will apply to both the Dublin CentralMasterplan area and the Proposed Development (Site 3, 4 & 5).

5.2.4.1 City Area

The subject site is located centrally within the Dublin City area, which is within the administrative area of Dublin City Council. As per the Dublin City Development Plan (2016 – 2022), Dublin City is zoned as objective Z5 – *"To consolidate and facilitate the development of the central area and to identify, reinforce, strengthen and protect its civic design character and dignity"* (Figure 5.1).



Figure 5.1: Zoning Map of Dublin City Central Area.

The site is located within the Dublin region, as defined by the Nomenclature of Territorial Units for Statistics (NUTS) developed by Eurostat. The Dublin region comprises counties Dublin City, Dun Laoghaire-Rathdown, Fingal and South Dublin.

5.3 RECEIVING ENVIRONMENT

5.3.1 Population & Demographics

5.3.1.1 Population

The most recent census of the population was carried out by the Central Statistics Office (CSO) on the 24 April 2016, and the previous census on the 10 April 2011. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns, and electoral divisions. Taking into consideration the location of the Dublin Central Masterplan, the census information on population, age profile, employment, and social class, has been analysed in relation to the development site.

Table 5.3 denotes the population change at for the state, and electoral districts for the census years 2011 and 2016. The latest census data shows that the population surrounding the development site increased in size by 5.8% between the years 2011 and 2016 compared with 3.8% nationally. The average rate of population growth across the study area was an increase in 5.5%. The general increase in growth rate of surrounding areas, when compared to the state figures, suggests the increasing economic role of the areas surrounding the Proposed Development site.

Area	2011	2016	% Change 2011 – 2016
State	4,588,252	4,761,865	+3.8%
North City	5,345	5,654	+5.8%
Rotunda B	2,439	2,458	+0.8%
Rotunda A	4,698	5,965	+26.9%

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Area	2011	2016	% Change 2011 – 2016
Mountjoy A	5,326	5,389	+1.2%
Mansion House A	4,347	4,665	+7.3%
Royal Exchange A	4,481	4,329	-3.4%
North Dock C	4,345	4,214	-3.0%
Study Area (Mean)	4,425	4,667	+5.5%

Table 5.3: Population change 2011 – 2016 (Source: www.cso.ie).

5.3.1.2 Age Profile

The age profile of the population in the area is an important parameter as it provides a good insight into the potential labour force, the demand for schools, amenities, other facilities, and the future housing demand. Table 5.4 shows the age profiles at a national level and electoral districts for the census year 2016.

Age	0 – 12	13 – 18	19 – 24	25 – 44	45 – 64	65+	Total Persons
State	18.48%	7.80%	6.96%	29.53%	23.84%	13.39%	4,761,865
North City	7.9%	2.6%	10.8%	55.9%	16.6%	6.1%	5,654
Rotunda B	9.8%	1.8%	11.1%	57.1%	15.9%	4.3%	2,458
Rotunda A	10.5%	4.1%	10.9%	47.8%	19.9%	6.8%	5,965
Mountjoy A	10.4%	6.3%	13.7%	47.5%	16.8%	5.3%	5,389
Mansion House A	8.9%	9.2%	18.1%	37.7%	17.1%	8.9%	4,665
Royal Exchange A	3.2%	4.2%	16.7%	44.8%	22.8%	8.2%	4,329
North Dock C	8.4%	4.2%	14.0%	47.8%	19.0%	6.6%	4,214
Study Area (mean)	8.5%	4.8%	13.6%	48%	18.4%	6.7%	4,667.7

Table 5.4: Age profile 2016 (Source: www.cso.ie).

This table shows that both nationally and in the study area, the dominant age grouping is 25 – 44 at 29.53% and 48% of the total population, respectively. This also reflects that the overall labour force population (12 – 64 age group) in the study area is reflective of the national level. This is in keeping with census data from 2011 and 2006.

5.3.2 Socioeconomics

5.3.2.1 Employment

Table 5.5 presents the employment statistics nationally and at the county level in 2016 compared with 2011. The data shows that unemployment decreased significantly in the county, as well as nationally, reflecting the economic recovery in recent years.

	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in labour force	% Unemployment
2011 Labour Force					
State	1,807,360	34,166	390,677	2,232,203	19.03%
North City	2,938	112	369	3,419	14.1%
Rotunda B	2,095	72	527	2,694	22.2%
Rotunda A	1,261	42	294	1,597	21.0%
Mountjoy A	2,304	119	677	3,100	25.7%
Mansion House A	1,883	61	365	2,309	18.4%
Royal Exchange A	2,311	49	330	2,690	14.1%
North Dock C	2,015	53	548	2,616	23%
2016 Labour Force					
State	2,006,641	31,434	265,962	2,304,037	12.91%
North City	3,496	86	382	3,964	11.8%
Rotunda B	1,404	30	217	1,651	15%
Rotunda A	3,231	86	503	3,820	15.4%
Mountjoy A	2,819	91	526	3,436	17.9%
Mansion House A	2,227	52	296	2,575	13.5%
Royal Exchange A	2,642	38	214	2,894	8.7%
North Dock C	2,284	41	383	2,708	15.6%

Table 5.5: Employment statistics 2011 and 2016 (Source: www.cso.ie).

The 2016 census data shows that the percentage of unemployed has decreased for the State and the area surrounding the Dublin CentralMasterplan area and the Proposed Development (Site 3, 4 & 5) since the 2011 census.

5.3.2.2 Education

Census data presenting the highest level of education completed for key educational levels by people living in the county and the area surrounding the development site is presented in Table 5.6. The table presents key milestones in education and ignores people undertaking other studies or where information was not stated.

Area	No Formal Education	Primary Education	Secondary[1]	Higher Education[2]	Undergrad-uate Degree[3]	Postgraduate Degree[4]	Total Persons
Highest Level of Education in 2011							

1 Lower secondary and Upper secondary
2 Higher Certificate, Advanced certificate/completed apprenticeship or Technical/vocational training
3 Ordinary bachelor's degree, Honours bachelor's degree/professional qualification
4 Postgraduate degree or Ph.D

Area	No Formal Education	Primary Education	Secondary[1]	Higher Education[2]	Undergrad-uate Degree[3]	Postgraduate Degree[4]	Total Persons
Dublin City	4,635	56,817	109,746	50,898	67,398	46,007	335,501
North City	28	140	574	529	790	530	2,591
Rotunda B	23	118	353	239	352	203	1,288
Rotunda A	38	257	692	431	422	287	2,127
Mountjoy A	56	483	722	455	474	291	2,481
Mansion House A	31	468	623	277	466	521	2,386
Royal Exchange A	26	221	415	343	582	450	2,037
North Dock C	46	413	608	328	573	425	2,393
Highest Level of Education in 2016							
Dublin City	5,807	43,102	100,278	53,536	77,803	58,960	339,486
North City	32	104	531	445	835	584	2,531
Rotunda B	29	102	213	216	344	254	1,158
Rotunda A	62	265	896	578	678	378	2,857
Mountjoy A	78	331	706	455	514	353	2,437
Mansion House A	48	343	574	339	568	548	2,420
Royal Exchange A	37	146	333	303	603	485	1,907
North Dock C	67	388	496	277	569	521	2,318

Table 5.6: Highest level of education in 2011 and 2016 (Source: www.cso.ie).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5.3.2.3 Labour Force Survey

The Labour Force Survey (LFS) is a large-scale, nationwide survey of households in Ireland carried out every three months. It generates labour force estimates which include the official measure of employment and unemployment for the state.

The LFS results nationally for Q4 2020 showed that there were 2,306,200no. people employed in the state with 468,655no. people registered as unemployed (aged 15 – 64 years). In Q4 2020, the majority of people were employed in the broad occupations of 'professionals' or as 'skilled trade'.

It is important to note that the effects of COVID-19 on the labour market in the results from the Labour Force Survey (LFS) in Quarter 4 (Q4) 2020. The results reflect some of the economic impacts of the COVID-19 situation. The LFS estimates that 607,190no. people will be unemployed by the end of Q1 2020 (www.cso.ie, 2020).

5.3.2.4 Income

The below data in Table 5.7 is obtained from CSO Statbank (CIA02), this demonstrates the levels of total income and disposable income per person in the Dublin area are 15 – 20% higher over the study years than the State in 2017.

A similar pattern of income distribution is observed in data on disposable income per person.

The below data in Table 5.7 is obtained from CSO Statbank (CIA02), this demonstrates the levels of total income and disposable income per person in the Dublin area are 15 – 20% higher over the study years than the State in 2017.

A similar pattern of income distribution is observed in data on disposable income per person.

Area	Income	2015	2016	2017
State	Total Income per Person (€)	26,857	27,753	29,239
	Disposable Income per Person (€)	18,854	19,660	20,714
Dublin	Total Income per Person (€)	32,750	34,099	35,197
	Disposable Income per Person (€)	21,832	23,005	23,864

Table 5.7: Income per Person (Source: CSO Statbank CIA02).

5.3.2.5 Deprivation

Deprivation in small areas is mapped using the Pobal HP Deprivation Index. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition and Labour Market Situation. Figure 5.2 below shows a graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population. In this EIA Report, the Relative Index Score is considered as the measure for deprivation, as these Relative Index Scores are rescaled such that the mean is 0 and the standard deviation is 10 at each census wave. This allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 5.8 below.

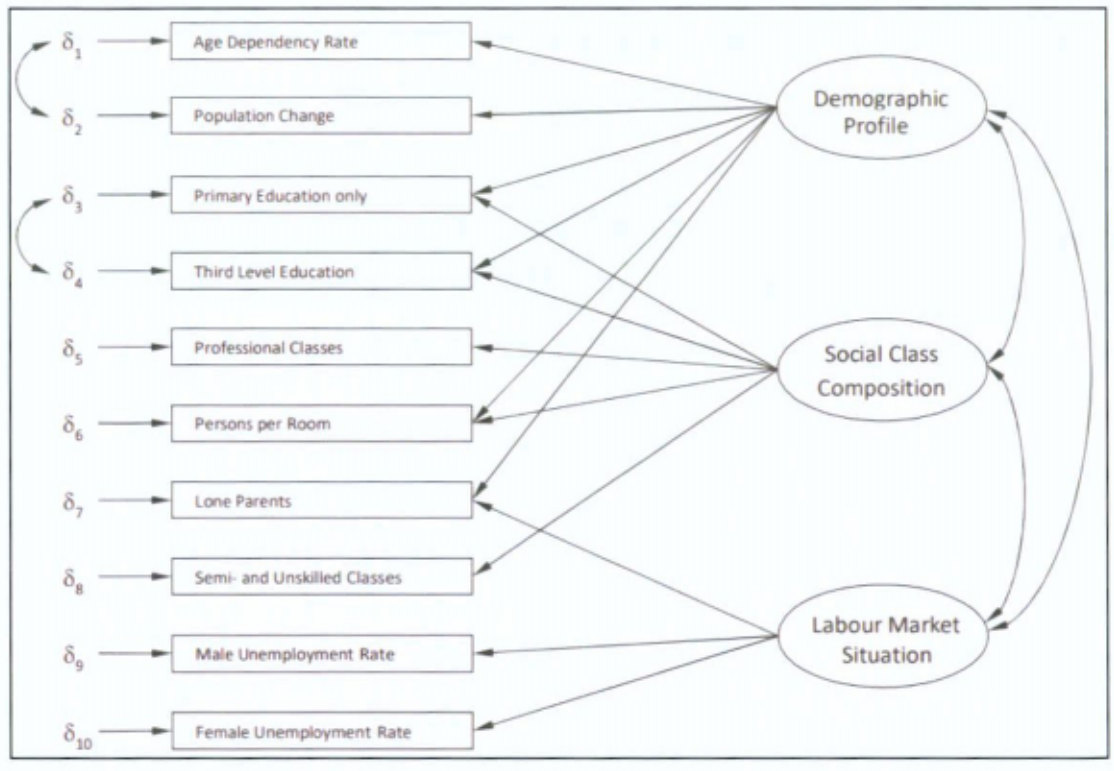

Figure 5.2: Basic Model of the Pobal HP Deprivation Index.

Graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.

Relative Index Score	Standard Deviation	Label
> 30	> 3	Extremely affluent
20 – 30	2 – 3	Very affluent
10 – 20	1 – 2	Affluent

Relative Index Score	Standard Deviation	Label
0 – 10	0 – 1	Marginally above average
0 – -10	0 – -1	Marginally below average
-10 – -20	-1 – -2	Disadvantaged
-20 – -30	-2 – -3	Very disadvantaged
< -30	< -3	Extremely disadvantaged

Table 5.8: Pobal HP Index Relevant Index Score labels (Source: Pobal HP Deprivation Index).

The data in Table 5.9 shows the Pobal HP Index Relevant Index Score Figures at a local and County level (*Source: Pobal HP Deprivation Index).* These figures show that the population living within the Study Area are generally classified as 'Marginally above average' and 'Affluent'. The county of Dublin is classified as 'Marginally above average' for the year 2011. Figure 5.3 below presents the Pobal HP Index map illustrating the Study Area.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Area	Relative Index Score	Pobal HP Description 2011
Dublin County	3.74	Marginally above average
North City	14.97	Affluent
Rotunda B	8.95	Marginally above average
Rotunda A	3.64	Marginally below average
Mountjoy A	2.60	Marginally above average
Mansion House A	4.62	Marginally above average
Royal Exchange A	13.79	Affluent
North Dock C	4.61	Marginally above average

Table 5.9: Pobal HP Index Relevant Index (Source: Pobal HP Deprivation Index).

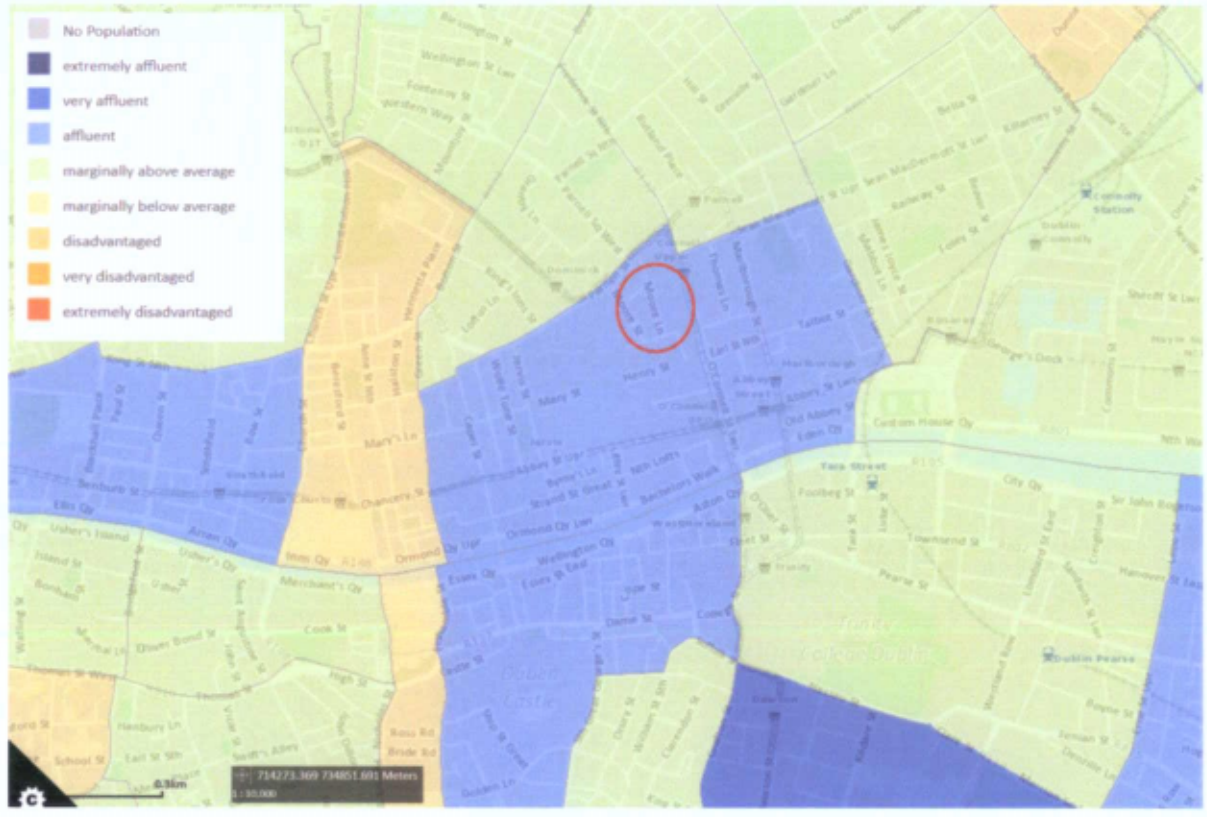

Figure 5.3: Pobal HP Index Electoral Division, Site is indicated with a red dot (Source: Pobal HP Deprivation Index).

5.3.3 Health

5.3.3.1 Physical Health

Life expectancy in Ireland by sex is a key metric for assessing population health; data for the study area is shown in Table 5.10. Dublin data shows that life expectancy for both males and females has increased consistently, with female life expectancy consistently higher than male.

Period Life Expectancy in Dublin by Sex					
Area	**Sex**	**2002**	**2006**	**2011**	**2016**
Dublin	Male	75.2	76.7	78.3	80.1
	Female	80.2	81.2	82.7	83.4

Table 5.10: Period Life Expectancy (Source: CSO Statbank VSA30 & VSA31).

Table 5.11 *shows* Circulatory Diseases Admission Rate per 100,000 Population at a National and County level *(Source: Public Health Well Community Profiles).* The rate of hospital admissions in Dublin City tends to generally fall in line with that of the State for all study years.

Circulatory Diseases Admission Rate per 100,000 Population					
Area	**2010**	**2011**	**2013**	**2014**	**2015**
State	4,308.6	4,026.8	4,495.6	4,644.6	3,794.9
Dublin City	3,805.56	3,498.7	3,950.4	4,716.7	3,425.8

Table 5.11: Circulatory Diseases (Source: Public Health Well Community Profiles).

Respiratory Diseases Admission Rate per 100,000 Population at a National and County level are shown in Table 5.12. The rate of hospital admissions in Dublin City tends to generally fall in line with that of the State for all study years.

Respiratory Diseases Admission Rate per 100,000 Population					
Area	**2010**	**2011**	**2013**	**2014**	**2015**
State	2,402.6	2,361.0	2,633.6	2,691.0	2,712.5
Dublin City	2,483.7	2,349.7	2,585.7	2,693.7	2,597.9

Table 5.12: Respiratory Diseases (Source: Public Health Well Community Profiles).

With respect to mental health the rates of death by suicide and intentional self-harm rate per 100,000 population is shown in Table 5.13 below. The rate in Dublin is overall lower over the study years compared with those in the State. The rate of death by suicide and intentional self-harm are generally decreasing year-on-year, this is generally in line with the pattern seen in the State.

Death by Suicide and Intentional Self Harm Rate per 100,000 Population				
Area	**2010**	**2011**	**2012**	**2013**
State	10.87	12.11	11.8	10.34
Dublin City	8.42	9.01	8.63	7.45

Table 5.13: Death by Suicide and Intentional Self Harm (Source: CSO Statbank DHA12).

The number of admissions to hospital for anxiety or depression per 1,000 people (Table 5.14) in Dublin City have followed the same pattern of the State, which shows a decline from 2013 to 2014. However, there was a steep incline in 2015 which occurred in Dublin City but did not occur for the overall State (Table 5.14).

Number of Admissions to Hospital for Anxiety or Depression Per 1,000 People			
Area	**2013**	**2014**	**2015**
State	2	1.8	1.8
Dublin City	2	1.4	24.9

Table 5.14: Number of admissions to hospital for anxiety or depression (Source: Public Health Well Community Profiles).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5.3.4 Social Infrastructure

5.3.4.1 Residential Dwellings

Currently, the Dublin CentralMasterplan area has little to no residential units present. The nearest existing residential units to the Dublin CentralMasterplan area are those located at Greeg Court Apartments, to the northwest of the site boundary, and Jurys Inn Hotel Parnell Street and Lynams Hotel, which are located beyond the north and east boundaries respectively. Other hotels in close proximity to the eastern site boundary are Holiday Inn Express and The Gresham Hotel on O'Connell Street.

As the site is centrally located within Dublin City centre there are a large number of commercial premises in close proximity including Henry Street to the South, and the nearby Jervis and Ilac Shopping Centres.

5.3.4.2 Schools

The area is well served by educational institutions. There are a number of primary and secondary schools in the vicinity of the Dublin CentralMasterplan area including: -

- Central Model Infant School – c. 214m east of the site.
- Rutland National School – c. 500m east of the site.
- St. Marys Primary School – c. 570m north west of the site.
- Central Model Senior School – c. 370m east of the site.
- Mount Carmel Secondary School – c. 470m to the north west of the site.
- St. Pauls Secondary School – c. 500m west of the site.

The closest third level institutions in the area include Trinity College Dublin (c. 500 m to the south east), IBAT College Dublin (c. 621m to the south west) and the National College of Art and Design (c. 1.3 km to the south west).

5.3.4.3 Health

The nearest hospital to the site is the Rotunda Hospital located c. 230m to the north of the site. Talbot Street and Jervis Street Medical Centres are located c. 350m to the east and west of the Dublin Central Masterplan area respectively.

5.3.4.4 Security

The O'Connell Street Garda Station is located c. 60 metres to the north with Store Street Garda Station located c. 640 m to the east of the Dublin Central Masterplan area.

5.3.5 Landscape Amenity and Tourism

In terms of landscape amenity of the Dublin Central Masterplan area, there are no listed or scenic views, no landscape or amenity designations or protected trees pertaining to the site. There are a number of protected structures listed on the Sites and Monuments Record (SMR) in the Dublin City Centre area. 'Site 4' bounds No. 14 – 17 Moore Street (DU018-390) to the north and south. An historical Brickworks site is located to the north east of the Dublin Central Masterplan area on Moore Lane (DUB018-020506) – See Chapter 16 – Cultural History (Archaeological).

The primary areas of landscape amenity in the immediate vicinity of the Dublin Central Masterplanarea are Mountjoy Square Park (c. 620 m to the north east) and Kings Inn Park Park (c. 700 m to the north west), which are all small recreational parks. Primary amenity areas such as Stephen's Green Park, Dublin Bay and the Phoenix Park are located c. 1.4 km to the south, 4 km to the south east and c. 2.3 km west of the Dublin Central Masterplan area, respectively.

The Dublin Central Masterplan area is not considered to be significant or sensitive from a natural landscape aspect due to its city central location. The lands are appropriately zoned in the Dublin City Development Plan 2016 – 2022 as Z5 – *"To consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity*". The immediate surrounding area is contained within an environment of an established city centre setting.

Tourism is a major industry in the immediate environs of the Dublin Central Masterplan area; with the General Post Office, O'Connell Street, Moore Street bounding the site. Section 16.5.3 of the Dublin City Development Plan lists a number of policy's to promote and facilitate tourism in the city centre area. A number of hotels are located in and around the Dublin Central Masterplan area including Jury's Inn Parnell Street bounding the site to the north, and the Gresham Hotel c. 20 metres to the east. A further hotel is presently under construction at the junction of Parnell Street and Moore Lane.

5.3.6 Natural Resources

Natural resources and land use in the hinterland of the Dublin Central Masterplan area have also been considered as they may have implications for the development of the lands.

The site is within the historical centre of Dublin City. Historical Ordnance Survey (OS) maps indicate that much of the surrounding land has been in a similar use for over 200 years.

Data from the Geological Survey of Ireland indicates that there are no areas of geological heritage within the vicinity of the proposed site. In terms of extractive industries, the closest active quarries are the Huntstown Quarry in Finglas (c. 7.4 km north west of the site) and the Belgard Quarry in West Dublin (c. 10.5 km south west of the site), both of which are operated by Roadstone Ltd. There are no anticipated impacts on these facilities from the Dublin CentralMasterplan or Proposed Development. Further detail on extractive industries is presented in Chapter 7: Land, Soils & Geology.

5.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

5.4.1 Dublin Central Masterplan

The Dublin Central Masterplan incorporates a large urban block located on the north side of the River Liffey. The Dublin Central Masterplan comprises c. 2.2 Ha and is bounded by Parnell Street on the north, Moore Street on the west, O'Connell Street Upper on the east and Henry Street on the south. Other streets within the block include Moore Lane, O'Rahilly Parade and Henry Place. It lies within St. Mark's Parish and is in the Dublin North City Ward.

A detailed description of the Dublin Central Masterplan site context, including its interface with the underground Metrolink Station (to be implemented by TII should consent be granted for the scheme) is presented in Chapter 3: Description of Proposed Development.

5.4.2 Proposed Development – Site 3, 4 & 5

The Proposed Development comprises a mixed-use scheme incorporating office, retail, hotel, residential uses, café / restaurant uses and landscaping, including new public realm. Its development has been guided by the Dublin Central Masterplan which will consist of at least six separate sites.

A detailed description of the Proposed Development site context is presented in Chapter 3: Description of Proposed Development.

5.5 POTENTIAL IMPACTS

5.5.1 Dublin Central Masterplan

The impact of construction, commissioning, operation and decommissioning of the Dublin Central Masterplan is considered below. As the study area is based on Local Electoral Districts the impacts and mitigation measures for both the Dublin Central Masterplanand the Proposed Development (Site 3, 4 & 5) will be similar or identical for some of the crieria listed.

5.5.1.1 Construction Stage

5.5.1.1.1 Impacts on Business and Residences

The main potential impacts on local businesses and residences associated with the Proposed Dublin Central Masterplan Development will be in relation to air quality, noise/vibration, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIAR as follows: -

- Chapter 9: Climate (Air Quality and Climate Change).
- Chapter 10: Climate (Sunlight & Daylight).
- Chapter 11: Air (Noise & Vibration).
- Chapter 12: Landscape and Visual Impact.
- Chapter 13: Material Assets (Transportation).

It is predicted that there will be a slight positive impact on local business activity during the construction phase with the increased presence of up to 400no. construction workers using local facilities. It is also believed there will be a long-term positive impact during the operational phase due to the residential aspect of the scheme and the increase in people requiring the use of the City Centre facilities.

There may be a short term slight negative impact on the local residential population during the construction phase and the operational phase, as well as the potential additional housing demand in the wider commuter area as a result of increased employment provided by the development of the Dublin Central Masterplan. It is also anticipated that the Dublin Central Masterplan will have indirect positive effects on employment in terms of construction material manufacture, maintenance contracts, equipment supply, landscaping etc.

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the wider Dublin area that may choose to reside in the immediate and wider local area is likely to amount to only a small percentage of the workforce employed during the construction phase but will result in some additional trade for local accommodation and services. It is expected that the majority of the work force will travel from

existing places of residence to the construction site rather than reside in the immediate environs of the site. However, some local employment from within the wider local area is expected.

Construction will have an indirect positive effect on support industries such as builder suppliers, construction material manufacture, maintenance contracts, equipment supply, landscaping and other local services. There will also be a need to bring in specialist workers on a regular basis that may increase the above estimated working population at times. Specialists are only likely to stay for shorter periods depending on the nature of the work. The construction phase, therefore, is considered to have the potential to have **a moderate short to medium term positive impact** on the economy and employment of the local and wider area.

The completed development will also have a **positive impact** in the provision of additional capacity for residential units in the city centre, the demand for which remains high due to the current nationwide housing crisis.

5.5.1.1.2 Impact on Human Health from Air Quality

As outlined in Chapter 9: Climate (Air Quality & Climate Change), National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are based on the protection of the environment as well as the protection of human health. Additional factors such as natural background levels, environmental conditions and socio-economic factors are also considered in the limit values which are set (see Chapter 9: Climate (Air Quality & Climate Change, Table 9.1). The ambient air quality standards established are designed to minimise harmful effects to health.

Dust emissions from the demolition and construction phase of the Proposed Development have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Table 9.6 of Chapter 9: Climate (Air Quality & Climate Change) the surrounding area is considered of low sensitivity to significant dust related human health impacts. There is an overall medium risk of human health impacts as a result of the demolition and construction works from the Dublin Central Masterplan (see Table 9.17 of Chapter 9: Climate (Air Quality & Climate Change). Therefore, in the absence of mitigation there is the potential for **slight, negative, short-term** impacts to human health as a result of implementation of the Dublin Central Masterplan.

Traffic emissions from construction vehicles also have the potential to impact human health. However, as per section 9.4.2.1.1 of Chapter 9: Climate (Air Quality & Climate Change) the change in local air quality as a result of construction traffic is considered **short-term, localised, negative** and **imperceptible**.

5.5.1.1.3 Impact on Human Health from Noise & Vibration

Noise and vibration impacts associated with the Dublin Central Masterplan have been fully considered within Chapter 11: Air (Noise & Vibration). Commentary on the impact assessment and related noise levels are summarised below with respect to potential environmental health impacts.

As detailed in Chapter 11: Air (Noise & Vibration), there will be some impact on nearby noise sensitive properties due to noise emissions from site activity and traffic. The application of noise limits and limits on the hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. In addition, due to the distance between the site and the nearest sensitive locations, vibration impacts generated during construction are expected to be negligible. Therefore, it is expected in the absence of specific mitigation measures that there will be a **neutral**, **not significant** and **temporary** impact at the closest receptors.

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5.5.1.1.4 Impact on Local Amenities and Tourism

There are no listed or scenic views, no landscape or amenity designations or protected trees pertaining to the site, There are a number of protected structures listed on the Sites and Monuments Record (SMR) in the Dublin City Centre area. Directly to the west bounding the site is 14-17 Moore Street (DU018-390) which is bounded by the Dublin Central Masterplan boundary. A historical Brickworks site is located to the north east of the site on Moore Lane (DUB018-020506). These will be protected and not impacted by the proposed construction and demolition works.

During construction and demolition works there may be a **neutral, slight** and **short-term impact** on the surrounding tourist attraction of the GPO to the south and north O'Connell Street due to works. There will be no impacts to the nearby park amenities identified above.

The implementation of the Dublin Central Masterplan will create a wastewater discharge but will not have an impact on local amenities or the local population.

5.5.1.1.5 Impact on Material Assets

The implementation of the Dublin Central Masterplan will require electrical power supply from the national grid. An Energy & Sustainability Statement, prepared by BDP M&E Consulting Engineers is available for each Site.

5.5.1.1.6 Impacts from Additional Traffic

An assessment of the additional traffic movements associated with the implementation of the Dublin Central Masterplan during the construction and operational phases is presented in Chapter 13: Material Assets (Transportation).

As stated in Section 13.5.1.1.16 of Chapter 13: Material Assets (Transportation), the increase in traffic volumes, the reduction in the width or local carriageways, reduction in width of select pathways etc. associated with the construction and demolition phase would lead to a likely **slight, negative** and **short-term** impact.

5.5.1.1.7 Impacts from Unplanned Events/ Impacts on Health and Safety

The Dublin Central Masterplan has been designed in accordance with the Safety, Health and Welfare at Work Act 2005 (S.I. 10 of 2005) as amended and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. 299 of 2007) as amended and associated regulations. The plant has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience based on a number of similar existing facilities operated by the operator.

The implementation of the Dublin Central Masterplan has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) as amended to minimise the likelihood of any impacts on worker's health and safety. The health and safety planning for the construction phase of the Proposed Dublin Central Masterplan Development will consider any appropriate measures to safeguard workers' health and safety with regards to Covid-19.

During the operational phase of the implementation of the Dublin Central Masterplan, the operator will implement an Environmental Safety and Health (EH&S) Management System and associated procedures at the facility. Full training in the EH&S Management System and relevant procedures will be provided to all employees. The Operator will also implement any appropriate health and safety measures to safeguard workers' health and safety with regards to Covid-19.

The 2014 EIA Directive, 2018 EIA Regulations and associated EPA Draft EIA Report Guidelines 2017 requirethat the vulnerability of the project to major accidents and / or natural disasters (such as flooding, sea level rise etc.) is considered in Chapter 17: Risk Management (Major Accidents & Disasters).

The Dublin Central Masterplan area has been assessed in relation to sea level rise / flooding as outlined below. The potential for major accidents to occur at the facility has also been considered with reference to Seveso / Control of Major Accident Hazards (COMAH) Regulations. See Chapter 17: Risk Management (Major Accidents & Disasters) for more details.

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity.

The potential risk of flooding on the site was also assessed. A site-specific flood risk assessment was carried out by the project engineers, Waterman Moylan and it was concluded that there is a an extremely low to low residual risk of flooding. Furthermore, the Dublin Central Masterplan has been designed to provide adequate attenuation etc. to ensure there is no potential impact on flood risk for other neighbouring properties, nor is the site at risk from sea level rise.

The implementation of the Dublin Central Masterplan will not be a Seveso / COMAH facility. The only substance stored on site controlled under Seveso / COMAH will be diesel for generators and the amounts proposed do not exceed the relevant thresholds of the Seveso Directive. The Dublin Central Masterplan area is not located within the consultation distance of any COMAH establishment that is notified to the Health and Safety Authority (HSA).

There is a potential impact on the receiving environment as a result of minor accidents / leaks of fuel / oils during the construction and operational phases. However, the implementation of the mitigation measures set out in Chapter 7: Land, Soils & Geology and Chapter 8: Water of the EIAR will ensure the risk of a minor / accident is low and that the residual effect on the environment is imperceptible.

5.5.1.2 Operational Stage

5.5.1.2.1 Impacts on Business and Residences

The implementation of the Dublin Central Masterplan will result in significant and positive impact to local residents in the area. There will be a varied mix of residential and employment opportunities provided which will be of direct benefit, allowing a diverse range of community to work, and live within the city centre.

The implementation of the Dublin Central Masterplan will result in increased employment during the operational phase and will significantly reduce the pressure on local housing supply. The provision of residential units will benefit the adjacent businesses.

As stated in Chapter 10 Climate: Sunlight & Daylight, the BRE 209 guideline recommends that in all relevant amenity spaces; at least half of the area should receive at least two hours of sunlight on 21st March. The implementation of the Dublin Central Masterplan will have a slight overshadowing impact on the new the 'Site 4' amenity space. The residential amenity space within 'Site 4' is at 1st floor level in a courtyard and receives at least 2 hours of direct sunlight on over 80% of the designated amenity area for residents (see figure 10.12 of Chapter 10: Climate (Sunlight & Daylight)). It is clear that residents will receive high levels of sunlight and the BRE 209 guidelines are met. The analysis carried out in Chapter 10: Sunlight & Daylight demonstrates that the design of Dublin Central Masterplan maximises access to sunlight in amenity spaces for both residents and the public and so the BRE 209 guidelines are easily achieved.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The extent of the impact of a development is usually proportional to the extent to which that development is large in scale and / or height and its proximity to the location. This proportionality may be modified by the extent to which the development is seen as culturally or socially acceptable, and on the interaction between the Proposed Development, the character of the existing shadow environment and the land use pattern of the receiving environment.

The impact of the implementation of the Dublin Central Masterplanon sunlight access to the adjacent properties is therefore defined as **Not Significant**: An effect which causes noticeable changes in the character of the environment but without significant consequences. This is the second lowest definition of impact taken from the Guidelines on the Information to be Contained in Environmental Impact Statements prepared by the Environmental Protection Agency (2017 Draft).

5.5.1.2.2 Impact on Human Health from Air Quality

Traffic related air emissions have the potential to impact human health if they do not comply with the ambient Air Quality Standards detailed in Table 9.1 of Chapter 9: Climate (Air Quality & Climate Change). However, as there is minimal car parking associated proposed as part of the Dublin Central Masterplan, the traffic generated does not satisfy the assessment criteria to require an air modelling assessment as outlined in Section 9.2.3.1 of Chapter 9: Climate (Air Quality & Climate Change) and therefore there is no potential for significant impacts. It can be determined that the impact to human health during the operational stage **is neutral, local**, **long-term** and **imperceptible**.

5.5.1.2.3 Impact on Human Health from Noise & Vibration

As detailed in Chapter 11: Air (Noise & Vibration), noise modelling was undertaken to assess the impact of the implementation of the Dublin Central Masterplan with reference to noise limits typically applied by Dublin City Ccouncil (DCC) and the Environmental Protection Agency (EPA). The predicted noise emissions associated with the implementation of the Dublin Central Masterplan during the operational phases (included in Section 11.5.1.2.1 of Chapter 11: Air (Noise & Vibration) should be compliant with the adopted noise limit values which are based with due consideration of the effect on human health. Furthermore, any change in noise levels associated with additional vehicles at road junctions in the vicinity of the Dublin Central Masterplan is expected to be **imperceptible**.

In essence, the noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria that have been adopted here for the operation of the Proposed Development and associated infrastructure. These criteria have been selected with due consideration to human health, therefore, will not result in a significant impact on human health.

The implementation of the Dublin Central Masterplan will not generate any perceptible levels of vibration during operation and therefore there will be no impact from vibrations on human health.

5.5.1.2.4 Impact on Local Amenities and Tourism

Once operation the Dublin Central Masterplan will have significant and positive impact upon the availability and quality of local amenities and also upon tourism.

The implementation of the Dublin Central Masterplan will provide increased leisure opportunities, public open spaces, community meetings areas and cultural facilities, all of which will have significant and positive impact on local amenities. Access to other amenities in the area will remain unaffected.

The implementation of the Dublin Central Masterplan will improve tourism resources in Dublin City, providing increased tourism accommodation which will be augmented by the provision of retail, cafes, restaurants and the aforementioned leisure, community and cultural provisions.

5.5.1.2.5 Impact on Material Assets

Dublin City Council and Irish Water have been consulted in relation to the the public water system and the foul sewerage system for the Proposed Development. Due to the management of the public system by Irish Water it is not believed there will be an impact upon any individuals relying on these services for healthcare reasons.

5.5.1.2.6 Impacts from Additional Traffic

There will be an increase in traffic arising from the operational phase of the Dublin Central Masterplan. As detailed in Chapter 13: Material Assets (Transportation) of this EIAR, there will be no discernible impact to human health arising from the noise and air quality related to additional traffic.

5.5.1.2.7 Impacts from Unplanned Events / Impacts on Health and Safety

The implementation of the Dublin Central Masterplan has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience based on a number of similar existing developments.

5.5.1.3 Do-Nothing Impact

If the Dublin Central Masterplan were not to be implemented, the subject land would for the short term remain as it is in which case there is no potential for the positive impacts associated with increased housing supply, increased tourist revenue, and increased local amenities and community spaces.

In the long-term, it is likely that the lands would be developed in time for another similar development in line with the zoning of the site.

5.5.2 Proposed Development Site 3, 4 & 5

5.5.2.1 Construction Stage

The Potential Impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the Potential Impacts of the Dublin Central Masterplan described in Section 5.5.1.1. The only change is for each individual Site 3, 4 & 5 (Table 9.17 of Chapter 9: Climate (Air Quality & Climate Change)) there is a negligible risk of human health impacts from demolition dust emissions.

5.5.2.2 Operational Stage

The Potential Impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the Potential Impacts of the Dublin Central Masterplan described in Section 5.5.1.2

5.5.2.3 Do-Nothing Impact

If the Proposed Development were not to proceed, the subject land would for the short term remain as it is in which case there is no potential for the positive impacts associated with increased housing supply, increased tourist revenue, and increased local amenities and community spaces.

In the long-term it is likely that the lands would be developed in time for another similar development in line with the zoning of the site.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5.5.3 Cumulative

5.5.3.1 Construction Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessments that have contributed to section 5.5.1 of this EIAR.

5.5.3.2 Operational Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessment that have contributed to section 5.5.2 of this EIAR.

5.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

The impacts on the local population in terms of residents and businesses are considered to be mainly positive in the sense of creating direct employment opportunities and indirect additional business, both during the construction and operational phases. Once operational there will be significant positive contributions to the residential, community and cultural aspects of Dublin City Centre.

Mitigation measures proposed to minimise the potential impacts on human health in terms of air quality and climate, traffic, noise and vibration are discussed in the relevant sections of Chapters 9: Climate (Air Quality & Climate Change), Chapter 11: Air (Noise & Vibration) and Chapter 13: Material Assets (Transportation) of this EIAR respectively.

Similarly, mitigation measures set out in Chapter 7: Land, Soils & Geology and Chapter 8: Water of the EIAR will ensure the risk of impacts to Human Health is low and that the residual effect on the environment is imperceptible.

5.6.1 Dublin Central Masterplan

5.6.1.1 Construction Stage

Prior to the commencement of construction, the appointed contractor will be required to obtain formal agreement from the Local Authority on pollution prevention measures as well the overall approach and emergency procedures for all construction stages. All demolition works are to be in accordance with the following guidelines: -

- BS 6187:2000 '*Code of Practice for Demolition*'.
- Health and Safety Executive Guidance Notes GS 29 / 1, 2, 3 & 4.
- S.I. 504 Safety, Health & Welfare at Work (Construction) regulations 2013.
- Air Pollution Act 1987.
- Environmental Protection Agency Act 1992.
- BS 5228:2009 Part 1 '*Noise Control on Construction & Open Sites*'.

Prior to the works commencing, detailed photograph surveys (condition schedules) of adjoining walls, roads, footpaths, grass verges etc. are to be prepared. Copies of the relevant parts are to be made available to adjoining owners and Dublin City Council. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause.

Roadways are to be kept clean of dirt and other debris. A road sweeping truck is to be provided if necessary, to ensure that this is so.

The Contractor will be responsible for the security of the site. The Contractor will be required to: -

- Operate a site induction process for all site staff.

- Ensure all site staff shall have current 'safe pass' cards.
- Install adequate site hoarding to the site boundary.
- Maintain site security staff at all times.
- Separate pedestrian access from construction at the main site entrance off the Naas Road and provide a safe walkway for pedestrians along the main access road into the site.
- Ensure restricted access is maintained to the works.

The construction works will be hoarded off or fenced off from the public at all times. A 2.4 m minimum high plywood painted timber hoarding will be provided along the long-term boundaries at the entrance, and at other areas around the site where the perimeter fence/wall is not deemed sufficient for safety and security reasons. Heras type fencing will be used on short term site boundaries where appropriate to suit the works.

Controlled access points to the site, in the form of gates or doors / turnstiles, will be kept locked any time that these areas are not monitored (e.g., outside working hours). During working hours, a gates person will control traffic movements and deliveries at any active site access to ensure safe access and egress to and from site onto the public roads.

A Traffic Management Plan will be prepared by the contractor and agreed with Dublin City Council's Transportation Department and An Garda Siochana, to mitigate any impact of construction on the surrounding road network (Further details are provided in Chapter 13: Material Assets (Transportation) of this EIAR). A Preliminary Construction Traffic Management Plan prepared by Waterman Moylan accompanies each planning application.

As detailed in Chapter 7: Land, Soils & Geology of this EIAR, there is no evidence of a significant soil hazard on site or requirement for dewatering of groundwater.

Chapter 8: Water of this EIAR states that there is no potential for flooding and the proposed design incorporates attenuation measures to ensure development will not result in increased flooding off site. In order to mitigate the potential dust-related health impacts during the construction phase, a dust minimisation plan will be formulated. This plan will draw upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible. Further detail is provided in Chapter 9: Climate (Air Quality & Climate Change) of this EIAR.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 will be complied with. Further details are provided in Chapter 11: Air (Noise & Vibration).

5.6.1.2 Operational Stage

In light of the fact that any of the impacts associated with the operation of the Dublin Central Masterplan on Human Health and Population are either not significant or positive, no further mitigation measures are required. Notwithstanding the lack of need for mitigation measures, Section 11.6.2 of Chapter 11: Air (Noise & Vibration) of this EIAR outlines a number of noise mitigation measures which will further reduce the likely noise impacts arising from entertainment noise and internal building façade noise.

5.6.2 Proposed Development Site 3, 4 & 5

5.6.2.1 Construction Stage

The mitigation measures of the Proposed Development (Sites 3, 4 and 5) are the same as the mitigation measures of the Dublin Central Masterplan described in Section 5.6.1.1.

5.6.2.2 Operational Stage

The mitigation measures of the Proposed Development (Sites 3, 4 and 5) are the same as the mitigation measures of the Dublin Central Masterplan described in Section 5.6.1.2.

5.7 RESIDUAL IMPACT

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

5.7.1 Dublin Central Masterplan

5.7.1.1 Construction Stage

5.7.1.1.1 Residual Impacts on Business and Residences

Taking into account the mitigation measures outlined in Section 5.6.6.1 it is predicted that there will be no likely significant effect with regard to the construction phase on business and residences.

5.7.1.1.2 Residual Impacts on Human Health from Air Quality

The greatest residual impact on air quality during the demolition and construction phase of the Dublin Central Masterplan is from construction dust emissions and the potential for nuisance dust. Taking into account the mitigation measures in Section 9.4.3 (and Appendix 9.2 'Dust Minimisation Plan' of Chapter 9: Climate (Air Quality & Climate Change) this EIAR, there will be no residual impact to human health arising from air quality impact.

5.7.1.1.3 Residual Impacts on Human Health from Noise & Vibration

Taking into account the mitigation measures and design recommendations outlined in Section 11.6.1 of Chapter 11: Air (Noise & Vibration) of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

5.7.1.1.4 Residual Impacts on Local Amenities and Tourism

It is predicted that there will be no likely significant effect of the residual impacts of the construction of the Dublin Central Masterplan on material assets.

5.7.1.1.5 Residual Impacts from Additional Traffic

Taking into account mitigation measures there will be no residual impact to human health arising from additional traffic.

5.7.1.1.6 Unplanned Events/Impacts on Health and Safety

Taking into account the mitigation measures outlined in Section 5.2.6 it is predicted that there will be no likely significant effect arising from the predicted residual impacts with regard to the construction phase for unplanned events and human health and safety.

5.7.1.2 Operational Stage

5.7.1.2.1 Residual Impacts on Businesses and Residences

Taking into account the mitigation measures outlined in Section 5.2.6 the predicted residual impacts with regard to the operational phase on business and residences is concluded to be **positive and significant.**

5.7.1.2.2 Residual Impacts on Human Health from Air Quality

It is predicted that there will be no likely significant effect of the residual impact of air quality on Human Health.

5.7.1.2.3 Residual Impacts on Human Health from Noise & Vibration

Taking into account the mitigation measures and design recommendations outlined in section 11.6.2 of Chapter 11: Air (Noise & Vibration). of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

5.7.1.2.4 Residual Impacts on Local Amenities and Tourism

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Dublin Central Masterplan on local amenities and tourism.

5.7.1.2.5 Residual Impacts on Material Assets

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Dublin Central Masterplan on material assets.

5.7.1.2.6 Residual Impacts from Additional Traffic

Taking into account the mitigation measures and design recommendations outlined in section 13.6.2 of Chapter 13: Material Assets (Transportation) of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

5.7.1.2.7 Unplanned Events/Impacts on Health and Safety

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Dublin Central Masterplan on unplanned events and human health and safety.

5.7.1.3 Worst Case Effect

The precautionary principle has been applied throughout this assessment.

5.7.2 Proposed Development Site 3, 4 & 5

5.7.2.1 Construction Stage

The residual impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the remedial impacts of the Dublin Central Masterplan described in Section 5.7.1.1

5.7.2.2 Operational Stage

The residual impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the remedial impacts of the Dublin Central Masterplan described in Section 5.7.1.2

5.7.2.3 Worst Case Impact

The precautionary principle has been applied throughout this assessment.

5.7.3 Cumulative

5.7.3.1 Construction Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessments that have contributed to section 5.5 of this EIAR.

5.7.3.2 Operational Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessment that have contributed to section 5.5 of this EIAR.

5.8 MONITORING

5.8.1 Dublin Central Masterplan

5.8.1.1 Construction Stage

A monitoring regime will be put in place to protect neighbours & neighbouring properties with a full and detailed vibration, noise, dust, and groundwater monitoring regime put in place for the duration of the works.

The Contractor will be obligated to work in compliance with the CMP (Construction Management Plan) which is submitted as part of this planning application. The Contractor will appoint a competent person to be referred to as the Surveying, Instrumentation and Monitoring Subcontractor (MSC) and together with them will prepare and maintain and the vibration, noise, dust and groundwater monitoring plan.

The MSC will be responsible for preparing or organizing the preparation of condition surveys of surrounding buildings, walls, hardstanding area etc. prior to the carrying out of any works on site. The condition surveys shall be carried out to a level of detail, suitable to the nature and extent of conditions encountered in order to obtain an understanding of the general structural condition of the property/structure and/or external environments.

Additional monitoring requirements are set out in Chapters 7: Land, Soils & Geology, Chapter 8: Water, Chapters 9: Climate (Air Quality & Climate Change), Chapter 10: Climate (Sunlight & Daylight), Chapter 11: Air (Noise & Vibration) and 13: Material Assets (Transportation) of this EIAR.

5.8.1.2 Operational Stage

5.8.1.2.1 No additional monitoring other than that which is set out in Chapters 7: Land, Soils & Geology, Chapter 8: Water, Chapters 9: Climate (Air Quality & Climate Change), Chapter 10: Climate (Sunlight & Daylight), Chapter 11: Air (Noise & Vibration) and 13: Material Assets (Transportation) of this EIAR required.

5.8.2 Proposed Development Site 3, 4 & 5

5.8.2.1 Construction Stage

The monitoring requirements are the same as those of the Dublin Central Masterplan described in Section 5.8.1.1.

5.8.2.2 Operational Stage

The monitoring requirements are the same as those of the Dublin Central Masterplan described in Section 5.8.1.2.

5.9 REINSTATEMENT

This is not applicable to this chapter.

5.10 DIFFICULTIES ENCOUNTERED

No difficulties were encountered during the drafting of this chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

6 BIODIVERSITY

6.1 INTRODUCTION

The Biodiversity Chapter of the Environmental Impact Assessment Report (EIAR) was authored by Síofra Quigley of Scott Cawley Ltd.

It provides an assessment of the potential ecological effects of the development of Dublin Central. Dublin Central is underpinned by a Masterplan (refer to Figure 6.1 below indicating the Dublin Central Masterplan area) which will be assessed as part of the cumulative assessment within this Chapter. The Proposed Development which is the subject of these 3no. planning applications is Site 3, Site 4 and Site 5. A detailed description of the Proposed Development is included in Chapter 3: Description of Proposed Development.

The Dublin Central Masterplan site is located in the 10km Grid Square O13 at O 15785 34695 in Dublin City centre, bounded by O' Connell Street Upper to the east, Parnell Street to the north, Henry Street to the south and Moore Street to the west, with Moore Lane traversing the middle of the site in a north / south direction. The site is urban in nature, composed of hard standing, buildings, and artificial surfaces. The surrounding habitat of inner-city Dublin is largely similar to the Proposed Development site, with retail units, hotels, and transport infrastructure in the immediate environs.

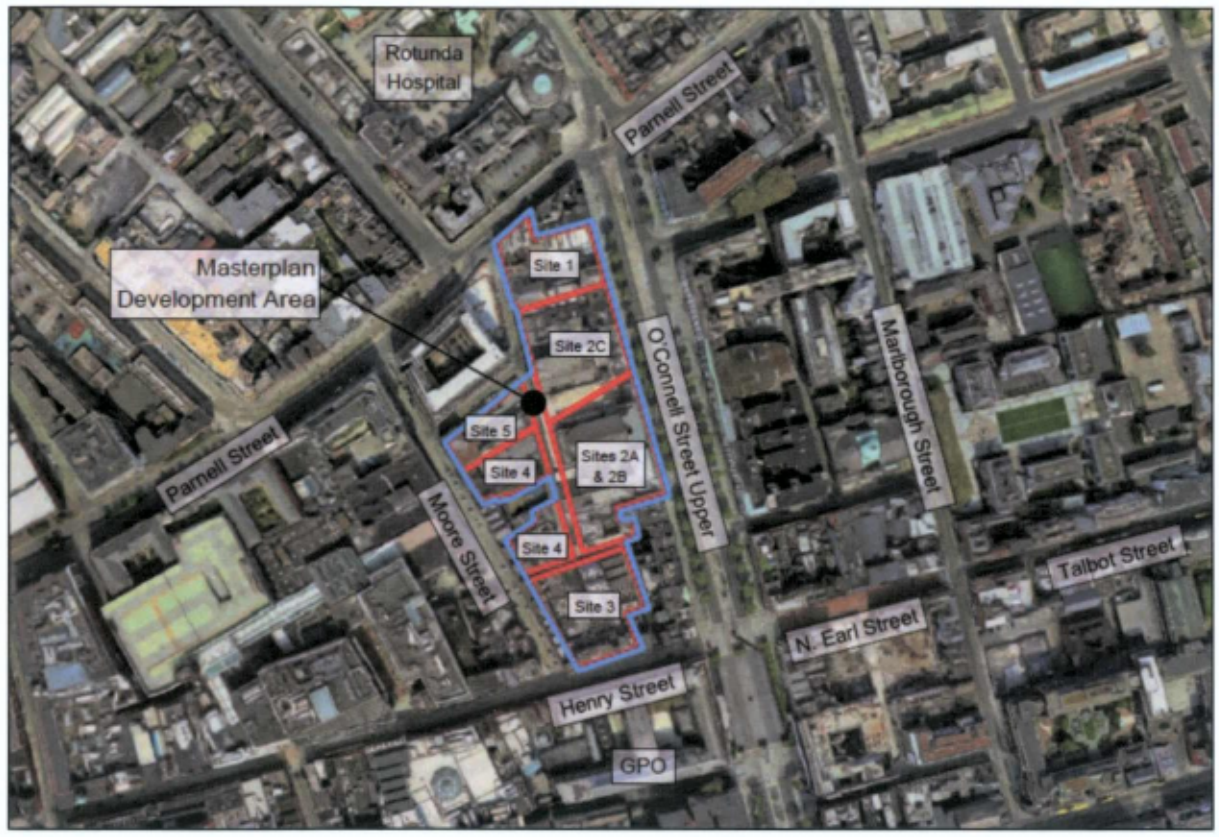

Figure 6.1: Site Location Plan[1] (Source: Google Maps, 2021).

The purpose of the chapter is to: -

- Establish and evaluate the baseline ecological environment, as relevant to the Dublin Central Dublin Central Masterplan and Proposed Development (i.e. Site 3, 4 & 5).

1 *Flood Risk Assessment, Dublin Central Mixed Use Development, O'Connell Street Upper* (April 2021). Waterman Moylan Consulting Engineers Limited.

- Identify, describe and assess all potentially significant ecological effects associated with the Dublin Central Dublin Central Masterplan and Proposed Development (i.e. Site 3, 4 & 5).
- Set out the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation.
- Provide an assessment of the significance of any residual ecological effects.
- Identify any appropriate compensation, enhancement or post-construction monitoring requirements.

An Appropriate Assessment (AA) Screening was prepared to be submitted with the planning applications. It contains information required for the competent authority (in this instance Dublin City Council and / or An Bord Pleanála) to undertake a screening for AA. It provides information on and assesses the potential for the Proposed Development to impact on the Natura 2000 network.

6.1.1 Planning, Policy and Legislation

The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this chapter.

The following international legislation is relevant to the Proposed Development: -

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network was established and Special Areas of Conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- Directive 2009/147/EEC; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which Special Protection Areas (SPAs) are designated for the protection of endangered species of wild birds listed in Annex I of that directive, becoming part of the Natura 2000 Network of protected areas.
- The following national legislation is relevant to the Proposed Development: -
    - Wildlife Act 1976 (as amended); hereafter collectively referred to as the 'Wildlife Acts'. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.
    - Planning and Development Act 2000 (as amended); hereafter collectively referred to as the 'Planning and Development Acts'. This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.
    - European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (as amended); hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).
    - Flora (Protection) Order, 2015. This lists species of plant protected under Section 21 of the Wildlife Acts.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The following plans and policies are relevant to the Proposed Development: -

- *National Biodiversity Action Plan 2017 – 2021* (Department of Culture Heritage and the Gaeltacht, 2017).
- *Dublin City Development Plan 2016 – 2022* (Dublin City Council, 2016).
- *Dublin City Biodiversity Action Plan 2015 – 2020* (Dublin City Council, 2016).

6.2 ASSESSMENT METHODOLOGY

6.2.1 Author Statement

This Ecological Impact Assessment (EcIA) was authored by Síofra Quigley, and reviewed by Niamh Burke of Coiscéim Ecology and Maeve Maher-McWilliams of Scott Cawley Ltd.

Síofra Quigley is a Consultant Ecologist with Scott Cawley. She obtained an honours degree in Zoology, from National University of Ireland Galway, and a Masters in Wildlife Biology and Conservation from Edinburgh Napier University. She has three years' professional experience working in the UK on large to small scale infrastructure projects, with governmental and private clients. Síofra is experienced in carrying out field surveys in several protected species, including bat, otter, badger, red squirrel, reptile, pine marten and mountain hare. She has also been involved in radio tracking mountain hares and bats, bat call analysis, badger bait marking, acting as an Ecological Clerk of Works, Phase 1 habitat surveys and reports, and desk top studies. Since joining Scott Cawley, Síofra's work involves the preparation of reports, including Ecological Impact Assessment and Appropriate Assessment reports for residential, commercial, and infrastructural projects across Ireland.

Niamh Burke is Principal Ecologist with Coiscéim Ecology. She holds a BSc in Natural Sciences with Environmental Science and a PhD in salmonid ecology. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Niamh is a senior scientist with academic research and consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles she has acted as reviewer for all ecological reporting and ensured consistency of standards and approach.

Maeve Maher-McWilliams is a Principal Ecologist with Scott Cawley. She holds an honours degree in Biological Sciences from Queens University Belfast and attained a distinction in her Masters in Evolutionary and Behavioural Ecology from University of Exeter. She is an Associate member of CIEEM. She has worked in ecological consultancy for over eight years and has worked on a range of large to small scale projects across Ireland and the UK. Maeve's primary technical specialism is ornithology, however her skills extend to protected mammal and habitat surveys. Her involvement extends from inception to post planning compliance, survey completion, project and survey management, carrying out of Ecological Impact Assessment, and authoring of EIAR Chapters, Appropriate Assessment Screening reports and Natura Impact Statements. She regularly undertakes surveys and prepares AA Screening, NIS and EcIA reports.

6.2.2 Scope of the assessment

The study area is defined by the zone of influence of the Proposed Development with respect to the ecological receptors that could potentially be affected.

The Zone of Influence (ZoI), or distance over which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs), depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken has established the habitats and species present within, and in the vicinity of, the Proposed Development site. The ZoI and study area was then informed and defined by the sensitivities of each of the KERs present, in conjunction with the nature and potential impacts associated with the Proposed Development.

The ZoI of habitat loss impacts will be confined to within the Proposed Development boundary.

The ZoI of general construction activities (i.e. risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting) is not likely to extend more than several hundred metres from the Proposed Development.

Excavation spoil and waste material will need to be removed offsite due to limited opportunities for reuse on site. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment/recovery or exported abroad for disposal at suitable facilities. This could potentially extend the ZoI to areas where the material will be deposited, however the waste will be classified in accordance with the EPA publication Waste Classification, with environmental soil analysis carried out prior to removal of the material, in accordance with the requirements for acceptance of waste at landfills[2].

The Proposed Development site, including the existing (and proposed) surface water drainage network drains to the River Liffey, and therefore, the hydrological ZoI extends downstream to Dublin Bay.

6.2.3 Desk Study

A desk study was undertaken on the 21 February 2021 to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this chapter: -

- Data on European sites, Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data – refer to Appendix 6.1 for descriptions and locations of protected sites in the vicinity of the Proposed Development.
- Records of rare and protected species for the 10km grid square(s), as held by the National Biodiversity Data Centre www.biodiversityireland.ie or the NPWS – refer to Appendix 6.2 for all desk study flora and fauna records.
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from https://myplan.ie/.
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from https://gis.epa.ie/EPAMaps/.
- Information on soils, geology and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx.
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert et. al, 2021)[3]
- Information on the location, nature and design of the Proposed Development supplied by the applicant's design team.

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2 Chapter 15: Material Assets (Waste), AWN Consulting (2021).

3 *Birds of Conservation Concern in Ireland 2020–2026*, Gilbert G., Stanbury A., Lewis L., (2021).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

6.2.4 Field Survey

Ecological field surveys were carried out following the best practice professional guidelines in June and July 2020. The surveys and survey dates are presented in Table 6.1.

Habitat and flora surveys, terrestrial fauna surveys, ground-level assessment of buildings, and breeding bird checks were undertaken on the 26 June 2020 by Síofra Quigley BSc (Hons) MSc. Internal building inspections for bats were undertaken by Síofra Quigley and Niall McHugh BSc (Hons) MSc on the 13 July 2020, and bat activity survey were undertaken by Niall McHugh, Nicholas Fettes BSc (Hons) MSc, and Adele Goulding Sheehan BSc on the 2 and 24 July 2020.

Survey	Survey Date(s)	Surveyor(s)
Multidisciplinary survey	26 June 2020	Scott Cawley Ltd.
Internal building inspections	13 July 2020	Scott Cawley Ltd.
Bat activity surveys	2 & 24 July 2020	Scott Cawley Ltd.

Table 6.1: Ecological surveys and survey dates.

6.2.4.1 Habitats and Flora

A habitat survey was undertaken of the Proposed Development site on the 26 June 2020 by Síofra Quigley following the methodology described in Best Practice Guidance for Habitat Survey and Mapping[4]. All habitat types were classified using the Guide to Habitats in Ireland[5], recording the indicator species and abundance using the DAFOR scale[6] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of The National Vegetation Database[7], having regard to more recent taxonomic changes to species names after the New Flora of the British Isles[8] and the British Bryological Society's Mosses and Liverworts of Britain and Ireland: A Field Guide[9] [10]. Invasive species as listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-2015, were also surveyed for within the lands of the Proposed Development site[11].

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4 Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council Church Lane, Kilkenny, Ireland.

5 Fossitt, J.A. (2000) A Guide to Habitats in Ireland. Heritage Council, Kilkenny.

6 The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

7 Weekes, L.C. & FitzPatrick, Ú. (2010) The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

8 Stace, C. (2019) New Flora of the British Isles. 4th Edition. C&M Floristics.

9 Atherton, I., Bosanquet, S. & Lawley, M. (2010) Mosses and Liverworts of Britain and Ireland: A Field Guide. Latimer Trend & Co., Plymouth.

10 Atherton, I., Bosanquet, S. & Lawley, M. (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide*. Latimer Trend & Co., Plymouth.

11 *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*. Transport Infrastructure Ireland, GE-ENV-01105, December 2020.

6.2.4.2 Fauna

6.2.4.2.1 Terrestrial Mammals (Excl. bats)

A terrestrial fauna survey (excluding bats) was undertaken on the 26 June 2020 by Síofra Quigley. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species.

6.2.4.2.2 Bats

A ground-level assessment of structures and buildings within the Proposed Development site, to examine their suitability to support roosting bats and potential to act as important landscape features for commuting/foraging bats, was based on guidelines (see Table 6.2) in Bat Surveys for Professional Ecologists: Good Practice Guidance (Collins ed., 2016) and included inspections of structures and buildings for potential roost features (PRFs), and for signs of bats (staining at roost entrances, droppings, carcasses, insect remains).

Buildings identified as having PRFs from the ground level assessment surveys, or buildings that could not be fully accessed externally, were then examined internally where possible. Seven buildings within the site were accessed internally via roof, attic space/loft, or top floor access and were surveyed for any signs of bats (droppings, staining, etc.) (see Figure 6.2). No other buildings within the Proposed Development site were surveyed internally, due to lack of attic / loft space, and / or lack of PRFs.



Figure 6.2: Locations of buildings accessed internally.

DBC PLAN NO.2861/21
RECEIVED: 01/06/2021

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (*i.e.* unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 6.2: Guidelines for assessing the potential suitability of Proposed Development sites for bats, based on the presence of habitat features within the landscape, applied according to professional judgement (Taken from Collins (2016)).

Two separate bat roost emergence / re-entry and activity surveys were undertaken within the lands by surveyors who are experienced in bat surveys. The surveys were designed with reference to methodologies in Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) (Collins, 2016). Observations of bat activity were recorded, and where necessary, data collected in the field was analysed using specialist software (Elekon BatExplorer) to aid in the identification of bat species by their calls. Data generated from the activity surveys was analysed using Elekon BatExplorer software, whereby calls were identified to species level (where this was possible), through professional judgement and with reference British Bat Calls: A Guide to Species Identification (Russ, 2012).

6.2.4.2.3 Birds

Breeding bird checks were undertaken on the 26 June 2020 by Síofra Quigley using a methodology adapted from the Bird Monitoring Methods - A Manual of Techniques for Key UK Species[12]. Due to the urban nature of the site, and the lack of vegetation within the site or in the wider environs, the area was checked for evidence of breeding / nesting birds on rooftops or within attic/loft spaces of the buildings. Birds present were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

6.2.5 Ecological Evaluation and Impact Assessment

6.2.5.1 Ecological Evaluation

Ecological receptors (including identified sites of ecological importance) are valued with regard to the ecological valuation examples set out in Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2[13] and the guidance provided in Guidelines for Ecological Impact Assessment in the UK and Ireland[14] – refer to Appendix 6.3 for examples of how ecological importance is assigned. In accordance with these guidelines, important ecological features within what is referred to as the Zone of Influence (ZoI) of the Proposed Development which are "both of sufficient value to be material in decision making and likely to be affected significantly" are deemed to be 'Key Ecological Receptors' (KERs). These are the ecological receptors which may be subject to significant effects from the Proposed Development, either directly or indirectly. KERs are those biodiversity receptors with an ecological value of local importance (higher value) or greater.

6.2.5.2 Impact Assessment

Ecological impact assessment is conducted following a standard source-pathway-receptor model, where, in order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potentially significant effect would not occur.

- Source(s) – e.g. pollutant run-off from proposed works.
- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats.
- Receptor(s) – e.g. wetland habitats and the fauna and flora species they support.

6.2.5.3 Characterising and Describing the Impacts

The parameters considered in characterising and describing the potential impacts of the Proposed Development are per the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports[15] and CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland: whether the effect is positive, neutral or negative; the significance of the effects; the extent and context of the effect; the probability, duration and frequency of effects; and, cumulative effects.

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. The following development types are included in considering cumulative effects: -

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12 Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. RSPB: Sandy

13 NRA (2009) Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2. National Roads Authority.

14 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

15 Environmental Protection Agency. (2017) Guidelines on the information to be contained in Environmental Impact Assessment Reports. Draft, August 2017. (refer to Table 3.3)

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- Existing projects (under construction or operational).
- Projects which have been granted consent but not yet started.
- Projects for which consent has been applied for which are awaiting a decision, including those under appeal.
- Projects proposed at a plan level, if relevant (e.g. future strategic infrastructure such as roads or greenways).

The likelihood of an impact occurring, and the predicted effects, can also be an important consideration in characterising impacts. In some cases it may not be possible to definitively conclude that an impact will not occur. In these cases the evaluation of significant effects is based on the best available scientific evidence but where reasonable doubt still remains then the precautionary principle is applied, and it may need to be assumed that significant effects may occur. Professional judgement is used in considering the contribution of all relevant criteria in determining the overall magnitude of an impact.

Integrity

The term "integrity" may be regarded as the coherence of ecological structure and function, across the entirety of a site that enables it to sustain all of the biodiversity or ecological resources for which it has been valued (NRA, 2009).

The term "integrity" is most often used when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can also be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites' habitats and / or species; affect the nature, extent, structure and functioning of component habitats; and / or, affect the population size and viability of component species.

Conservation Status

Similar definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2018) and NRA (2009) guidance which are summarised as follows:

For natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its extent, structure and functions as well as its distribution, or the long-term survival of its typical species, at the appropriate geographical scale

For species, conservation status means the sum of influences acting on the species concerned that may affect the abundance of its populations, as well as its distribution, at the appropriate geographical scale

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status, having regard to the definitions of favourable conservation status provided in the EU Habitats Directive 92/43/EEC – i.e. into the future, the range, area and quality of habitats are likely to be maintained / increased and species populations are likely to be maintained / increased.

According to the CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological receptor will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than an international level.

6.3 RECEIVING ENVIRONMENT

The receiving environment in terms of biodiversity is the same for the Dublin Central Masterplan and each individual site of the development. Therefore, the following sections detail the existing baseline ecological environment and do not differentiate between the Dublin Central Masterplan development or the individual sites of the development being assessed within this EIAR chapter.

6.3.1 Designated Sites

6.3.1.1 European Sites

Special Areas of Conservation (SAC) are designated under the EC Habitats Directive (92/43/EEC) for the protection of habitats listed on Annex I and / or species listed on Annex II of the Directive. Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC) for the protection of bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

SACs and SPAs are offered additional protection under development plans, as is the case for the Dublin City Development Plan 2016 – 2022 through Policy GI2 and GI24 on Natura 2000 sites which requires that planning authorities give due regard to their protection in planning policies and decisions (Dublin City Council, 2016).

There are thirteen European sites within the vicinity of the Proposed Development. The Proposed Development does not overlap with any European sites. The nearest European site is South Dublin Bay and River Tolka Estuary SPA, located c. 2.3km to the north east of the Proposed Development site in Dublin Bay. South Dublin Bay SAC is the next closest European site, c. 3.5km south east of the Proposed Development. Other nearby sites in Dublin Bay include North Dublin Bay SAC and North Bull Island SPA, both c. 5.3km north east of the Proposed Development site, Howth Head SAC and Howth Head Coast SPA, located c. 11km and c. 13km east, respectively, and Rockabill to Dalkey Island SAC located c. 11.3km east of the site. These European sites are considered to be within the potential zone of influence of the Proposed Development, as all of these sites are located downstream of the Proposed Development site within Dublin Bay. There is no direct surface water hydrological link between the proposed site and these European sites, however surface waters will drain to the existing surface water drainage network ultimately discharging into Dublin Bay, with wastewaters draining via the combined sewer to Ringsend WWTP for treatment prior to discharge into Dublin Bay.

The SAC and SPA sites in the vicinity of the Proposed Development, their distance from the Proposed Development and their qualifying interests / special conservation interests are presented in Appendix 6.1.

The locations of those SAC and SPA sites relative to the Proposed Development are illustrated on Figure 6.3 below.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 6.3: European sites in the vicinity of the Proposed Development.

6.3.1.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are designated under the Wildlife Acts to protect habitats, species or geology of national importance. In addition to NHAs there are proposed NHAs (referred to as pNHAs), which are also sites of significance for wildlife and habitats and were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Proposed NHAs are offered protection under county development plans, as is the case for the Dublin City Development Plan 2016 – 2022 through Policy GI24 on Natural Heritage Areas which requires that planning authorities give due regard to their protection in planning policies and decisions (Dublin City Council, 2016). For convenience, these are described as "national sites".

There are 20 national sites within the vicinity of the Proposed Development, all of which are pNHAs. The Proposed Development does not overlap with any national sites. The nearest national sites are the Royal Canal pNHA, located c. 1.3km north east, and the Grand Canal pNHA located c. 1.6km south east of the Proposed Development. The Proposed Development is not hydrologically or otherwise connected to these National sites. South Dublin Bay pNHA, located c. 3.5km east, Dolphins, Dublin Docks pNHA located, 4.4km east and North Dublin Bay pNHA located 5.3km north east, are potentially within the zone of influence of the Proposed Development, as all of these National sites are located downstream of the Proposed Development in Dublin Bay. There is no direct surface water hydrological link between the proposed site and these National sites, however surface waters will drain to the existing surface water drainage network ultimately discharging into Dublin Bay, with wastewaters draining via the combined sewer to Ringsend WWTP for treatment prior to discharge into Dublin Bay.

The pNHA sites in the vicinity of the Proposed Development, their distance from the Proposed Development and their qualifying interests / special conservation interests are presented in Appendix 6.1.

The locations of those pNHA sites relative to the Proposed Development are illustrated on Figure 6.4 below.

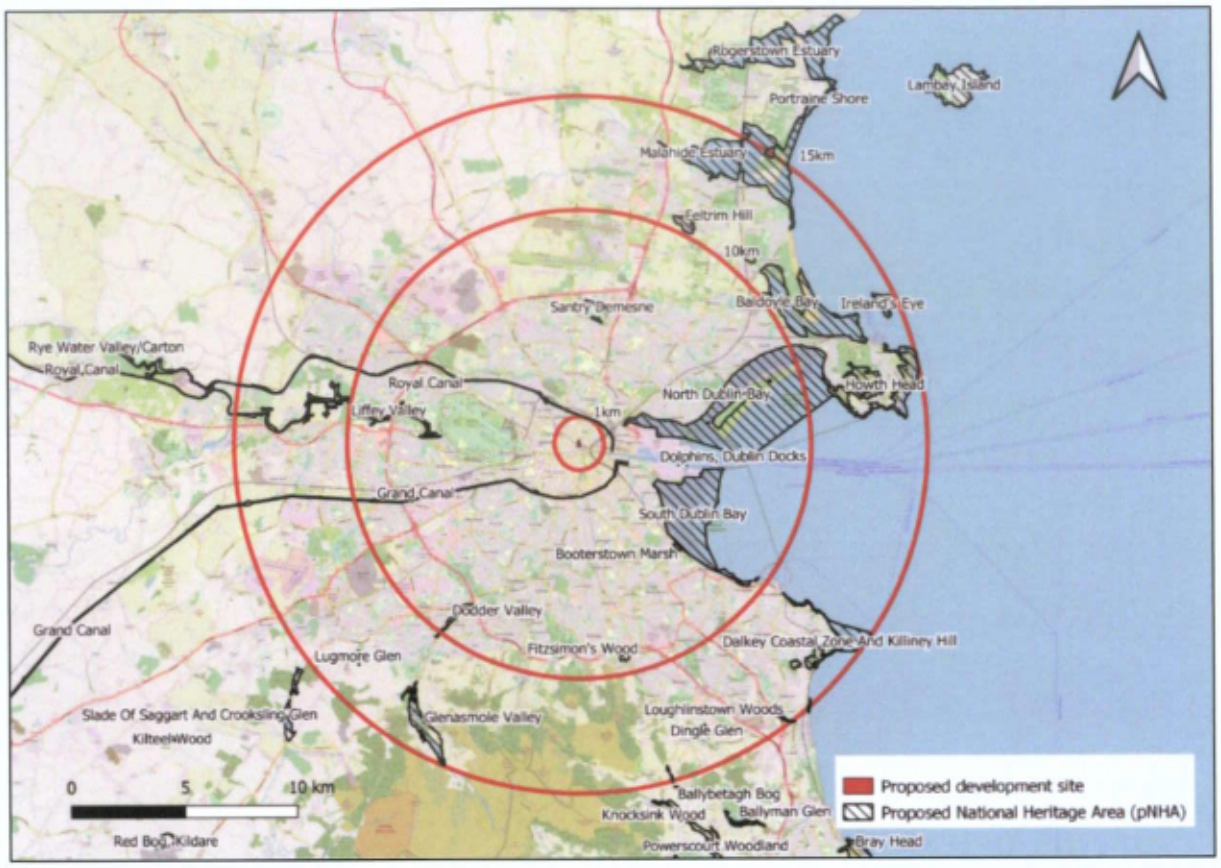

Figure 6.4: National Sites in the vicinity of the Proposed Development.

6.3.2 Habitats and Flora

6.3.2.1 Habitats

Due to the urban nature of the site, the only habitats identified within the Proposed Development were buildings and artificial surfaces (BL3), with small, isolated areas of ornamental / non-native scrub (WS3) growing on built surfaces (which have not been mapped but are shown in the photograph in Figure 6.5. The buildings and artificial surfaces habitat encompassed the majority of the site, and included; all buildings within the site, roads going through the site (Moore Land and Henry Place), and paths along O'Connell Street and Henry Street. Also found sporadically throughout the site was ornamental / non-native scrub, comprising of butterfly bush *Buddleia davidii*, mainly growing from the sides of buildings or on rooftops in isolated areas.

As these areas have little to no ecological value due to the lack of vegetation and urbanised environment, the habitats within the Proposed Development site are valued as being of local importance (lower value).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 6.4: Habitat map of the Proposed Development (Site 3, Site 4 and Site 5).

6.3.2.2 Flora

The NBDC holds three records for protected and/or rare plant species within 2km of the Proposed Development site; *Centaurea cyanus, Hordeum secalinum, and Groenlandia densa. Centaurea cyanus* is listed as 'Regionally Extinct', while the latter listed species are listed as 'Vulnerable' on the Flora Protection Order. There is no habitat for these species within the Proposed Development site however, as it is mostly hard standing and buildings.

With regards to invasive non-native species, there were records of five species on NBDC database for species listed on Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015 within c. 2km of the Proposed Development; *Azolla filiculoides, Crassula helmsii, Elodea canadensis, Heracleum mantegazzianum, Fallopia japonica, Impatiens glandulifera, Elodea nuttallii,* and *Allium triquetrumin.* Although records of these invasive species are within c. 2km of the proposed site, none of the aforementioned species are located in the immediate or nearby vicinity of the site, with the closest (*Allium triquetrum*) located c. 200m east of the Proposed Development site.

No protected and / or rare species listed in the Flora Protection Order or in Red Lists, nor invasive non-native species listed on Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015 were found to be present onsite at the time of the survey. One non-scheduled non-native invasive species, *Buddleja davidii* was recorded within the Proposed Development site boundary in single strands, mostly on rooftops or growing from the sides of buildings.

6.3.3 Fauna

6.3.3.1 Terrestrial Fauna (excluding bats)

6.3.3.1.1 Badger

Badger *Meles meles*, and their breeding and resting places, are protected under the Wildlife Acts. The NBDC data search and NPWS identified one record of badger c. 2km of the site from 2009.

No evidence of badgers, such as setts, snuffle holes or scat, was found onsite.

The habitats found within the Proposed Development site, buildings and artificial surfaces, provide no suitable habitat for badgers.

The local badger populations are valued to be of local importance (lower value).

6.3.3.1.2 Small mammals

Small mammals, pygmy shrew *Sorex minutus* and red squirrel *Sciurus vulgaris* are protected under the Wildlife Acts. The NBDC database search identified one record of pygmy shrew and red squirrel, c. 2km of the site.

No evidence of any of the small mammal species were found onsite. There was no suitable habitat for pygmy shrew or red squirrel on the Proposed Development site due to the urban environment, and as both species are typically found in woodlands.

The local small mammal populations are valued to be of local importance (lower value).

6.3.3.2 Birds

All wild birds, and their nests and eggs, are protected under the Wildlife Acts. Some bird species are also listed on Annex I of the EU Birds Directive. The following birds were observed within or in the vicinity of the Proposed Development: herring gull *Larus argentatus*, feral pigeon *Columba livia f. domestica*, and rook *Corvus frugilegus*. Feral pigeon and rook are green-listed (i.e. of low conservation concern) in the most recent evaluation of bird populations in Ireland in Birds of Conservation Concern in Ireland (Gilbert et al., 2021) and commonly occupy urban environments. Herring gull are amber-listed (of medium conservation concern), due to short term declines in populations on a national level, and have been forced by anthropogenic pressures to occupy and breed in urban environments.

Breeding birds use various habitats, including trees, structures and scrub, for nesting. Three juvenile herring gulls were identified on a building roof off Henry Street within the Proposed Development site, with other potential nests noted from the presence of adolescent herring gulls on other rooftops within the Proposed Development site. No herring gull nests were observed, however. From the internal building inspection surveys, the majority of the buildings surveyed were run-down and partially dilapidated. Feral pigeons were identified using these spaces as potential nesting sites, with droppings and carcasses present in many of the buildings. The older buildings provide good shelter and protection so are ideal for urban nesting sites.

The breeding birds within the Proposed Development site are considered to be of local importance (higher value).

6.3.3.3 Bats

Bats, and their breeding and resting places, are protected under the Wildlife Acts. All bat species are also listed on Annex IV of the EU Habitats Directive (with the lesser horseshoe bat also listed on Annex II) and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

The NBDC and NPWS hold records of the following bat species in the vicinity of the Proposed Development site: common pipistrelle *Pipistrellus pipistrellus*, nine records from the NBDC recorded within c. 2km of the site from 2009; lesser noctule *Nyctalus leisleri*, 11 records from the NBDC recorded within c. 2km of the site from 2016; soprano pipistrelle *Pipistrellus pygmaeus*, 13 records from the NBDC recorded within c. 2km of the site from 2009; and Nathusius's pipistrelle *Pipistrellus nathusii*, two records from the NBDC recorded within c. 2km of the site from 2009.

In total, two passes of a single bat species was recorded during the dusk survey carried out on the 2nd July 2020; Leisler's bat, recorded on Henry Street (Figure 6.5). This was recorded as very brief passes by a Leisler's bat, likely commuting over the site to suitable foraging habitat, no other activity or any emergences or re-entries at the buildings were recorded during bat surveys.

Seven buildings within the Proposed Development boundary were deemed as having low suitability for roosting bats and during external building surveys. There were a number of potential roost features evident from external checks, however due to the surrounding urban environment and lack of connecting habitat to more suitable foraging/commuting areas, the buildings were assessed as low suitability for the likelihood of supporting roosting bat species. No bat evidence was noted during external building surveys. The remaining buildings within the Proposed Development had negligible suitability for roosting bats from ground assessments, and the surrounding habitat was deemed to have negligible suitability for commuting and foraging bats.

The seven buildings that were identified as having low potential for roosting bats, were assessed internally for evidence of bats with roof / loft access (Appendix 6.4). No evidence of bats was noted in any of the buildings surveyed or adjacent to these properties. A number of PRFs were identified on these buildings, providing access into attic spaces in some (Buildings 2, 5 and 6), while others provided access into the buildings or had PRFs on external walls with crevices / gaps suitable for roosting bats (Buildings 1, 3, 4 and 7) (see Figure 6.2 for building locations).



Figure 6.5: Location of Leisler's bat identified during activity surveys.

From internal and external building inspections, and bat activity surveys undertaken in June and July 2020, it can be concluded that the Proposed Development site, while it does contain potential roost features within the aforementioned buildings, there is no suitable habitat for bats connecting this site to other suitable habitat. The heavily urbanized environment surrounding the site, with constant light and noise disturbance from O' Connell Street, together with the lack of vegetation and surrounding habitat deem this site unsuitable for roosting bats. The two bat calls identified during surveys, and no emergences or re-entries of bats from or into the building confirms this conclusion.

Therefore, the local bat population is valued as being of local importance (lower value).

6.3.4 Summary of Ecological Evaluation

Table 6.3 below summarises the ecological evaluation of all receptors taking into consideration legal protection, conservation status and local abundance, and identifies the Key Ecological Receptors (KERs). Species, habitats and features not qualifying as KERs are not subjected to impact assessment in line with current best practice of assessing the impacts on what are determined to be important ecological or biodiversity features: CIEEM and TII guidelines (CIEEM, 2018 and National Roads Authority, 2009).

Ecological Receptor	Ecological Valuation	KER?
Designated Sites		
North Dublin Bay SAC	International	**Yes**
South Dublin Bay SAC	International	**Yes**
Rockabill to Dalkey Island SAC	International	**Yes**
Howth Head SAC	International	**Yes**
North Bull Island SPA	International	**Yes**
South Dublin Bay and River Tolka Estuary SPA	International	**Yes**
Howth Head Coast SPA	International	**Yes**
All other SAC/SPA sites	International	No
North Dublin Bay pNHA	National	**Yes**
South Dublin Bay pNHA	National	**Yes**
Royal Canal pNHA	National	**Yes**
Dolphins, Dublin Docks pNHA	National	**Yes**
Grand Canal pNHA	National	**Yes**
All other NHA/pNHA sites	National	No
Habitats		
Building and artificial surfaces (BL3)	Local Importance (lower value)	No
Ornamental/non-native scrub (WS3)	Local importance (lower value)	No
Fauna Species		
Bats	Local importance (lower value)	No
Breeding birds	Local Importance (higher value)	**Yes**
Badgers	Local importance (lower value)	No
Other mammal species	Local importance (lower value)	No

Table 6.3: Summary of the ecological evaluation.

6.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

6.4.1 Dublin Central Masterplan

DCC PLAN NO.2861/21
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The Dublin Central project is an expansive (c.2.2 Ha) and complex regeneration project. It needs to be delivered in stages to overcome site and project constraints.

A site wide cumulative masterplan has been prepared by 'the Applicant' to set out the overall development vision for the Dublin Central project.

The Dublin Central Masterplan area encompasses almost entirely three urban blocks. The area is bounded generally by O'Connell Street Upper and Henry Place to the east, Henry Street to the south, Moore Street to the west, and O'Rahilly Parade and Parnell Street to the north. Moore Lane extends south from Parnell Street through the centre of the Dublin Central Masterplan area, as far as its junction with Henry Place.

The Proposed Development is split over 6 no. Sites (Figure 6.6), broadly outlined as follows: -

- Site 1 – Generally bounded by Parnell Street, Moore Lane and O'Connell Street.
- Site 2AB – Generally bounded by O'Connell Street, Moore Lane.
- Site 2C – Generally bounded by O'Connell Street, Moore Lane.
- Site 3 – Generally bounded by Moore Street and Moore Lane.
- Site 4 – Generally boundary by Moore Street and Moore Lane, with a National Monument No. 14 – 17 of Moore Street (indicated in blue on Figure 6.6) in the centre of Site 4 not forming part of the proposals.
- Site 5 – Generally bounded by Moore Street, O'Rahilly Parade and Moore Lane.



Figure 6.6: Dublin Central Masterplan.

The subject site is currently 100% hardstanding with surface water drains on each site draining to the existing surrounding combined sewer network. The development of this site will provide a significant gain to Dublin City Council in reducing surface water runoff to the combined sewers and ultimately to the Ringsend Wate Water Treatment Plant (WWTP).

The surface water runoff for the subject site is 278l/s unrestricted flow. Dublin City Council require that surface water discharge from the site is restricted to 2l/s/ha. With the overall site area of 2.23 Ha, the allowable outfall from the entire development is 4.46 l/s. Therefore, it is proposed that each Site will attenuate to 2l/s, with attenuation storage within each Site provided at roof level and below ground level. This discharge from each Site will be to a common internal surface water network which would run along Moore Lane and the other internal roads/pedestrian areas. The runoff from the internal road/pedestrian areas would drain direct to this common network and then discharge to the public sewer at the permitted restricted rate. Attenuation would be provided in an underground tank beneath the main internal square for the common areas, including the surplus attenuation arising from the fact that each Site is discharging 2l/s into the common network.

Green and blue roofs are also proposed within the remit of the development. Blue roofs will involve the attenuation of surface water by way of using storage cells under roof terraces/podium/green roofs. At least 37% of the roof area in each Site is proposed to include blue roof attenuation, with between 5 – 43% green roof cover proposed.

Blue roofs comprise of a combined drainage and attenuation void within the roof structure and a roof outlet system designed to release the attenuated water at a controlled discharge rate via a restrictor chamber. Rainwater will discharge from the blue roofs at a controlled rate, with water accumulating at the roofs only when this rate is exceeded. A secondary emergency drainage outlet will be provided as a method of drainage to facilitate the removal of excess rainfall if the designed capacity is exceeded.

Green sedum roofing will act as a source control device. The substrate and the plant layers in a sedum roof absorb large amount of rainwater and release it back into the atmosphere by transportation and evaporation. They also filter water as it passes through the layers, so the run-off, when it is produced, has fewer pollutants. Rainfall not retained by green roofs is detained, effectively increasing the time to peak and slowing peak flows.

It is an objective of the Greater Dublin Strategic Drainage Study, and the Dublin City Development Plan 2016-2022, to incorporate Sustainable Urban Drainage Systems (SUDS) within new developments. The SUDS features associated with the Proposed Development are not included within the design to avoid or reduce any potential harmful effects to any European sites. Therefore, they have not been considered, and are not necessary, in reaching the conclusion of this assessment as to the potential for the Proposed Development to result in significant effects on any European sites.

Foul water drainage will discharge to existing combined sewer which run around and through the Dublin Central site. These will simply be a connection from the building direct to the combined sewer. Waste water from this development will discharge to the combined sewers and ultimately end up at Ringsend WWTP for treatment prior to discharge into Dublin Bay. The estimated foul water per day for the Proposed Development is calculated as 803,386, with a peak flow of 55.791l/s.

6.4.2 Proposed Development Site 3, 4 & 5

6.4.2.1 Site 3

Located in the south west corner of the Dublin Central Masterplan area, Site 3 is bounded by Henry Street to the south, Moore Street to the west and Henry Place to the north and east. Site 3 includes Nos. 36 – 41 Henry Street, Nos. 1 – 9 Moore Street and Nos. 3 – 13 Henry Place.

Site 3 lies within the O'Connell Street ACA.

The Proposed Development comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses (c. 15,842 sq. m gross floor area) in 2no. blocks ranging in height from 1 – 9 storeys over 2no. new independent single storey basements. Provision of a new passageway linking Henry Street with Henry Place / Moore Lane.

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Surface Water

The existing drainage network comprises of combined sewers which convey surface water and wastewater. Surface water currently discharges uncontrolled and unattenuated to the combined sewer network. The surrounding combined drains in the vicinity of the site include a 300mm vitrified clay sewer on Henry Place, connected to a 2,160mm x 1,230mm brick sewer in Moore Street. This in turn discharges to a 1,860mm x 730mm brick sewer draining eastwards along Henry Street towards O' Connell Street. In addition to this combined network, there are also some separated surface water sewers in the vicinity of the site; a 225mm concrete sewer in Parnell Street, and a 375mm concrete surface water sewer in Henry Street approximately 110m west of the Site 3 boundary[16].

It is proposed to drain surface water from the development to the existing combined water sewer adjacent to the site in Moore Lane. Surface water will be discharged at a controlled rate of 2l/s (the same for all Sites of the development), which has been agreed with the Dublin City Council Drainage Division. Excess surface runoff during storm events will be attenuated using a combination of blue roofs and an underground concrete attenuation tank. Green roofs will also be used in Site 3 as a source control device. Block A has a total green roof area of 44m^2, while Block B has a total green roof area of 182m^2, giving a cumulative green roof area of 226m^2 for Site 3. It is also proposed to provide blue roofing at some of the roof areas. Block A has a total blue roof area of 510m^2, while Block B has a total blue roof area of 410m^2, giving a cumulative blue roof area of 920m^2 for Site 3.

Foul Water

The surrounding drainage network consists of combined foul and surface water sewers, and includes a 300mm vitrified clay sewer on Henry Place, connected to a 2,160mm x 1,230mm brick sewer on Moore Street. This in turn discharges to a 1,860mm x 730mm brick sewer draining eastwards along Henry Street towards O'Connell Street.

It is proposed to provide two new 225mm connections to the existing public network, one for Block A and one for Block B. The Block A connection will be made to the existing sewer in Henry Street, to the south of the site, while the Block B connection will be to the 300mm sewer to the north. A new manhole will be constructed at each of the two connection points. Although the existing drainage infrastructure consists of combined foul and surface water sewers, private foul and surface water drainage will be drained on completely separate systems throughout the development. Domestic wastewater loads have been calculated based on 2.7 persons per unit with a per capita wastewater flow of 150 litres per head per day along with a 10% unit consumption allowance. The total daily load of Site 3 is calculated at 134,816 l/day, with a peak flow of 9.362 l/s.

6.4.2.2 Site 4

Located in the west of the Dublin Central Masterplan area, Site 4 is bounded by Moore Street to the west, Moore Lane to the east, Henry Place to the south and Site 5 to the north. Site 4 includes Nos. 10 – 13 and Nos. 18 – 21 Moore Street, Nos. 5 – 8 and Nos. 10 – 12 Moore Lane.

Site 4 excludes the site of the National Monument and its protection zone at 14-17 Moore Street (protected structures) and the open area to the rear at Nos. 8 & 9 Moore Lane.

The Proposed Development comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument / Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. Provision of a part of the new public plaza and archway onto the new public plaza.

16 *Engineering Assessment Report, Dublin Central Mixed Use Development – Site 3.* Water Moylan Consulting Engineers Ltd. April 2021.

Surface Water

Surface water currently discharges uncontrolled and unattenuated to the combined sewer network. The surrounding combined drains in the vicinity of the site include a 300mm concrete sewer draining into a 300mm vitrified clay sewer on O'Rahilly Parade, connected to a 2,300mm x 1,200mm brick sewer in Moore street. This in turn discharges to a 1,860mm x 730mm brick sewer draining eastwards along Henry Street towards O'Connell Street. There is a 300mm vitrified clay combined sewer in Moore Lane, draining south and then west to the brick sewer in Moore Street.

It is proposed to drain surface water from Site 4 of the development to the existing public combined water sewer adjacent to the site in Moore Street[17]. Two surface water connections are proposed to the existing combined sewer; one for the portion of the site south of the National Monument and another for the portion of the site to the north of the National Monument. Surface water will be discharged at a controlled rate of 2 l/s. Excess surface water runoff during storm events will be attenuated using a combination of blue roofs and an underground attenuation tank.

Permeable paving in the private courtyard area will also infiltrate surface water from paved areas, with the added benefit of improving water quality by trapping suspended solids and filtering pollutants in the substrata layers. The total area of green roofing proposed for Site 4 of the development is 476m^2. Planter boxes and planted areas with trees can also help control storm water runoff, by slowing rain from reaching the ground and capturing and storing rainfall to be released later.

Foul Water

The surface and foul water network are a combined network, as such, foul waters currently discharge from the site through the existing network as described above.

It is proposed to provide two new 225mm connections to the existing public network, one for each block. The main block will connect to the existing 300mm vitrified clay sewer to the south of the site. The smaller northern block will discharge wastewater to the existing brick sewer on Moore Street via a new connection. A new manhole will be constructed at each of the two connection points. Domestic wastewater loads have been calculated based on 2.7 persons per unit with a per capita wastewater flow of 150 litres per head per day along with a 10% unit consumption allowance. The total daily load of Site 3 is calculated at 23,617 l/day, with a peak flow of 1.640 l/s.

6.4.2.3 Site 5

Located in the west of the Dublin Central Masterplan area, Site 5 is bounded by Moore Street to the west, Moore Lane to the east, O'Rahilly Parade to the north and Site 4 to the south. Site 5 includes Nos. 22 – 25 Moore Street, Nos. 1 – 8 O'Rahilly Parade and Nos. 13 – 15 Moore Lane.

The Proposed Development comprises a mixed-use scheme accommodating office and café / restaurant uses (c. 6,478 sq. m gross floor area) in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

Surface Water

As with Sites 3 and 4, the existing drainage network comprises of combined sewers which convey surface water and wastewater. The existing surface drainage network for Site 5 use the same drainage network as previously described for Site 4[18].

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17 *Engineering Assessment Report, Dublin Central Mixed Use Development – Site 4.* Waterman Moylan Consulting Engineers Ltd. April 2021.

18 *Engineering Assessment Report, Dublin Central Mixed Use Development – Site 5.* Waterman Moylan Consulting Engineers Ltd. April 2021

DCC PLAN NO 2861/21
25/06/2021

The proposed surface water drainage for Site 5 will include new surface water drains. Laid along O'Rahilly Parade towards Moore Street, continuing north along Moore Street to the existing sewer in Parnell Street. The discharge from Site 5 will be limited to 2 l/s, via the same flow control device as Site 4. Permeable paving and planted areas will infiltrate and help control excess storm water, with blue roofs also used for attenuation proposed on some roof areas of Site 5. The remainder of the attenuation storage required for the 1-in-100 year storm event will be provided in an underground concrete tank with a Hydrobrake or similar approved flow control device to limit the discharge rate to 2 l/s.

Foul Water

The existing foul water sewers for Site 5 use the same drainage network as previously described for Site 4.

It is proposed to provide one new 225mm connection to the existing public network in O'Rahilly Parade. A new manhole will be constructed at the connection point. Wastewater loads have been calculated with a 10% unit consumption allowance, with the total daily load of Site 5 calculated as 66,036 l/day, and a peak flow of 4.586 l/s.

A full project description is provided in Chapter 3: Description of Proposed Development.

6.5 POTENTIAL IMPACTS

6.5.1 Dublin Central Masterplan

As per the relevant guidelines, likely significant effects have only been assessed for KERs, as listed in Table 6.3. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a KER at a specified geographical scale. All impacts are described in the absence of mitigation.

6.5.1.1 Potential Impact on Designated Sites During Construction Stage

This section describes and assesses the potential for the Dublin Central Masterplan (including Site 3, 4 & 5) to result in likely significant effects on European sites that lie within the ZoI of the Dublin Central Masterplan. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. The assessment required under the Habitats Directive is presented in the Appropriate Assessment Screening Report for the Proposed Development (i.e. Site 3, Site 4 & Site 5) that accompanies this planning application.

In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the development of the Dublin Central Masterplan with reference to the ecological features for which the site is designated, or is proposed.

6.5.1.1.1 European Sites

This section describes and assesses the potential for the Dublin Central Masterplan (including Site 3, 4 & 5) to result in likely significant effects on European sites that lie within the ZoI of the Dublin Central Masterplan. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. The assessment required under the Habitats Directive is presented in the Appropriate Assessment Screening Report for the Proposed Development (i.e. Site 3, Site 4 & Site 5) that accompanies this planning application.

The assessment presented in the Appropriate Assessment Screening Report concluded that the potential impacts associated with the development of the Dublin Central Masterplan do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interests or special conservation interests of any European sites; either alone or in combination with any other plans or projects.

As the Dublin Central Masterplan does not traverse any European sites there is no potential for habitat fragmentation to occur.

There are no plant species listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations, 2011* on the Dublin Central Masterplan site. The Dublin Central Masterplan site is hydrologically connected European sites in Dublin Bay through the combined surface and foul water drainage network, however, due to the absence of Third Schedule non-native invasive species within the Dublin Central Masterplan site, there is no risk of non-native invasive species spreading from the Dublin Central Masterplan site to any European site.

Herring gulls are an SCI species of nearby European sites, and are known to nest on flat roof tops in urban areas. The development of the Dublin Central Masterplan may therefore temporarily remove suitable ex-situ breeding habitat for this species. However there will not be any permanent impacts on herring gulls as the current roofs will be replaced by similar structures, and as the construction programme will be on a phased basis, the demolition of buildings will be gradual. The installation of green and blue roofs in some areas may also increase suitability for a wider range of bird species, including; skylark, oystercatcher, ringed and little plovers, common tern and lapwings[19].

[19] Biodiversity and Green Roofs – Green Roof Services, Living Roofs. Accessed here: https://livingroofs.org/biodiversity-and-wildlife/

DCC PLAN NO 2861/21
01/06/2021

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the Dublin Central Masterplan. For birds, disturbance effects would not be expected to extend beyond a distance of *c.* 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance[20]. There are no European sites within the disturbance ZoI; the next nearest European site to the Dublin Central Masterplan is *c.* 2.4km away.

There is some potential for contaminants arising from the construction phase of the development of the Dublin Central Masterplan to enter the downstream receiving environment via the existing surface water mains. Notwithstanding the location of the aforementioned designated sites in the downstream receiving environment, there is not considered to be any potential for significant effects arising from the construction or operation of the development of the Dublin Central Masterplan . This is because: -

- South Dublin Bay SAC (000210) (which overlaps with South Dublin Bay pNHA) is located to the east along *c.* 5.4km of the River Liffey channel from the Dublin Central Masterplan , and South Dublin Bay and River Tolka Estuary SPA (004024) is located to the east along c. 4.7km of the River Liffey channel. There is therefore a large freshwater and estuarine water buffer separating the designated sites from the Dublin Central Masterplan over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated sites.
- North Bull Island SPA (004006) (which partially overlaps with North Dublin Bay pNHA) is located to the east along *c.* 6.4km of the River Liffey channel (and the sea waters of the Dublin Bay) from the Dublin Central Masterplan , and North Dublin Bay SAC (000206) is located to the east along c. 6.4km of the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large freshwater and estuarine water buffer separating the designated sites from the Dublin Central Masterplan over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated sites.
- Rockabill to Dalkey Island SAC (003000) (which partially overlaps with Dalkey Coastal Zone And Killiney Hill pNHA) is located *c.* 11.3km from the Dublin Central Masterplan along the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large marine and freshwater water buffer separating the designated site from the Dublin Central Masterplan over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated site.
- Howth Head SAC (000202) (which overlaps with Howth Head Coast SPA) is located *c.* 11km north east of the Dublin Central Masterplan site along the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large marine and freshwater water buffer separating the designated site from the Dublin Central Masterplan over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated site.

Any discharge of silt laden water to gravels or stormwater would not result in any exceedances within the Liffey as settlement would occur in the gravel deposits or stormwater lines close to the site boundary[21].Furthermore, it is an objective of the Greater Dublin Strategic Drainage Study, and the Dublin City Development Plan 2016 – 2022, to incorporate Sustainable Urban Drainage Systems (SUDS) within new developments.

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[20] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. Wildfowl (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

[21] Hydrological & Hydrogeological Qualitative Risk Assessment for Dublin Central Project, Dublin 1, AWN Consulting (2021).

The SUDS features associated with the Proposed Development are not included within the design to avoid or reduce any potential harmful effects to any European sites. Therefore, they have not been considered, and are not necessary, in reaching the conclusion of this assessment as to the potential for the Proposed Development to result in significant effects on any European sites.

Due to the above reasons, there are no hydrological or hydrogeological risks associated with the development of the Dublin Central Masterplan, and therefore there are no European sites at risk of habitat degradation.

6.5.1.1.2 National Sites

In the case of NHAs and pNHAs the assessment considers whether the integrity[22] of any such site would be affected by the development of the Dublin Central Masterplan with reference to the ecological features for which the site is designated, or is proposed.

The Dublin Central Masterplan does not overlap with any nationally designated sites.

As outlined within Section 6.5.2 of this chapter, the zone of influence of the Dublin Central Masterplan in relation to designated sites extends to NHAs / pNHAs and European sites downstream of the Dublin Central Masterplan in Dublin Bay. Therefore, the only nationally designated sites within the potential zone of influence of the Dublin Central Masterplan are; South Dublin Bay pNHA (000210), Dolphins, Dublin Docks pNHA (000201), and North Dublin Bay pNHA (000206). These designated sites are in the downstream receiving environment within Dublin Bay, to which the surface waters from the lands ultimately discharge via the River Liffey. There is not considered to be any potential for significant effects arising from construction of the Dublin Central Masterplan for the same reasons as European sites above. Dolphins, Dublin Docks pNHA, is designated for nesting terns, and as noise from the development is not predicted to extend more than a few hundred metres[12] from the site, no significant effects are predicted on this National site.

Grand Canal pNHA (002104) located c. 1.6km south and the Royal Canal pNHA (002103) located c. 1.3km north of the Dublin Central Masterplan site, are not hydrologically connected or otherwise to the Dublin Central Masterplan site, therefore no significant effects are predicted on these National sites.

As the implementation of the Dublin Central Masterplan will not result in significant effects on nationally designated sites on its own, there is no potential for cumulative effects arising from the proposal in-combination with other plans or projects.

6.5.1.2 Potential Impact of the Masterplan Proposal on Habitats during Construction Stage

There are no habitats of importance within the Dublin Central Masterplan site, or in the immediate environs. Landscaping plans for the Dublin Central Masterplan will enhance the urban nature of the site. Therefore the implementation of the Dublin Central Masterplan will not results in significant effects on habitats at any geographical scale.

6.5.1.3 Potential Impact of the Masterplan Proposal on Birds during Construction Stage

6.5.1.3.1 Effects on Mortality and Disturbance

There is considered to be temporary displacement of nesting herring gull and pigeon habitat (as well as the potential for bird injury/mortality) on the roof tops of the buildings if works are undertaken during the breeding bird season (*i.e.* 1st March to 31st August, inclusive). Feral pigeon are a green-listed species in Ireland and are commonly occurring within urban environments. Herring gull although a red-listed species in Ireland have been forced by anthropogenic pressures to occupy and breed in urban environments.

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22 Refer to Section 4.5.2.2 for definition and impact assessment methodology.

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DCC PLAN NO 2861/21
01/06/2021

If site clearance works were to be undertaken during the bird breeding season (March to August, inclusive) it is likely that nesting sites holding eggs or chicks will be destroyed and birds killed. Mortality of birds at the scale of the Dublin Central Masterplan (given the relatively low area of vegetation roof cover in the wider context that will be lost), over what is likely to be a single breeding bird season in terms of completing site clearance works, could only have a short-term effect on local breeding bird population abundance. However, in the longer-term this would be unlikely to affect the abundance or distribution of the breeding bird species recorded in the study area nor would it be likely to affect the long-term viability of the local populations. The landscape planting proposed as part of the design may also serve to provide additional nesting and foraging opportunities, and upon the completion of the development the rooftops would continue to provide nesting opportunities for herring gulls.

The noise, vibration, increased human presence and the visual deterrent of construction traffic associated with site clearance and construction will disturb breeding bird species and is likely to displace breeding birds from habitat areas adjacent to the Dublin Central Masterplan boundary. Although it is not possible to quantify the magnitude of this potential impact (or the potential effect zone) it could potentially extend for several hundred metres from the Dublin Central Masterplan site. Given the abundance of rooftops and buildings in the surrounding environs, disturbance or displacement effects will also be over the short-term and are therefore not likely to affect the conservation status of the local breeding bird populations.

Overall, the site clearance and physical disturbance associated with the implementation of the Dublin Central Masterplan is not likely to result in long-term effects on local breeding bird populations, however will result in a likely short-term significant negative effect, at a local geographic scale. Following mitigation measures proposed in Section 6.6.3.2, this impact will not result in a significant effect at any geographical scale.

6.5.1.4 Operational Stage

6.5.1.5 Potential Impacts of the Masterplan Proposal on Habitats during Operational stage

No operational phase impacts are predicted on habitats as a result of the Dublin Central Masterplan proposal.

6.5.1.6 Potential Impacts of the Masterplan Proposal on Birds during Operational Stage

6.5.1.6.1 Disturbance

It is possible that birds using the site and environs may be temporarily disturbed as a result of increased noise and human activity levels during operation of the Dublin Central Masterplan. This could potentially result in the temporary disturbance and displacement of birds until they habituate to the increased levels of noise and human activity. Birds recorded within the Dublin Central Masterplan site are typical urban species which are considered to tolerate increased levels of disturbance providing suitable habitat remains which birds use as a refuge. The increase in vegetation and planting, will also provide habitat for other local bird species, in what is a heavily urbanised environment. Overall, the disturbance during operation is unlikely to result in a significant effect at any geographic scale.

6.5.1.7 Cumulative Assessment

The Dublin Central Masterplan site is currently zoned as Z5 "City / Town / Village Centre, Central Area" with the zoning objective *"to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity"* within the Dublin City Development Plan 2016 – 2022.

This section of the chapter assesses the potential for any other Proposed Developments to act cumulatively with the development of the Dublin Central Masterplan, to give rise to likely significant effects on biodiversity.

Based on a search of active or recent planning applications in the immediate environs of the Dublin Central Masterplan site[23], most applications relate to minor additions or amendments to existing buildings, including installation of platform lifts, improved access facilities etc. The exception to this is the planning application directly east of the site, on Moore Lane / Parnell Street, which will consist of the provision of additional nine bedrooms to the existing hotel. Planning permission for construction of the building was granted in July 2019, and works on this development are currently ongoing.

Potential cumulative impacts may arise during construction and operation, as a consequence of the development of the Dublin Central Masterplan acting in-combination with other plans and projects, on water quality in the downstream surface water environment, and on disturbance and habitat loss to birds.

There is potential for cumulative impacts to arise with other local developments that would also result in increased noise, vibration, and human presence. However, as any disturbance effects from other such local developments are likely to be or a minor nature, temporary, localised and over a short-duration, they are not likely to cumulatively affect the local breeding bird populations in conjunction with the implementation of the Dublin Central Masterplan.

Considering the predicted impacts associated with the implementation of the Dublin Central Masterplan, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

6.5.1.8 Do-Nothing Impact

Under the do-nothing scenario, the site would continue to degrade and provide habitat for nesting gull species, and feral pigeons. The minor areas of non-native ornamental scrub would likely continue to grow and spread across the site, potentially providing nesting opportunities for bird species, and invertebrate populations.

6.5.2 Proposed Development Site 3, 4 & 5

As per the relevant guidelines, likely significant effects have only been assessed for KERs, as listed in Table 6.3. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a KER at a specified geographical scale. All impacts are described in the absence of mitigation.

6.5.2.1 Potential Impact of the Proposed Development on Designated Sites during Construction Stage

This section describes and assesses the potential for the Proposed Development (i.e. Site 3, 4 and 5) to result in likely significant effects on European sites that lie within the ZoI of the Proposed Development. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. This assessment is directly related to the assessment methodology for European sites required under the Habitats Directive, which is presented in the Appropriate Assessment Screening Report for the Proposed Development that accompanies this application.

In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the Proposed Development with reference to the ecological features for which the site is designated, or is proposed.

[23] Planning applications accessed via myplan.ie on 23 February 2021. Only planning applications that have been granted permission within the last five years were considered.

DCC PLAN NO. 2861/21
01/06/2021

6.5.2.1.1 European Sites

This section describes and assesses the potential for the Proposed Development to result in likely significant effects on European sites that lie within the ZoI of the Proposed Development. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. The assessment required under the Habitats Directive is presented in the Appropriate Assessment Screening Report for the Proposed Development that accompanies this application.

The assessment presented in the Appropriate Assessment Screening Report concluded that the potential impacts associated with the Proposed Development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interests or special conservation interests of any European sites; either alone or in combination with any other plans or projects.

As the Proposed Development does not traverse any European sites there is no potential for habitat fragmentation to occur.

There are no plant species listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations, 2011* on the Proposed Development site. The Proposed Development site is hydrologically connected European sites in Dublin Bay, however, due to the absence of Third Schedule non-native invasive species within the Proposed Development site, there is no risk of non-native invasive species spreading from the Proposed Development site to any European site.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the Proposed Development. For birds, disturbance effects would not be expected to extend beyond a distance of *c.* 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance[24]. There are no European sites within the disturbance ZoI; the next nearest European site to the Proposed Development is *c.* 2.4km away.

There is some potential for contaminants arising from the construction phase of the Proposed Development to enter the downstream receiving environment via the existing surface water mains. Notwithstanding the location of the aforementioned designated sites in the downstream receiving environment, there is not considered to be any potential for significant effects arising from the construction or operation of the Proposed Development. This is because: -

- South Dublin Bay SAC (000210) (which overlaps with South Dublin Bay pNHA) is located to the east along *c.* 5.4km of the River Liffey channel from the Proposed Development, and South Dublin Bay and River Tolka Estuary SPA (004024) is located to the east along c. 4.7km of the River Liffey channel. There is therefore a large freshwater and estuarine water buffer separating the designated sites from the Proposed Development over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated sites.
- North Bull Island SPA (004006) (which partially overlaps with North Dublin Bay pNHA) is located to the east along *c.* 6.4km of the River Liffey channel (and the sea waters of the Dublin Bay) from the Proposed Development, and North Dublin Bay SAC (000206) is located to the east along c. 6.4km of the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large freshwater and estuarine water buffer separating the designated sites from the Proposed Development over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated sites.

[24] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. Wildfowl (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

- Rockabill to Dalkey Island SAC (003000) (which partially overlaps with Dalkey Coastal Zone And Killiney Hill pNHA) is located *c.* 11.3km from the Proposed Development along the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large marine and freshwater water buffer separating the designated site from the Proposed Development over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated site.
- Howth Head SAC (000202) (which overlaps with Howth Head Coast SPA) is located c. 11km north east of the Proposed Development site along the River Liffey channel (and the sea waters of the Dublin Bay). There is therefore a very large marine and freshwater water buffer separating the designated site from the Proposed Development over which it is anticipated that any potential pollutants would be absorbed and diluted to an extent that they would not be perceptible at the designated site.

Due to the above reasons, there are no hydrological or hydrogeological risks associated with the Proposed Development, and therefore there are no European sites at risk of habitat degradation.

Excavation spoil and waste material will need to be removed offsite due to limited opportunities for reuse on site. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment/recovery or exported abroad for disposal at suitable facilities. This could potentially extend the ZoI to areas where the material will be deposited, however the waste will be classified in accordance with the EPA publication Waste Classification, with environmental soil analysis carried out prior to removal of the material, in accordance with the requirements for acceptance of waste at landfills[2]. Therefore there will be no impact associated with this on European sites.

There are no plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 on the Proposed Development site. The Proposed Development site is hydrologically connected European sites in Dublin Bay, however, due to the absence of Third Schedule non-native invasive species within the Proposed Development site, there is no risk of non-native invasive species spreading from the Proposed Development site to any European site.

6.5.2.1.2 National Sites

In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the Proposed Development with reference to the ecological features for which the site is designated, or is proposed.

The Proposed Development does not overlap with any nationally designated sites.

As outlined within Section 6.5.2 of this chapter, the zone of influence of the Proposed Development in relation to designated sites extends to NHAs/pNHAs and European sites downstream of the Proposed Development in Dublin Bay. Therefore, the only nationally designated sites within the potential zone of influence of the Proposed Development are; South Dublin Bay pNHA (000210), Dolphins, Dublin Docks pNHA (000201), and North Dublin Bay pNHA (000206). These designated sites are in the downstream receiving environment within Dublin Bay, to which the surface waters from the lands ultimately discharge via the River Liffey. There is not considered to be any potential for significant effects arising from construction of the Proposed Development for the same reasons as European sites above. Dolphins, Dublin Docks pNHA, is designated for nesting terns, and as noise from the development is not predicted to extend more than a few hundred metres10 from the site, no significant effects are predicted on this National site.

Grand Canal pNHA (002104) located c. 1.6km south and the Royal Canal pNHA (002103) located c. 1.3km north of the Proposed Development site, are not hydrologically connected or otherwise to the Proposed Development site., therefore no significant effects are predicted on these National sites.

As the Proposed Development will not result in significant effects on nationally designated sites on its own, and as all other developments within the area will be subject to the environmental protective policies and objectives of the Dublin City Development Plan 2016-2022, there is no potential for cumulative effects arising from the proposal in-combination with other plans or projects.

DCC PLAN NO. 2861/21
01/06/2021

6.5.2.2 Potential Impact of the Proposed Development on Habitats during Construction Stage

There are no habitats of importance within the Proposed Development site, or in the immediate environs. Landscaping plans for the Proposed Development will enhance the urban nature of the site. Therefore, the Proposed Development will not results in significant effects on habitats at any geographical scale.

6.5.2.3 Potential Impact of the Proposed Development on Birds during Construction Stage

6.5.2.3.1 Effects of Mortality and Disturbance

There is considered to be temporary displacement of nesting herring gull and pigeon habitat (as well as the potential for bird injury/mortality) on the roof tops of the buildings if works are undertaken during the breeding bird season (i.e. 1 March to 31 August, inclusive). Feral pigeon are a green-listed species in Ireland and are commonly occurring within urban environments. Herring gull although a red-listed species in Ireland have been forced by anthropogenic pressures to occupy and breed in urban environments.

If site clearance works were to be undertaken during the bird breeding season (March to August, inclusive) it is likely that nesting sites holding eggs or chicks will be destroyed and birds killed. Mortality of birds at the scale of the Proposed Development (given the relatively low area of vegetation and roof cover that will be lost), over what is likely to be a single breeding bird season in terms of completing site clearance works, will probably have a short-term effect on local breeding bird population abundance. However, in the longer-term this would be unlikely to affect the abundance or distribution of the breeding bird species recorded in the study area nor would it be likely to affect the long-term viability of the local populations. The landscape planting proposed as part of the design may also serve to provide additional nesting and foraging opportunities, and upon the completion of the development the rooftops would continue to provide nesting opportunities for herring gulls.

The noise, vibration, increased human presence and the visual deterrent of construction traffic associated with site clearance and construction will disturb breeding bird species and is likely to displace breeding birds from habitat areas adjacent to the Proposed Development boundary. Although it is not possible to quantify the magnitude of this potential impact (or the potential effect zone) it could potentially extend for several hundred metres from the Proposed Development. Given the abundance of rooftops and buildings in the surrounding environs, disturbance or displacement effects will also be over the short-term and are therefore not likely to affect the conservation status of the local breeding bird populations.

Overall, the site clearance and physical disturbance associated with the Proposed Development is not likely to result in long-term effects on local breeding bird populations, however will result in a likely short-term significant negative effect, at a local geographic scale. Following mitigation measures proposed in Section 6.7.3.2, this impact will not result in a significant effect at any geographical scale.

6.5.2.4 Potential Impacts of the Proposed Development on Habitats during Operational Stage

No operational phase impacts are predicted on habitats as a result of the Proposed Development.

6.5.2.5 Potential Impacts of the Proposed Development on Birds during Operational Stage

6.5.2.5.1 Disturbance

It is possible that birds using the site and environs may be temporarily disturbed as a result of increased noise and human activity levels during operation of the Proposed Development. This could potentially result in the temporary disturbance and displacement of birds until they habituate to the increased levels of noise and human activity. Birds recorded within the Proposed Development site are typical urban species which are considered to tolerate increased levels of disturbance providing suitable habitat remains which birds use as a refuge. The increase in vegetation and planting, will also provide habitat for other local bird species, in what is a heavily urbanised environment. Overall, the disturbance during operation is unlikely to result in a significant effect at any geographic scale.

6.5.2.6 Do-Nothing Impact

Under the do-nothing scenario, the site would continue to degrade and provide habitat for nesting gull species, and feral pigeons. The little areas of non-native ornamental scrub would likely continue to grow and spread across the site, potentially providing nesting opportunities for bird species, and invertebrate populations.

6.5.3 Cumulative

The Dublin Central Masterplan site, and subsequently the Proposed Development, is currently zoned as Z5 "City / Town / Village Centre, Central Area" with the zoning objective "to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity" within the Dublin City Development Plan 2016 – 2022.

This section of the chapter assesses the potential for any other Proposed Developments to act cumulatively with the development of the Proposed Development, to give rise to likely significant effects on biodiversity.

Based on a search of active or recent planning applications in the immediate environs of the Dublin Central site, most applications relate to minor additions or amendments to existing buildings, including installation of platform lifts, improved access facilities etc. The exception to this is the planning application directly east of the site, on Moore Lane / Parnell Street, which will consist of the provision of additional nine bedrooms to the existing hotel. Planning permission for construction of the building was granted in July 2019 and works on this development are currently ongoing.

Potential cumulative impacts may arise during construction and operation, as a consequence of the development of the Proposed Development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, and on disturbance and habitat loss to birds.

There is potential for cumulative impacts to arise with other local developments that would also result in increased noise, vibration, and human presence. However, as any disturbance effects from other such local developments are likely to be or a minor nature, temporary, localised and over a short-duration, they are not likely to cumulatively affect the local breeding bird populations in conjunction with the development of the Proposed Development.

Considering the predicted impacts associated with the development of the Proposed Development, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

DCC PLAN NO.2861/21
RECD: 01/06/2021

6.5.3.1 Do-Nothing Impact

Under the do-nothing scenario, the site would continue to degrade and provide habitat for nesting gull species, and feral pigeons. The minor areas of non-native ornamental scrub would likely continue to grow and spread across the site, potentially providing nesting opportunities for bird species, and invertebrate populations.

6.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

6.6.1 Dublin Central Masterplan

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the Proposed Development on KERs as outlined above. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

6.6.1.1 Mitigation Measures for Designated Sites during Construction Stage

6.6.1.1.1 European Sites

As set out in the Appropriate Assessment Screening Report, in concluding that the Proposed Development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

6.6.1.1.2 National Sites

As there is no risk of the Proposed Development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on nationally designated sites were not required or taken into account.

6.6.1.2 Mitigation Measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value)) arising from the Proposed Development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings may also be undertaken well in advance of breeding bird season. This includes measures such as: -

- Kite hawks to discourage birds from the site.
- A specialist bird proof net to restrict access and prevent gulls from nesting.[25]

These measures must be undertaken by a specialist, and before any birds begin to nest on the buildings.

[25] Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland.

6.6.1.3 Operational Stage

6.6.1.4 Mitigation Measures for Birds during Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the Proposed Development will be short-term and not significant.

6.6.2 Proposed Development Site 3, 4 & 5

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the Proposed Development on KERs as outlined above. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

6.6.2.1 Mitigation Measures for Designated sites during Construction Stage

6.6.2.1.1 European Sites

As set out in the Appropriate Assessment Screening Report, in concluding that the Proposed Development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

6.6.2.1.2 National Sites

As there is no risk of the Proposed Development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on nationally designated sites were not required or taken into account.

6.6.2.2 Mitigation measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value) arising from the Proposed Development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings may also be undertaken well in advance of breeding bird season. This includes measures such as:

- Kite hawks to discourage birds from the site.
- A specialist bird proof net to restrict access and prevent gulls from nesting.[26]

These measures must be undertaken by a specialist, and before any birds begin to nest on the buildings.

[26] Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland

6.6.2.3 Mitigation measures for birds Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the Proposed Development will be short-term and not significant.

6.7 RESIDUAL IMPACT

6.7.1 Dublin Central Masterplan

6.7.1.1 Designated Sites

6.7.1.1.1 European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any European site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any European sites.

6.7.1.1.2 National sites

There is no risk of the Proposed Development to affect the integrity of any nationally designated site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

6.7.1.2 Birds

The effects of the Proposed Development on breeding birds have been considered within Section 6.6.2.5 of this chapter. Measures to avoid, reduce and mitigate effects on breeding birds have been provided in Section 6.6.3.2 of this chapter. Following the implementation of these measures, residual effects on breeding birds arising from the Proposed Development will be reduced to levels not considered to be significant.

6.7.1.3 Worst Case Impact

Construction and operational activities are assessed under the best and worst-case operating conditions, to determine all potential impacts associated with the Dublin Central Masterplan.

6.7.2 Proposed Development Site 3, 4 & 5

6.7.2.1 Designated Sites

6.7.2.1.1 European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any European site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any European sites.

6.7.2.1.2 National Sites

There is no risk of the Proposed Development to affect the integrity of any nationally designated site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

6.7.2.2 Birds

The effects of the Proposed Development on breeding birds have been considered within Section 6.7.2.3 of this chapter. Measures to avoid, reduce and mitigate effects on breeding birds have been provided in Section 6.7.3.2 of this chapter. Following the implementation of these measures, residual effects on breeding birds arising from the Proposed Development will be reduced to levels not considered to be significant.

6.7.2.3 Worst Case Impact

Construction and operational activities are assessed under the best and worst-case operating conditions, to determine all potential impacts associated with the Proposed Development.

6.8 MONITORING

This heading is not considered relevant to this Chapter as monitoring is not proposed or required within this assessment.

6.9 REINSTATEMENT

This heading is not considered relevant to this Chapter.

6.10 DIFFICULTIES ENCOUNTERED

It was not possible to fully survey all of the buildings within the Proposed Development boundary internally due to access issues as a result of the Covid 19 pandemic. This is not considered to be a limitation however as the buildings not surveyed internally were not deemed to have any potential for roosting bats. Secondly, the coverage during bat activity surveys was sufficient enough to identify if there were any bats roosting on site.

DCC PLAN NO 2861/21
RECEIVED: 01/06/2021

7 LAND, SOIL & GEOLOGY

7.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact on the surrounding soil and geology in the vicinity of the Proposed Development. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 7.5 below indicating the Dublin Central Masterplan area) which will be assessed also. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

This chapter was completed by Stephen Dent-Neville and Joe Gibbons of Waterman Moylan Consulting Engineers. Stephen is a Chartered Engineer with 8 years' experience and Joe is a Chartered Engineer with 35 years' experience.

7.2 ASSESSMENT METHODOLOGY

A desktop study to classify the geological features related to the site was undertaken. Data from the Geological Survey of Ireland (GSI) was reviewed, including the following maps: -

- Bedrock Geology Map.
- Bedrock Aquifer Map.
- Ground Water Vulnerability Map.

This information was supplemented by a review of geotechnical Site Investigations carried out within the Dublin Central site by IGSL in 2008. This comprehensive ground investigation assessed the soil, rock and groundwater conditions across the site and included boreholes, rotary coreholes, piezometers, geophysical surveys, permeability testing and laboratory testing of selected soil and rock samples.

7.3 RECEIVING ENVIRONMENT

The subject development is located in Dublin City Centre. The overall Dublin Central Masterplan site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. Topographic survey data shows that the subject site and the surrounding roads are generally flat, at a level of between 4.85m OD Malin and 5.40m OD Malin.

The site is a brownfield site, comprising of numerous buildings including various retail units, restaurants, offices, and derelict buildings. The subject development will involve a complete redevelopment of the site, though several protected buildings and façades are to be retained, rejuvenated and incorporated into the scheme.

The baseline conditions associated with the Dublin Central Masterplan area are considered to be the same for the individual sites which are subject to this planning application (i.e. Site 3, Site 4 and Site 5).

7.3.1 Desktop Study

Geological Survey Ireland (GSI) produces a wide range of datasets, including bedrock geology mapping, extracted in the Figure below.

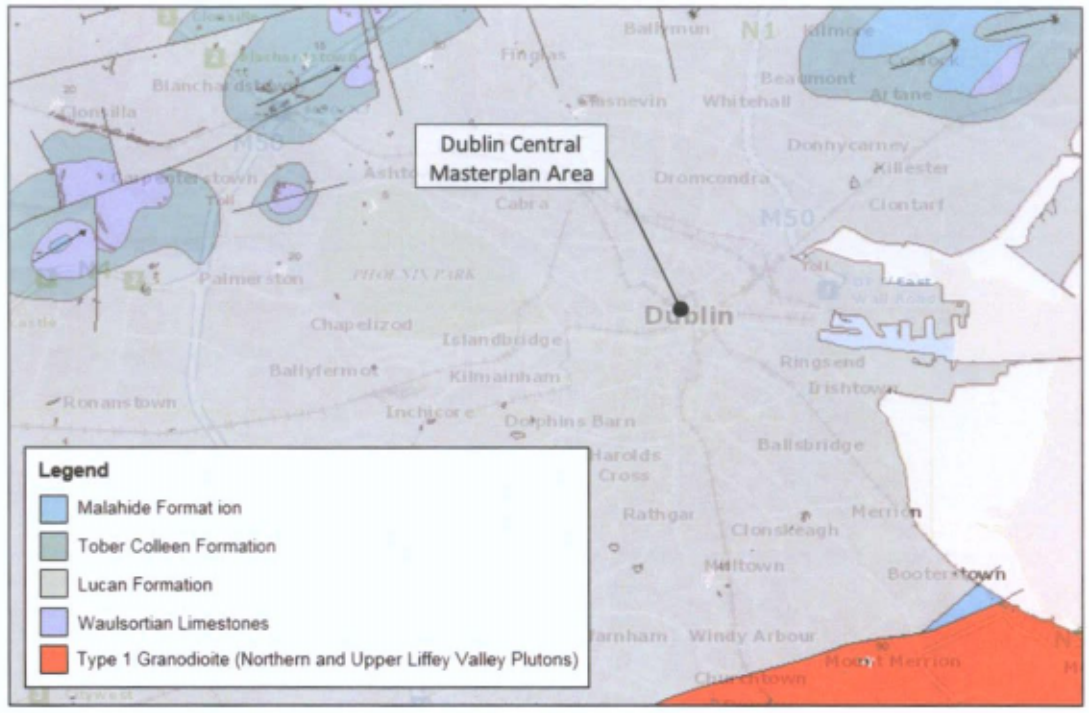


Figure 7.1: Extract from GSI Bedrock Geology Map.

The bedrock geology map indicates that most of Dublin City Centre, including the subject site, lies within the Lucan Formation. This formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar.

The National Aquifer Bedrock Map prepared by the Geological Survey of Ireland was consulted and is extracted below. From this map, it was established that the entirety of the site is within the designation LI, which represents locally important moderately productive aquifer.

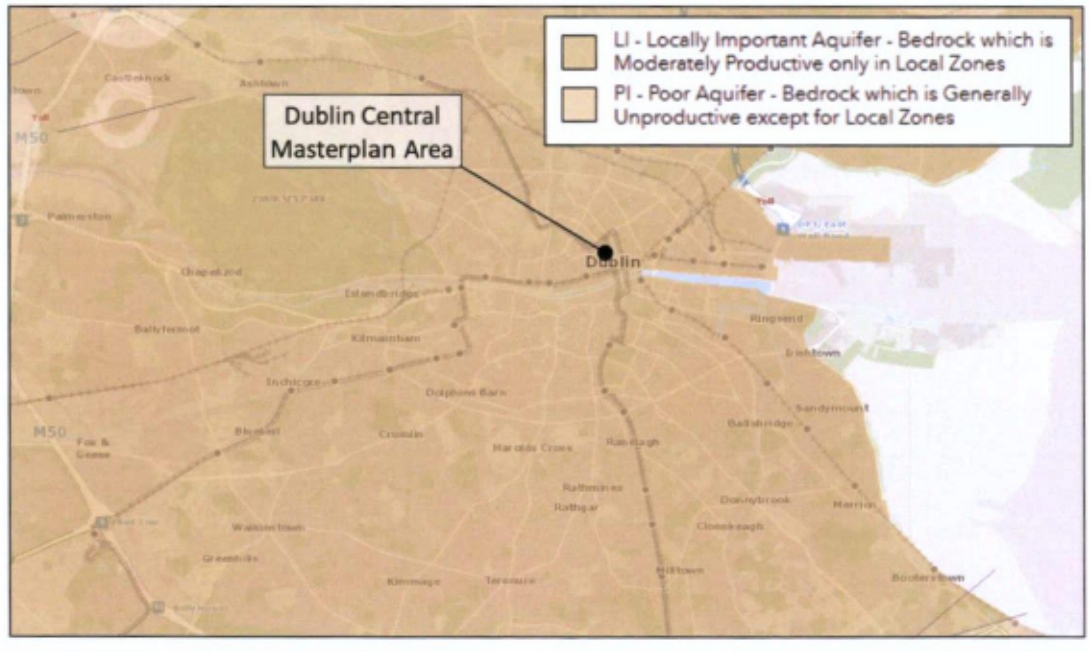


Figure 7.2: Extract from GSI Groundwater Aquifer Map.

The vulnerability of the groundwater in the vicinity of the subject site was also examined by referencing the Geological Survey of Ireland, and it was established that the vulnerability of the aquifer is low.

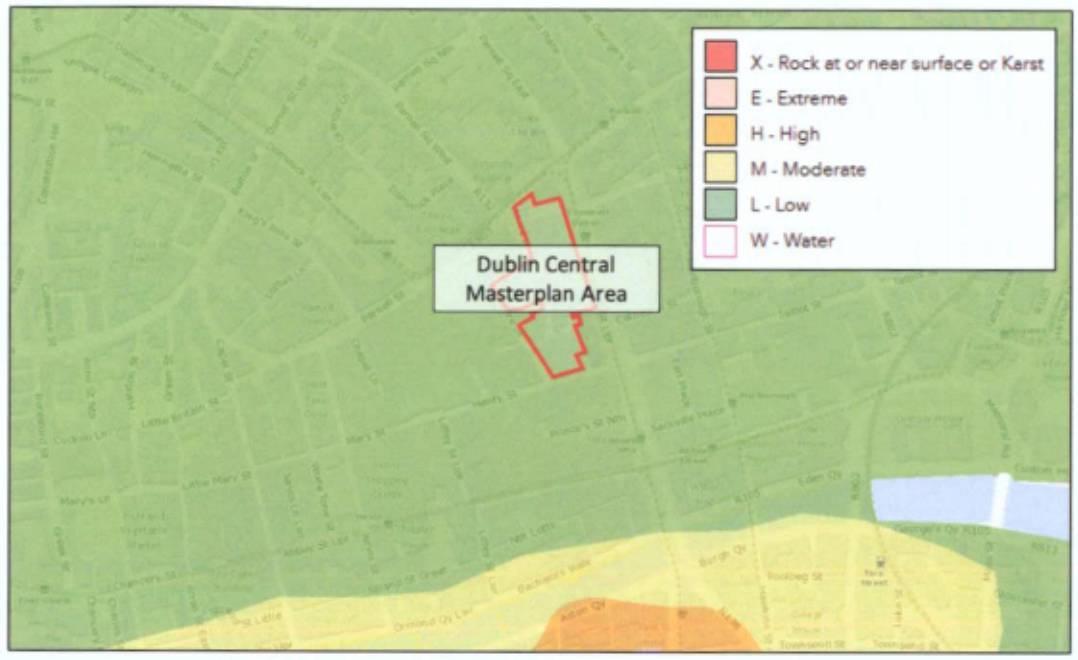


Figure 7.3: Extract from GSI Groundwater Vulnerability Map.

7.3.2 Ground Investigations

Intrusive ground investigations carried out at the site in 2008 by IGSL (See Appendix 7.1). The scope of the site investigation works carried out at the site comprised the following:

- 10no. shell and auger boreholes on an approximately 50m grid spacing across the site. The boreholes were taken to refusal in dense gravel or very stiff to hard boulder clay over rock.
- 13no. rotary coreholes on taken a minimum of 10m into rock to depths of 30-37m using a special triple-tube coring system with a polymer gel drilling fluid to maximise core recovery in very stiff to hard boulder clay and weathered rock.
- Sealed piezometers in soil and rock to observe groundwater levels across the site and any variations in water level between the gravel aquifer and the bedrock. A total 20no. piezometers were installed in 11no. locations (with multiple piezometers in some boreholes).
- 2no. wells and 2no. observation wells for pump tests were installed in the centre of the site for the purpose of measuring the mass permeability of the gravel and the bedrock.
- In-situ SPT tests and variable head permeability testing in boreholes.
- In-situ packer testing in rotary coreholes to assess the permeability of the rock.
- Downhole optical and acoustic imaging of rock coreholes to determine the in situ characteristics of the rock discontinuities such as joints and fractures to assess the stability of rock slopes and the variability in rock quality and type with depth.
- 2-D geophysical profiles around the perimeter of the excavation to obtain a continuous profile of soil and rock along the line of retaining walls and to obtain advanced parameters for numerical modelling of excavation support systems. This consisted of 2-D seismic refraction surveys and shear velocity (MASW) surveys carried out to an effective depth of 30m. A 2-D Resistivity survey was also carried out through the centre of the site.

- 9no. trial pits carried out at the Nos. 40 – 41 O'Connell Street site to investigate the foundations of existing buildings for underpinning design.
- Laboratory classification and strength testing. This included: -
  - Moisture content and Atterburg limit tests.
  - Particle size distribution tests – wet sieve and hydrometer.
  - Consolidated Undrained Triaxial tests.
  - Bender Element Tests carried out by a specialist laboratory to obtain the small strain stiffness of the boulder clay.
  - pH, sulphate and chloride tests.
  - Uniaxial compressive strength and point load index tests on rock.

Borehole locations are indicated on the Figure below: -

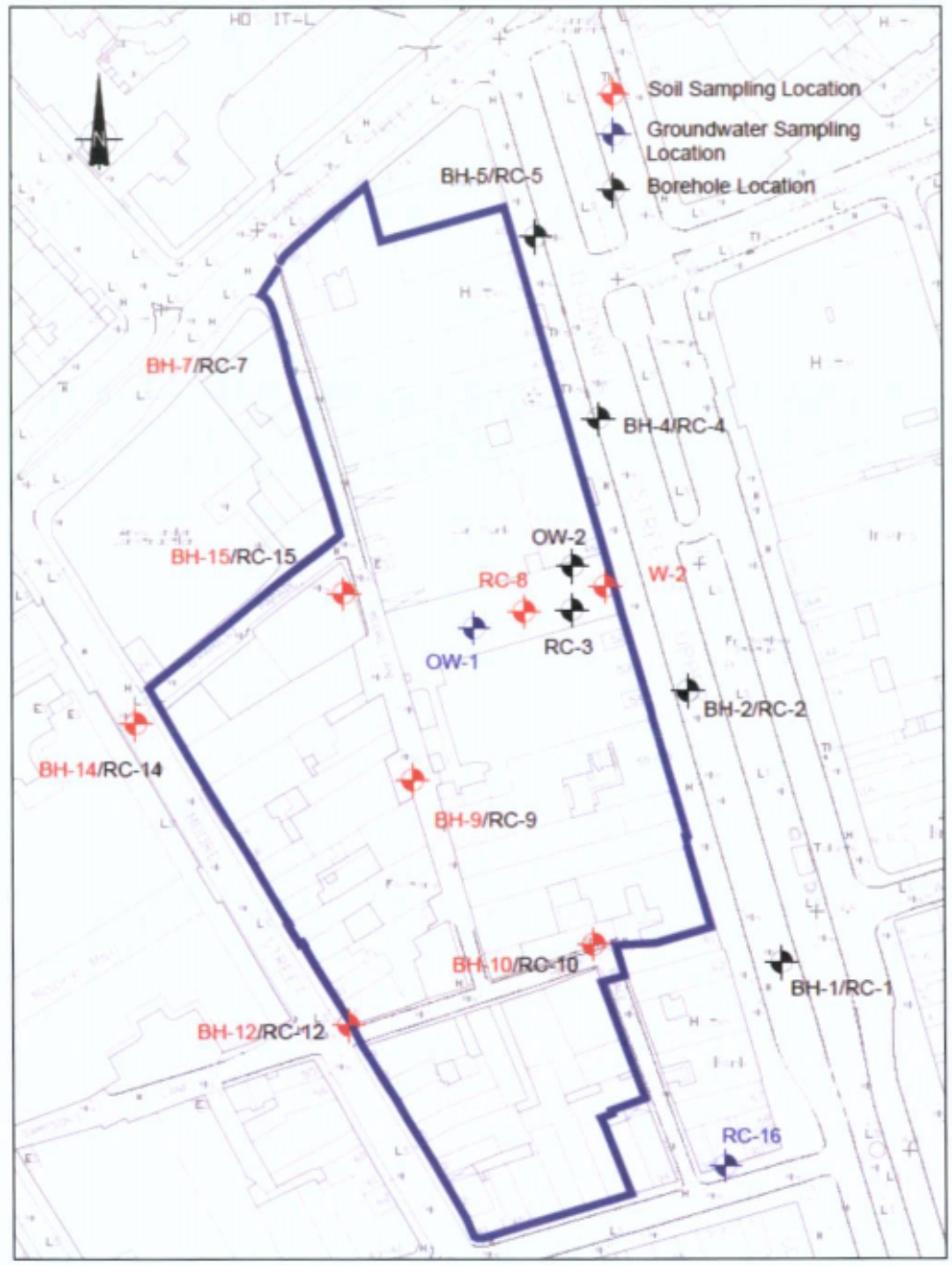


Figure 7.4: Site Investigation Locations.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The ground conditions encountered during the site investigations included made ground immediately below the ground surface between 2m to 5m deep. It was found to be predominantly a gravel with varying proportions of silt, sand and clay. It was also found to be highly variable in strength and stiffness.

Gravel was generally encountered below the fill material, with a high degree of variability in thickness, ranging from about 6m to 21m but thinning out to less than 1m at the corner of Moore Street and Henry Place. The gravel is a medium dense to dense sandy gravel with cobbles and boulders and occasional layers of sand and silt.

The gravel is underlain by Boulder Clay at a depth of 13m to 16m below ground level. The boulder clay is typically a stiff, very stiff or hard stony fine-grained soil which contains varying amounts of gravel, cobbles and boulders However, some seams of boulder clay were encountered in the gravel at higher levels, and locally at Nos. 40 – 41 O'Connell St. the depth to the top of the Boulder Clay drops to 23.5m. The gravel and boulder clay deposits are water bearing, although the gravel deposits would have a significantly higher permeability.

Bedrock was encountered at depths that varied between 17 and 27m below ground level and comprised interbedded Limestone and Shale with strengths in the range of moderately weak to strong. A thin layer of weathered rock up to 1m thick was occasionally encountered at the upper surface of the bedrock. Weathered seams were also encountered with the Limestone and the Shale.

Waste Acceptance Criteria (WAC) testing was carried out on soil samples. In RC-8 and W-2, the levels of sulphate, total dissolved solids, TPH and PAHs exceeded the inert waste WAC. However all of the levels were less than the non-hazardous WAC. In BH-12, which was located on the southeast perimeter of the site TPH and mercury were detected above the inert waste WAC in the upper fill sample; however the levels of these parameters in the underlying fill and natural ground were less than the inert WAC.

There was no evidence of significant contamination in any of the other samples and the tested parameters, where detected, are at levels generally below the inert WAC.

The groundwater table was found to be between +0.1 and +0.5m OD Malin, within the overburden and the bedrock. Groundwater samples were collected from four groundwater monitoring wells (OW-1 Subsoils, OW-1 Bedrock, RC-16 Subsoils and RC-16 Bedrock) and sent to the STL laboratory in Santry for analysis.

The range of parameters tested included dissolved metals (arsenic, antimony, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, tin and zinc), sodium, chloride, potassium, magnesium, sulphate, sulphide, total hardness, bicarbonate, TPH, BTEX and PAH.

Elevated PAH levels were detected in the groundwater wells immediately to the south but not within the portion of the site where deep excavation will occur.

7.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

7.4.1 Dublin Central Masterplan

The Dublin Central Masterplan is divided into six sites. The overall development site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. The development is a mixed use development, and includes office, hotel, residential, café / restaurant and retail spaces. There is also provision made in Site 2AB and Site 2C for a proposed Metrolink station, to be implemented separately by Transport Infrastructure Ireland (TII). A breakdown of the schedule of accommodation is shown in the Table below: -

	Site 1	Site 2AB	Site 2C	Site 3	Site 4	Site 5	Total
Use	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**
Office	3,610	17,484	17,029	-	295	5,799	**44,217**
Hotel	8,094	-	-	7,175	-	-	**15,270**
Residential	-	-	-	6,452	1,454	-	**7,906**
Retail	-	1,876	1,255	1,954	617	-	**5,672**
Café / Restaurant	-	625	150	138	864	679	**2,456**
Cultural / Gallery / Cafe	-	-	-	123	-	-	**123**
Extension to National Monument for ancillary use to National Monument – a cultural facility	-	-	-	-	60	-	**60**
Metro Enabling Works	-	555	831	-	-	-	**1,386**
Total	**11,704**	**20,541**	**19,235**	**15,842**	**3,290**	**6,478**	**77,090**

Table 7.1: Schedule of Accommodation by Site.

The blocks which form the six sites of the Dublin Central Masterplan are highly interconnected, and as such a holistic approach has been taken in preparing this EIAR.

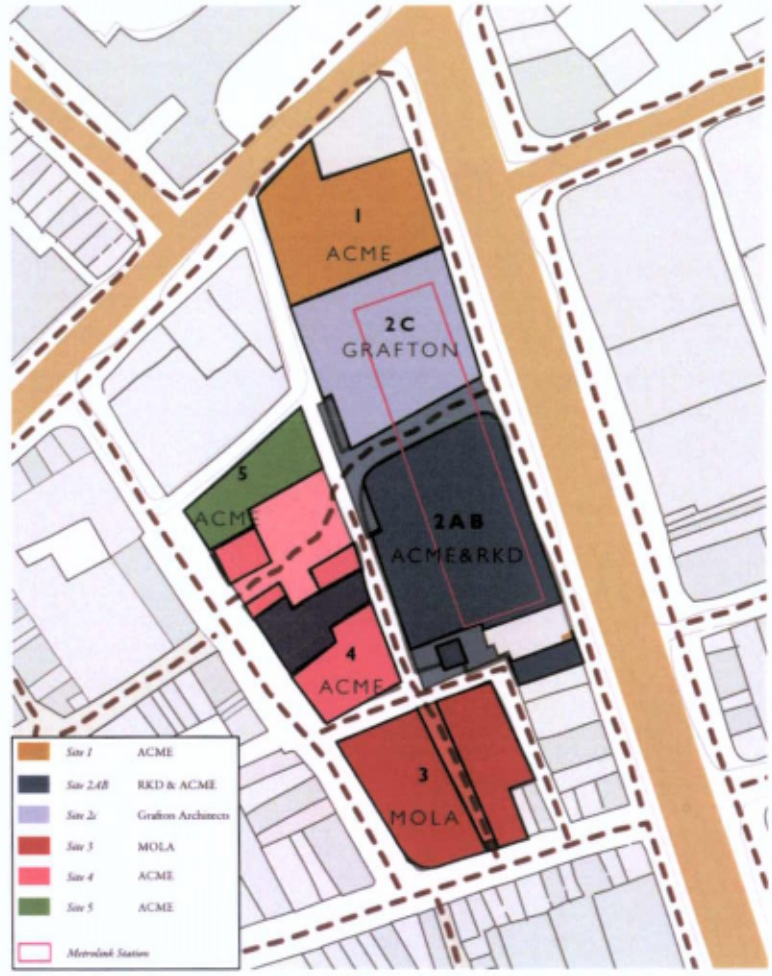


Figure 7.5: Dublin Central Masterplan with each Site identified.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

7.4.2 Proposed Development – Site 3, 4 & 5

7.4.2.1 Site 3

The Proposed Development comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses (c. 15,842 sq. m gross floor area) in 2no. blocks ranging in height from 1 – 9 storeys over 2no. new independent single storey basements. Provision of a new street/laneway linking Henry Street with Henry Place/Moore Lane.

7.4.2.2 Site 4

The Proposed Development comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument/Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. Provision of a part of the new public plaza and archway onto new public square.

7.4.2.3 Site 5

The Proposed Development comprises a mixed-use scheme accommodating office and café / restaurant uses (c. 6,478 sq. m gross floor area) in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

The Proposed Development, with respect to soils and geology, includes the following characteristics: -

- Excavation of basements and foundations.
- Excavation of drainage sewers and utilities.
- Minor regrading and landscaping.
- Disposal of any surplus excavated soils including any contaminated material.

7.5 POTENTIAL IMPACTS

7.5.1 Dublin Central Masterplan

7.5.1.1 Construction Stage

The removal of topsoil during earthworks and the construction of roads, services and buildings, in particular basements and foundations, will expose subsoil to weathering and may result in the erosion of soils during adverse weather conditions. Surface water runoff from the surface of the excavated areas may result in silt discharges to the River Liffey.

Excavations for foundations, remaining roadworks and services will result in a surplus of subsoil. Surplus subsoil will be used in fill areas where applicable.

Dust from the site and from soil spillages on the existing road network around the site may be problematic, especially during dry conditions.

Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures.

7.5.1.2 Operational Stage

During the operational stage of the development it is not envisaged that there will be any ongoing impacts on the underlying soil as a result of the Proposed Development. Any hydro-geological impacts are temporary and associated with the construction of the Proposed Development.

7.5.1.3 Do-Nothing Impact

There is no impact on the soils and geology in the do-nothing scenario.

7.5.2 Proposed Development – Site 3, 4 & 5

7.5.2.1 Construction Stage

The potential impacts of the Proposed Development are the same as the potential impacts of the Dublin Central Masterplan described in Section 7.5.1.1.

7.5.2.2 Operational Stage

The potential impacts of the Proposed Development are the same as the potential impacts of the Dublin Central Masterplan described in Section 7.5.1.2.

7.5.2.3 Do-Nothing Impact

The do-noting impact of the Proposed Development is the same as the do noting impact of the Dublin Central Masterplan described in Section 7.5.1.3.

7.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

7.6.1 Dublin Central Masterplan

7.6.1.1 Construction Stage

To reduce the quantity of soil to be removed from or imported into the site, the floor levels of the proposed buildings and roads are designed to match existing levels and minimise the cut and fill balance. The number of vehicle movements offsite will be minimised by this optimisation. However, given that there are significant basement areas proposed, including the proposed underground Metrolink station, it is anticipated that there will be a significant surplus of soil to be removed from the site.

Surplus subsoil and rock that may be required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill. A Construction Management Plan will need to include protocols for soil removal and should be implemented by the development's main contractor during the construction stage.

Where contaminated soils are encountered during the works, they will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998-2006, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

The provision of wheel wash facilities at the construction entrances to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from the development site on the existing public roads.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding of standing water within the basement and other excavations.

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing combined drainage system which discharges to the Dublin Wastewater Treatment Plant at Ringsend. Straw bales will be used at the outfall to filter surface water to remove contaminants.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

After implementation of the above measures, the Proposed Development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction stage to control the above remedial measures.

7.6.1.2 Operational Stage

No mitigation measures for soils or geology will required during the operational stage.

7.6.2 Proposed Development – Site 3, 4 & 5

7.6.2.1 Construction Stage

The mitigation measures for the Proposed Development are the same as the mitigation measures set out for the Dublin Central Masterplan described in Section 7.6.1.1.

7.6.2.2 Operational Stage

No mitigation measures for soils or geology will required during the operational stage.

7.7 RESIDUAL IMPACT

7.7.1 Dublin Central Masterplan

7.7.1.1 Construction Stage

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will be minimised.

The Proposed Development will result in a surplus of excavated material, which may contain contaminants. Any contaminated material will be exported to an approved licensed waste facility.

No significant adverse impacts on the soils and geology of the subject lands are envisaged.

7.7.1.2 Operational Stage

During the operational stage, the buildings and public realm will be an urban environment, largely covered in roof and hard standing. Some areas with permeable paving, tree pits and green planting will allow for some surface water to permeate the soil. These SuDS devices treat and improve water quality by trapping suspended solids and filtering pollutants before they enter the soil.

No likely significant adverse impacts are predicted on soils or geology.

7.7.1.3 Worst Case Impact

The worst case scenario would be for contaminated soils to be encountered during the works. As noted above, any contaminated soils encountered will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998 – 2006, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the worst case scenario, subsoil may be exposed to inclement weather during construction and may result in the erosion of soils. However, with the proposed mitigation measures the quantity of soils exposed and the duration of that exposure will be minimised.

7.7.2 Proposed Development – Site 3, 4 & 5

7.7.2.1 Construction Stage

The residual impacts for the Proposed Development are the same as the residual impacts described for the Dublin Central Masterplan described in Section 7.7.1.1.

7.7.2.2 Operational Stage

The residual impacts for the Proposed Development are the same as the residual impacts described for the Dublin Central Masterplan described in Section 7.7.1.2.

7.7.2.3 Worst Case Impact

The worst case impact for the Proposed Development are the same as the worst case impact described for the Dublin Central Masterplan described in Section 7.7.1.3.

7.8 MONITORING

7.8.1 Dublin Central Masterplan

7.8.1.1 Construction Stage

Monitoring during the construction stage is recommended, in particular in relation to the following: -

- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to the existing drainage network.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures close to the boundaries of the site, when required due to unusually dry weather conditions.

During the operational stage, the surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation system) will need to be regularly maintained and where required cleaned out. A suitable

maintenance regime of inspecting and cleaning should be incorporated into the safety file / maintenance manual for the development.

7.8.1.2 Operational Stage

Not applicable.

7.8.2 Proposed Development – Site 3, 4 & 5

7.8.2.1 Construction Stage

The monitoring for the Proposed Development is the same as the monitoring for the Dublin Central Masterplan described in Section 7.8.1.1.

7.8.2.2 Operational Stage

Not applicable.

7.9 REINSTATEMENT

7.9.1 Dublin Central Masterplan

Trenches opened during construction will be backfilled with subsoil to reinstate existing ground levels. Upon completion no impact is foreseen.

7.9.2 Proposed Development Site 3, 4 & 5

The reinstatement for the Proposed Development is the same as the reinstatement for the Dublin Central Masterplan described in Section 7.9.1.

7.10 DIFFICULTIES ENCOUNTERED

There were no difficulties encountered when undertaking this assessment.

8

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

8 WATER

8.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact on the network of water (water supply, foul drainage, surface water) in the vicinity of the Proposed Development. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 8.1 below indicating the Dublin Central Masterplan area) which will be assessed also. The chapter also sets out mitigation and remedial measures and methods of monitoring while the development is operational.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

This chapter was completed by Stephen Dent-Neville and Joe Gibbons of Waterman Moylan Consulting Engineers. Stephen is a Chartered Engineer with 8 years' experience and Joe is a Chartered Engineer with 35 years' experience.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

8.2 ASSESSMENT METHODOLOGY

8.2.1 Water Supply

Research for this section included a review of the existing watermain layout from Irish Water / Dublin City Council records for the area.

8.2.2 Foul Water Drainage

Research for this section included a review of the existing foul water layout from Irish Water / Dublin City Council records for the area.

8.2.3 Surface Water Drainage

Research for this section included a review of Ordnance Survey and Topographical surveys of the subject site and surrounding area and a review of the existing surface water layout from Irish Water / Dublin City Council records for the area.

8.3 RECEIVING ENVIRONMENT

8.3.1 Water Supply

There are a number of existing interconnected water supply mains in the vicinity of the Dublin Central Masterplan site, including: -

- A 200mm ductile iron main in Moore Street, constructed in 1986.
- A 350mm ductile iron main in Parnell Street, constructed in 1986.
- A 250mm ductile iron main on the western side of O'Connell Street Upper, constructed in 2006.
- A 12-inch (c. 300mm) cast iron main on the northern side of Henry Street, constructed in 1900.
- A 6-inch (c. 150mm) cast iron main on the southern side of Henry Street, constructed in 1900.
- A 125mm HDPE main in Henry Place, constructed in 2019.
- A 4-inch (c. 100mm) cast iron main in Moore Lane, constructed in 1900.
- A 110mm HPPE main in O'Rahilly Parade, constructed in 2007.

Existing buildings at the subject site are currently fed water by various connections to this existing network.

8.3.2 Foul Water Drainage

The drainage network surrounding the Dublin Central Masterplan site consists of combined foul and surface water sewers. There are a number of existing combined sewers in the vicinity of the subject Dublin Central Masterplan site, including: -

- A brick sewer conveying flows in a southerly direction along Moore Street, varying in size from 2220mm x 1200mm at Parnell Street to the north to 2160mm x 1230mm at Henry Street to the south.
- This brick sewer continues east along Henry Street, where it reduces in size to 1860mm x 730mm.
- A brick sewer conveying flows in a southerly direction along O'Connell Street Upper, varying in size from 1670mm x 970mm near the north-east corner of the site to 2200 x 760 near the south-eastern corner, where it connects with the sewer coming from Henry Street and both continue east away from the site along North Earl Street.
- A 1200mm concrete sewer in Parnell Street flowing west.
- An 810mm x 510mm brick sewer in Henry Place, connected to the Henry Street sewer.
- An 810mm x 510mm brick sewer in Moore Lane flowing south to the sewer in Henry Place.
- A 300mm vitrified clay sewer in Moore Lane, flowing west to the brick sewer in Moore Street.
- A 300mm concrete sewer on the eastern side of O'Rahilly Parade, flowing westwards into a 300mm concrete sewer at the eastern side of O'Rahilly Parade, connected to the Moore Street brick sewer.

Foul and surface water currently run uncontrolled / unattenuated from the Dublin Central Masterplan site, discharging to the existing combined network via several connections.

8.3.3 Surface Water Drainage

The Dublin Central Masterplan site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. The site is generally flat, at a level of approximately 5m OD Malin.

The surrounding drainage network consists of combined foul and surface water sewers, as described in Section 8.3.2 above. Foul and surface water currently run uncontrolled / unattenuated from the subject site, discharging to the existing combined network via several connections.

In addition to this combined network, there are also some separated surface water sewers in the vicinity of the site. There is a 225mm concrete sewer in Parnell Street, increasing to 300mm near the intersection with Dominick Street Lower. There is a 375mm concrete surface water sewer in Henry Street approximately 110m west of the site's southern boundary.

8.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

8.4.1 Dublin Central Masterplan

The Dublin Central Masterplan site is divided into six separate sites. The overall development site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west.

The development is a mixed use development, and includes office, hotel, residential, café / restaurant and retail spaces. There is also provision made in Site 2AB and Site 2C for a proposed Metrolink station, to be implemented separately by Transport Infrastructure Ireland (TII). A breakdown of the schedule of accommodation is shown in the Table below: -

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

	Site 1	Site 2AB	Site 2C	Site 3	Site 4	Site 5	Total
Use	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**
Office	3,610	17,484	17,029	-	295	5,799	**44,217**
Hotel	8,094	-	-	7,175	-	-	**15,270**
Residential	-	-	-	6,452	1,454	-	**7,906**
Retail	-	1,876	1,255	1,954	617	-	**5,672**
Café / Restaurant	-	625	150	138	864	679	**2,456**
Cultural / Gallery / Cafe	-	-	-	123	-	-	**123**
Extension to National Monument for ancillary use to National Monument – a cultural facility	-	-	-	-	60	-	**60**
Metro Enabling Works	-	555	831	-	-	-	**1,386**
Total	**11,704**	**20,541**	**19,235**	**15,842**	**3,290**	**6,478**	**77,090**

Table 8.1: Schedule of Accommodation by 'Site' within the Dublin Central Masterplan.



Figure 8.1: Dublin Central Masterplan with each Site identified.

8.4.1.1 Water Supply

It is proposed to supply water to each site within the Dublin Central Masterplan via new metered connections to the existing watermain network.

An estimate of the water demand from the public water supply system for the Dublin Central Masterplan is shown in the Table below. An approximate allocation has been made for the Metrolink project also to provide a more robust assessment of water demand.

The average domestic demand has been established based on an average occupancy ratio of 2.7 persons per dwelling with a daily domestic per capita consumption of 150 litres per head per day and with a 10% allowance factor. Note that the Irish Water Code of Practice assumes 2.7 residents per unit regardless of the unit type. In the case of the subject development, the residential units are studio, 1-bed and 2-bed apartments, so 2.7 persons per unit is considered a very conservative estimate and the actual number of residents will likely be much lower.

The average day / peak week demand has been taken as 1.25 times the average daily domestic demand, while the peak demand has been taken as 5 times the average day / peak week demand, as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure.

Description		Quantity	Total Population	Per Capita Water Demand	Water Demand	Average Demand	Average Peak Demand	Peak Demand
			No. People	*l/hd/day*	*l/day*	*l/s*	*l/s*	*l/s*
Office	**Staff**	1 staff per 10m² GFA	4,422 Staff	90	437,748	5.067	6.333	31.666
Hotel	**Guests**	325 Rooms	650 Customers	250	178,750	2.069	2.586	12.930
	Staff	1 staff per 5 rooms	65 Staff	90	6,435	0.074	0.093	0.465
Residential	**Residents**	100 Apartments	270 Residents	150	44,550	0.516	0.645	3.223
Food & Beverage	**Customers**	1 customer per 3m² GFA	819 Customers	30	27,017	0.313	0.391	1.954
	Staff	1 staff per 15m² GFA	164 Staff	45	8,105	0.094	0.117	0.586
Retail	**Customers**	1 customer per 5m² GFA	1,134 Customers	15	18,718	0.217	0.271	1.354
	Staff	1 staff per 15m² GFA	378 Staff	45	18,718	0.217	0.271	1.354
Metro	**Public Restrooms**	2 Toilet Blocks	250 Uses	10	2,750	0.032	0.040	0.199
	Staff	25 Full Time Staff	25 Staff	90	2,475	0.029	0.036	0.179
Total					**745,267**	**8.626**	**10.782**	**53.911**

Table 8.2: Estimate of the Water Demand for the Dublin Central Masterplan.

Based on these figures, the water demand that will be generated by the Dublin Central Masterplan is approximately 8.626l/s, or 745.29m³ per day.

A pre-connection enquiry was submitted to Irish Water in October 2020 to confirm whether there is adequate capacity in the existing water supply network to cater for the all the sites within the Dublin Central Masterplan. The enquiry is still under assessment by Irish Water.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

8.4.1.2 Foul Water Drainage

An estimate of the foul water discharge rate from the Dublin Central Masterplan to the public drainage network is shown in the Table below. An approximate allocation has been made for the Metrolink project also to provide a more robust assessment of water demand.

Domestic wastewater loads have been calculated based on 2.7 persons per unit with a per capita wastewater flow of 150 litres per head per day along with a 10% unit consumption allowance, in line with Section 3.6 of the Irish Water Code of Practice for Wastewater Infrastructure. Note that the Irish Water Code of Practice assumes 2.7 residents per unit regardless of the unit type. In the case of the subject development, the residential units are studio, 1-bed and 2-bed apartments, so 2.7 persons per unit is considered a very conservative estimate and the actual number of residents will likely be much lower.

Per capita wastewater flows for the commercial areas have been based on the flow rates set out in Appendix C of the Code of Practice, and a peak flow multiplier of 6 has been used, as per Section 2.2.5 of Appendix B of the Code of Practice.

Description		Quantity	Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
			No. People	*l/hd/day*	*l/day*	*l/s*	*l/s*
Office	**Staff**	1 staff per 10m² GFA	4,422 Staff	90	437,748	5.067	30.399
Hotel	**Guests**	325 Rooms	650 Customers	250	178,750	2.069	12.413
	Staff	1 staff per 5 rooms	65 Staff	90	6,435	0.074	0.447
Residential	**Residents**	100 Apartments	270 Residents	150	44,550	0.516	3.094
Food & Beverage	**Customers**	1 customer per 3m² GFA	819 Customers	30	27,017	0.313	1.876
	Staff	1 staff per 15m² GFA	164 Staff	45	8,105	0.094	0.563
Retail	**Customers**	1 customer per 5m² GFA	1,134 Customers	15	18,718	0.217	1.300
	Staff	1 staff per 15m² GFA	378 Staff	45	18,718	0.217	1.300
Metro	**Public Restrooms**	2 Toilet Blocks	250 Uses	10	2,750	0.032	0.191
	Staff	25 Full Time Staff	25 Staff	90	2,475	0.029	0.172
Total					**745,267**	**8.626**	**51.755**

Table 8.3: Foul Discharge Rate for the Dublin Central Masterplan.

Dry Weather Flow (DWF) from the Development = 8.626 l/s

Peak Flow (6 x DWF) = 51.755 l/s

It is proposed to drain wastewater from each site within the Dublin Central Masterplan via new connections to the existing combined drainage network.

A pre-connection enquiry was submitted to Irish Water in October 2020 to confirm whether there is adequate capacity in the existing drainage network to cater for the Proposed Development. The enquiry is still under assessment by Irish Water.

8.4.1.3 Surface Water Drainage

It is proposed to drain surface water from Dublin Central Masterplan site to the existing public surface water sewer at Parnell Street where feasible, and elsewhere to the adjacent combined network.

Dublin Central Masterplan incorporates a Storm Water Management Plan within each Site through the use of various SuDS techniques. Treatment and storage of surface water at source will intercept and slow down the rate of runoff from the site to the existing surface water sewer system.

Based on three key elements, Water Quantity, Water Quality and Amenity, the targets of the SuDS train concept have been implemented in the design. The SuDS devices proposed within and around the individual sites include green and blue roofing, permeable paving, tree pits and planted areas, underground attenuation and flow control devices.

Attenuation storage is provided to limit the discharge rate from the site into the public network. As per the GDSDS, the required attenuation volume is calculated assuming 100% runoff from paved areas, and has been calculated for the 1-year, 30-year and 100-year return periods, identifying the critical storm for each. Surface water runoff will be restricted via a hydro-brake or similar approved flow control device, limited to 2 l/s for each Site.

8.4.2 Proposed Development – Site 3, 4 & 5

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR. The following is a broad outline of the development of each site: -

- Site 3: The Proposed Development comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses (c. 15,842 sq. m gross floor area) in 2no. blocks ranging in height from 1 – 9 storeys over 2no. new independent single storey basements. Provision of a new street/laneway linking Henry Street with Henry Place / Moore Lane.
- Site 4: The Proposed Development comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument/Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. Provision of a part of the new public plaza and archway onto new public square.
- Site 5: The Proposed Development comprises a mixed-use scheme accommodating office and café / restaurant uses (c. 6,478 sq. m gross floor area) in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

8.4.2.1 Water Supply

It is proposed to supply water to the subject blocks via new metered connections to the existing watermain network, as indicated on the watermain layout drawings which accompany this submission. Water supply will be provided for each site as follows: -

- Site 3: It is proposed to provide two new metered water supply connections to serve the development, one for Block A and one for Block B. The Block A connection will be made to the existing 12" main in Henry Street, to the south of the site. To serve Block B, it is proposed to construct a new loop in Henry Place connected to the existing 200mm main in Moore Street.
- Site 4: It is proposed to provide two new metered water supply connections to serve the development, one for the northern portion of the site and another for the southern portion. The southern block will connect to the new loop in Henry Place, which is proposed as part of the Site 3 development. The northern portion of the site will be connected directly to the existing 200mm ductile iron main in Moore Street.
- Site 5: It is proposed to provide one new metered water supply connection to serve the development, at the location of the existing connection to the 110mm main in O'Rahilly Parade.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

8.4.2.2 Foul Water Drainage

It is proposed to drain wastewater from the subject development to the existing combined network. Any existing drainage connections at the sites are to be decommissioned, with the existing drain capped from within the site to decommission the pipe. Although the existing drainage infrastructure comprises of combined foul and surface water sewers, private foul and surface water will be drained on completely separate systems throughout the development (refer also to Section 8.4.2.3 below). Foul water will be drained from each site as follows: -

- Site 3: It is proposed to provide two new 225mm connections to the existing public network, one for Block A and one for Block B. The Block A connection will be made to the existing sewer in Henry Street, to the south of the site, while the Block B connection will be to the 300mm sewer to the north. A new manhole will be constructed at each of the two connection points.
- Site 4: It is proposed to provide two new 225mm connections to the existing public network, one for the northern portion of the site and one for the southern portion. The southern block will connect to the existing 300mm vitrified clay sewer to the south of the site. The northern portion of the site will discharge wastewater to the existing brick sewer on Moore Street via a new connection. A new manhole will be constructed at each of the two connection points.
- Site 5: It is proposed to provide one new 225mm connection to the existing public network in O'Rahilly Parade. A new manhole will be constructed at the connection point.

8.4.2.3 Surface Water Drainage

The option to discharge surface water from each site to the public surface water sewers in Henry Street and in Parnell Street were examined. However, given the depths of these existing sewers and given the flat gradients of the surrounding road network, it was determined only to be feasible for Site 5 to discharge to the surface water network. Sites 3 and 4 will discharge surface water to the existing combined network.

Under the proposed scheme, surface water discharges will be restricted through the use of flow control devices, and each site will incorporate suitable attenuation for the 1-in-100 year storm. Appropriate Sustainable Drainage System (SuDS) measures are proposed, including the use of green roofs, blue roofs and tree pits. These surface water proposals will significantly reduce the rate of surface water runoff to the existing combined network compared to the current scenario.

Surface water will be drained from each site as follows: -

- Site 3: It is proposed to drain surface water to the existing public combined water sewer adjacent to the site in Moore Lane. Surface water will discharge from Site at a controlled rate limited to the practical minimum rate of 2l/s. Attenuation storage is to be provided at blue roofs and in an underground tank.
- Site 4: It is proposed to drain surface water to the existing public combined water sewer adjacent to the site in Moore Street. Two surface water connections are proposed to the existing combined sewer; one for the portion of the site south of the National Monument at 14-17 Moore Street and another for the portion of the site to the north of the National Monument. Surface water will discharge from each of these catchments a controlled rate limited to the practical minimum rate of 2l/s. Attenuation storage is to be provided at blue roofs and in two underground tanks, one for the northern portion of the site and another for the southern portion.
- Site 5: New surface water drains will be laid along O'Rahilly Parade towards Moore Street, continuing north along Moore Street to the existing sewer in Parnell Street. Surface water will discharge from the Site at a controlled rate limited to the practical minimum rate of 2l/s. Attenuation storage is to be provided at blue roofs and in an underground tank.

8.5 POTENTIAL IMPACTS

8.5.1 Dublin Central Masterplan

8.5.1.1 Water Supply

8.5.1.1.1 Construction Stage

Many of the existing buildings within the Dublin Central Masterplan site are currently occupied and in use. Although there will be some water demand for site offices, commencement of construction will result in a net decrease in the water demand for the site.

There is a risk of contamination to the existing water supply during connection of the individual sites watermains within the Dublin Central Masterplan to the public water supply.

8.5.1.1.2 Operational Stage

During the operational stage of the Dublin Central Masterplan, there will be an increase in demand for water from the public water supply.

8.5.1.2 Foul Water Drainage

8.5.1.2.1 Construction Stage

During the construction of the new foul sewers there is the potential for surface water to be discharged to the existing public foul sewer system due to pipes and manholes being left open.

There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers.

8.5.1.2.2 Operational Stage

There will be a net peak foul water flow of 52l/s discharging to the foul water system serving the Dublin Central Masterplan site. Foul and surface water currently flow uncontrolled / unattenuated from the Dublin Central Masterplan site to the existing combined network. The proposal will result in a net reduction in flows to the network.

There is a possibility of some surface water ingress into the foul water drainage system due to poor workmanship. There is also a possibility of leakage from sewers and drains within the Dublin Central Masterplan site and along the route to the outfall sewer. Any foul water leakage would result in local contamination of soil and ground waters in the area.

8.5.1.3 Surface Water Drainage

8.5.1.3.1 Construction Stage

Foul and surface water currently flow uncontrolled / unattenuated from Dublin Central Masterplan site to the existing combined network. The proposal will result in a net reduction in flows to the combined network.

There is a possibility of some surface water ingress into the combined drainage system due to poor workmanship. There is also a possibility of leakage from sewers and drains within the Dublin Central Masterplan site and along the route to the outfall sewer. Any leakage would result in local contamination of soil and ground waters in the area.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

8.5.1.3.2 Operational Stage

The development of the Dublin Central Masterplan will result in a net reduction in the runoff volume through the introduction of SuDS devices and in a reduction in the runoff rate through the introduction of flow control devices and attenuation storage. However, the Dublin Central Masterplan site currently discharges surface water to the existing combined network, whereas the Dublin Central Masterplan will discharge from Site 5 to the existing separated surface water network. The increase in the runoff to the surface water network could therefore result in downstream flooding.

The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts, to the surface water system which might result in polluting of the surface water network.

8.5.1.4 Do-Nothing Impact

In the do-nothing scenario, surface water will continue to flow from the site uncontrolled and unrestricted to the existing combined network.

8.5.2 Proposed Development – Site 3, 4 & 5

8.5.2.1 Water Supply

The potential impacts on water supply of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.5.1.1.

8.5.2.2 Foul Water Drainage

The potential impacts on foul water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.5.1.2.

8.5.2.3 Surface Water Drainage

The potential impacts on surface water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.5.1.3.

8.5.2.4 Do-Nothing Impact

The do-noting impact of the Proposed Development (Sites 3, 4 and 5) is the same as the do noting impact of the Dublin Central Masterplan described in Section 8.5.1.4.

8.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

8.6.1 Dublin Central Masterplan

Mitigation measures will be implemented on a site by site basis in line with best practice standards. The relevant mitigation measures for Site 3, 4 & 5 are set out in Section 8.6.2 below. The same standards will be implemented as part of the development of the remaining sites within the Dublin Central Masterplan area.

8.6.2 Proposed Development – Site 3, 4 & 5

8.6.2.1 Water Supply

8.6.2.1.1 Construction Stage

A method statement setting out in detail the procedures to be used when working in the vicinity of existing watermains will be produced by the contractor for any construction works within the vicinity of watermains and for roads or services crossing watermains.

All watermains will be cleaned and tested in accordance with Irish Water guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out by, or under the supervision of, Irish Water

Potential negative impacts during construction stage will be short term only.

8.6.2.1.2 Operational Stage

Water meters will be installed at connection points, with locations to be agreed and approved by Irish Water, and these meters will be linked to Irish Water's monitoring system by telemetry. These meters will facilitate the early detection of unusual water usage in the network and identify potential leaks in the system.

All plumbing fixtures and fittings and sanitary wear to be installed within the development should be to the current best practice for water consumption to minimise future water usage.

It is not envisaged that any further remedial or reductive measures will be necessary on completion.

8.6.2.2 Foul Water Drainage

8.6.2.2.1 Construction Stage

In order to reduce the risk of defective or leaking foul sewers, the following remedial measures will be implemented: -

- All new foul sewers will be tested by means of an approved air test during the construction stage in accordance with Irish Waters Code of Practice and Standard Details.
- All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements.
- Foul sewers will be surveyed by CCTV to identify possible physical defects.
- The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.
- Prior to commencement of excavations in public areas, all utilities and public services will be identified and checked, to ensure that adequate protection measures are implemented during the construction stage.

8.6.2.2.2 Operational Stage

All foul drains will be tested and surveyed prior to connection to the public sewers to minimise the risk of uncontrolled ground water penetration or leakage of the foul water to ground water on the site.

Otherwise, no remedial or reductive measures are deemed to be necessary after completion of the development of the Dublin Central Masterplan, other than normal maintenance of the foul sewer system.

8.6.2.3 Surface Water Drainage

8.6.2.3.1 Construction Stage

The contractor will prepare and implement a Construction Management Plan which will outline the requirements for the storage and handling of fuel, including the refuelling of vehicles in designated refuelling zones to minimise the risk of spillages, and the impact of spillages should they occur.

The Construction Management Plan will also utilise sedimentation controls, including silt traps, tailings ponds and silt fences during the construction period.

All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and Building Control (Amendment) Regulations (BCAR) requirements. This will reduce the possibility of any cross connections being constructed.

8.6.2.3.2 Operational Stage

Surface water will be attenuated privately within each site of the Dublin Central Masterplan, and will discharge to the public network at a controlled rate limited to 2l/s from each site.

In addition, the SuDS devices outlined in Section 8.4.1.3 will reduce and slow down the rate of surface water runoff from each site within the Dublin Central Masterplan. This will minimise peak flows in the downstream system during major storm events. Gullies and the flow control devices shall be regularly maintained to avoid blockages.

The SuDS treatment train will also treat the surface water discharging to the public network, removing pollutants form the surface water runoff. Maintenance of these SuDS devices will be required to ensure that they continue to treat the surface water as designed.

8.7 RESIDUAL IMPACT

8.7.1 Dublin Central Masterplan

8.7.1.1 Water Supply

8.7.1.1.1 Construction Stage

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction stage of the implementation of the Dublin Central Masterplan on the water supply network.

8.7.1.1.2 Operational Stage

There will be a water demand for the implementation of the Dublin Central Masterplan of approximately 800m^3 per day. Irish Water will confirm whether the existing network has sufficient capacity, or alternatively will outline any upgrades required to facilitate the development.

8.7.1.2 Foul Water Drainage

8.7.1.2.1 Construction Stage

During the construction stage of implementation of the Dublin Central Masterplan some short term negative impacts as identified above may result. However, if the proposed remedial and reductive measures are implemented, the impact of the implementation of the Dublin Central Masterplan during the construction stage will be minimised and **no significant long term impacts** will result from the construction works.

8.7.1.2.2 Operational Stage

By removing surface water flows from the combined network, the implementation of the Dublin Central Masterplan will result in a net decrease in the wastewater flows discharging to the existing combined drainage system.

8.7.1.3 Surface Water Drainage

8.7.1.3.1 Construction Stage

During the construction stage of implementation of the Dublin Central Masterplan some short term negative impacts as identified above may result. However, if the proposed remedial and reductive measures are implemented, the impact of the implementation of the Dublin Central Masterplan during the construction stage will be minimised and **no significant long term impacts** will result from the construction works.

8.7.1.3.2 Operational Stage

With the implementation of the SuDS treatment train, attenuation and flow control, there will be a net improvement in the quality and a net reduction in the quantity of surface water discharging from the individual site within the Dublin Central Masterplan. The proposal to discharge Site 5 to the existing surface water network, rather than the combined network, will result in a significant decrease in flows to the combined network and a net increase in flows to the surface water network.

No significant adverse impacts are envisaged.

8.7.1.4 Worst Case Impact

In the worst case scenario, there could be some surface water ingress into the foul water drainage system due to poor workmanship. Leakage from sewers and drains could result in local contamination of soil and ground waters in the area. The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts, to the surface water system which might result in polluting of the surface water network. However, with the mitigation measures set out above, the likelihood of these impacts will be minimised, and **no significant long term impacts** will result from the development.

8.7.2 Proposed Development – Site 3, 4 & 5

8.7.2.1 Water Supply

The potential impacts on water supply of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.1.

8.7.2.2 Foul Water Drainage

The potential impacts on foul water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.2.

8.7.2.3 Surface Water Drainage

The potential impacts on surface water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.3.

8.7.2.4 Worst Case Impact

The worst case impact of the Proposed Development (Sites 3, 4 and 5) is the same as the do noting impact of the Dublin Central Masterplan described in Section 8.5.1.4.

8.8 MONITORING

8.8.1 Dublin Central Masterplan

Monitoring will be implemented on a site by site basis in line with best practice standards. The relevant mitigation measures for Site 3, 4 & 5 are set out in Section 8.8.2 below. The same standards will be implemented as part of the development of the remaining sites within the Dublin Central Masterplan area.

8.8.2 Proposed Development – Site 3, 4 & 5

8.8.2.1 Water Supply

Water usage and potential leakage will be monitored by Irish Water using the water meters which will be installed on the supply pipes so that the development can be monitored in sections. The location of these meters will be agreed with Irish Water and the meters will be linked to Irish Water's monitoring system via telemetry.

8.8.2.2 Foul Water Drainage

Following completion of construction of the Dublin Central Masterplan there are no monitoring requirements envisaged other than normal monitoring and maintenance of the wastewater system by Irish Water.

8.8.2.3 Surface Water Drainage

The surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation systems) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning shall be incorporated into the safety file/maintenance manual for the Dublin Central Masterplan.

8.9 REINSTATEMENT

8.9.1 Dublin Central Masterplan

Any existing roads and footpaths that are opened to facilitate water supply, foul water drainage and surface water drainage connections will be reinstated.

8.9.2 Proposed Development – Site 3, 4 & 5

The reinstatement for the Proposed Development (Sites 3, 4 and 5) is the same as the reinstatement for the Dublin Central Masterplan described in Section 7.9.1.

8.10 DIFFICULTIES ENCOUNTERED

There were no difficulties encountered when undertaking this assessment.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

9 CLIMATE (AIR QUALITY & CLIMATE CHANGE)

9.1 INTRODUCTION

This chapter assesses the likely air quality and climate impacts associated with the Proposed Development at O'Connell Street, Dublin 1. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan which will be assessed also. A full description of the development is available in Chapter 3: Description of Proposed Development.

This chapter was completed by Ciara Nolan, an environmental consultant in the air quality section of AWN Consulting Ltd. She holds an MSc. (First Class) in Environmental Science from University College Dublin and has also completed a BSc. in Energy Systems Engineering. She is an Associate Member of both the Institute of Air Quality Management (AMIAQM) and the Institution of Environmental Science (AMIEnvSc). She has been active in the field of air quality for 4 years, with a primary focus on consultancy.

9.2 ASSESSMENT METHODOLOGY

9.2.1 Criteria for Rating of Impacts

9.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set (see Table 9.1 and Appendix 9.1).

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011 (S.I. no. 180 of 2011), which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. The limit values for NO_2, PM_{10} and $PM_{2.5}$ are relevant to this assessment (see Table 9.1). Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions (see Appendix 9.1).

Pollutant	Regulation Note 1	Limit Type	Value
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health – not to be exceeded more than 18 times / year.	200 µg/m³
		Annual limit for protection of human health.	40 µg/m³
		Critical level for protection of vegetation.	30 µg/m³ $NO + NO_2$
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health – not to be exceeded more than 35 times / year.	50 µg/m³
		Annual limit for protection of human health.	40 µg/m³
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health.	25 µg/m³

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC.

Table 9.1: Air Quality Standards Regulations.

9.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 9.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the Bergerhoff limit of 350 mg/(m^2*day) to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the Proposed Development.

9.2.1.3 Climate Agreements

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C. The aim is to limit global GHG emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to GHG emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action post 2020. Significant progress was also made in the Paris Agreement on elevating adaption onto the same level as action to cut and curb emissions.

In order to meet the commitments under the Paris Agreement, the EU enacted *Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013* (the Regulation). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. Ireland's obligation under the Regulation is a 30% reduction in non-ETS greenhouse gas emissions by 2030 relative to its 2005 levels.

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland '*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*' (3.(1) of No. 46 of 2015). This is referred to in the Act as the '*national transition objective*'. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The *Climate Action Plan* (CAP) (Government of Ireland, 2019), published in June 2019, outlines the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlines the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The CAP also details the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The CAP has set a built environment sector reduction target of 40 – 45% relative to 2030 pre-NDP (National Development Plan) projections.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Following on from Ireland declaring a climate and biodiversity emergency in May 2019 and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme for the Climate Action (Amendment) Bill 2019 in December 2019 (Government of Ireland, 2019) followed by the publication of the Climate Action and Low Carbon Development (Amendment) Bill 2021 (hereafter referred to as the 2021 Climate Bill) in March 2021 (Government of Ireland, 2021). The 2021 Climate Bill was prepared for the purposes of giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Bill is to provide for the approval of plans '*for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050*'. The 2021 Climate Bill will also '*provide for carbon budgets and a decarbonisation target range for certain sectors of the economy*'. The 2021 Climate Bill defines the carbon budget as '*the total amount of greenhouse gas emissions that are permitted during the budget period*'.

The 2021 Climate Bill removes any reference to a national mitigation plan and instead refers to both the Climate Action Plan, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Environment Minister shall request each local authority to make a 'local authority climate action plan' lasting five years and to specify the mitigation measures and the adaptation measures to be adopted by the local authority.

The Dublin City Council Climate Change Action Plan published in 2019 (Dublin City Council and Codema, 2019) outlines a number of goals and plans to prepare for and adapt to climate change. There are five key action areas within the plan: energy and buildings, transport, flood resilience, nature-based solutions and resource management. Some of the measures promoted within the Action Plan under the 5 key areas involve building retrofits, energy master-planning, development of segregated cycle routes, the promotion of bike share schemes, development of flood resilient designs, promotion of the use of green infrastructure and water conservation initiatives. The implementation of these measures will enable the Dublin City Council area to adapt to climate change and will assist in bringing Ireland closer to achieving its climate related targets in future years. New developments need to be cognisant of the Action Plan and incorporate climate friendly designs and measures where possible.

9.2.2 Construction Phase

9.2.2.1 Air Quality

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site specific mitigation required. The use of UK guidance is considered best practice in the absence of applicable Irish guidance.

The major dust generating activities are divided into four types within the IAQM guidance (2014) to reflect their different potential impacts. These are: -

- Demolition.
- Earthworks.
- Construction.
- Trackout (movement of heavy vehicles).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. These are described below for each category as per the IAQM guidance (2014).

Demolition

Demolition will primarily involve the removal of buildings or structures currently on the site in a potentially dusty manner. This may also involve dust generation at heights. Dust emission magnitude from demolition can be classified as small, medium and large and are described below: -

- **Large**: Total building volume >50,000m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level.
- **Medium**: Total building volume 20,000m^3 – 50,000m^3, potentially dusty construction material, demolition activities 10 – 20m above ground level.
- **Small**: Total building volume less than 20,000m^3.

Earthworks

Earthworks typically involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. Dust emission magnitude from earthworks can be classified as small, medium and large and are described below: -

- **Large:** Total site area > 10,000m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8m in height, total material moved >100,000 tonnes.
- **Medium:** Total site area 2,500m^2 – 10,000m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes.
- **Small:** Total site area <2,500m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds < 4m in height, total material moved <20,000 tonnes, earthworks during wetter months.

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below: -

- **Large:** Total building volume >100,000 m^3, on-site concrete batching, sandblasting.
- **Medium:** Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching.
- **Small:** Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

Factors which determine the dust emission magnitude associated with trackout are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below: -

- **Large:** >50 HGV (>3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
- **Medium:** 10 – 50 HGV (>3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100 m.
- **Small:** <10 HGV (>3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site specific mitigation to be determined.

Construction phase traffic also has the potential to impact air quality and climate. The UK Highways Agency Design Manual for Roads and Bridges (DMRB) guidance (UK Highways Agency, 2019a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment. The use of the UK guidance is recommended by the TII (2011) in the absence of specific Irish guidance, this approach is considered best practice and can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more.
- Heavy duty vehicle (HDV) AADT changes by 200 or more.
- A change in speed band.
- A change in carriageway alignment by 5m or greater.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

In addition, the impact of construction activities on vehicle movements shall be assessed where construction activities are programmed to last for more than 2 years (UK Highways Agency, 2019a). The construction phase of the Proposed Development will last for over 2 years, in addition, the traffic associated with the overall Dublin Central Masterplan will increase the construction phase HDV AADT by over 200 on certain roads.

As a result, the impact of construction phase traffic emissions on local air quality was investigated using the UK Highways Agency DMRB screening model (2007). Air dispersion modelling of NO_2 emissions was undertaken for the worst case construction year of 2025. Only modelling of NO_2 was undertaken in detail as per the UK Highways Agency guidance (2019a). The traffic data used in the modelling assessment was obtained from Waterman Moylan, the consulting engineers on this project and is detailed in Table 9.2 below. Modelling was undertaken at 2 worst-case sensitive receptors within 200m of the impacted road links as per the DMRB guidance (UK Highways Agency, 2019a). These receptors are the Rotunda Hospital (R1) and an apartment building on the corner of Moore Street and Parnell Street (R2).

Road Name	Speed (kph)	% HGV	Do Nothing AADT	Do Something AADT
			Construction Year 2025	
Link 7 (Parnell St, east of Moore St)	30	2%	13,309	13,552
Link 9 (Parnell St, west of Moore St)	30	2%	13,309	13,552

Table 9.2: Construction Phase Traffic Data used in Air Quality Assessment

9.2.2.2 Climate

The impact of the construction phase of the development on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities associated with the Proposed Development.

9.2.3 Operational Phase

9.2.3.1 Air Quality

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the Proposed Development. The UK Highways Agency DMRB scoping criteria detailed in Section 9.2.2.1 was used to determine if any road links are affected by the Proposed Development and require inclusion in a detailed air dispersion modelling assessment. As there is minimal car parking associated with the Proposed Development it is not predicted to significantly change the existing traffic on the nearby road links. Therefore, according to the DMRB scoping criteria in section 9.2.2.1 none of the local road links can be classed as 'affected' and detailed air dispersion modelling of operational phase traffic emissions is not required as there is no potential for significant impacts to air quality.

9.2.3.2 Climate

Ireland has annual GHG targets which are set at an EU level and need to be complied with in order to reduce the impact of climate change. Impacts to climate as a result of GHG emissions are assessed against the targets set out by the EU under *Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013*. Which has set a target of a 30% reduction in non-ETS sector emissions by 2030 relative to 2005 levels.

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established by reference to EPA data on annual GHG emissions (see Section 9.3.3). Thereafter the impact of the Proposed Development on climate is determined. Emissions from road traffic associated with the Proposed Development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments *LA 114 Climate*. The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed project during the operational stage. During the operational phase, if any of the road links impacted by the Proposed Development meet the below criteria then further assessment is required.

- A change of more than 10% in AADT.
- A change of more than 10% to the number of heavy duty vehicles.
- A change in daily average speed of more than 20 km/hr.

The Proposed Development will not increase traffic by more than 10% AADT on any nearby road links, therefore, none of the above scoping criteria are met and a detailed climate assessment is not required as there is no potential for significant impacts to climate as a result of traffic emissions.

The EU guidance (2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. The Energy & Sustainability Statement, prepared by BDP in relation to the Proposed Development has been reviewed and used to inform the operational phase climate assessment. This report outlines a number of measures in relation to energy usage from the Proposed Development primarily in relation to heat and electricity. A number of measures have been incorporated into the overall design of the development to reduce the impact to climate where possible.

9.3 RECEIVING ENVIRONMENT

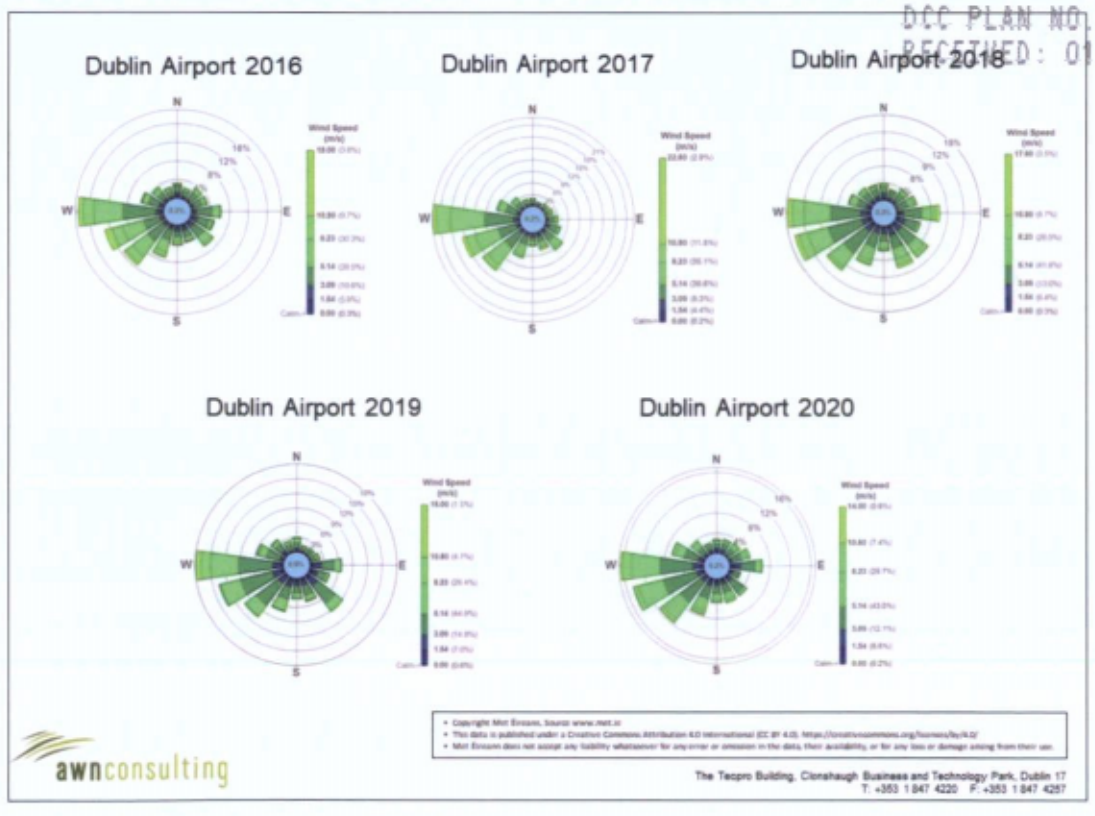
The receiving environment in terms of air quality and climate is the same for the Dublin Central Masterplan and each individual site of the development. Therefore, the following sections detail the existing air quality and climate environment and do not differentiate between the Dublin Central Masterplan or the individual sites of the Proposed Development being assessed within this EIAR chapter.

9.3.1 Meteorological Conditions

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (World Health Organisation, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds.

However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport, which is located approximately 8 km north of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 9.1). For data collated during five representative years (2016 – 2020), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.5 m/s over the period 1981 - 2010 (Met Eireann, 2021).



DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Figure 9.1: Dublin Airport Windrose 2016 – 2020.

9.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2019*" (EPA, 2020a). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2021).

As part of the implementation of the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2020a). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the Proposed Development site is within Zone A (EPA, 2020a). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the Proposed Development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

Long-term NO_2 monitoring was carried out at the Zone A suburban locations of Rathmines, Ballyfermot, Dun Laoghaire and Swords and the urban location of Winetavern Street for the period 2015 - 2019 (EPA, 2020a). Long term average concentrations are significantly below the annual average limit of 40 $\mu g/m^3$ for both the urban and suburban locations. Average results range from 13 – 22 $\mu g/m^3$ for the suburban background locations and from 27 – 37 $\mu g/m^3$ for the urban location of Winetavern Street. The NO_2 annual average for this five year period suggests an upper average limit of no more than 22 $\mu g/m^3$ (Table 9.3) as a background concentration for the suburban locations. Based on the above information and having regard to the Proposed Developments location within Dublin City Centre, a conservative estimate of the current background NO_2 concentration for the region of the Proposed Development is 25 $\mu g/m^3$.

Station	Station Classification	Averaging Period Note 1	Year				
			2015	2016	2017	2018	2019
Rathmines	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	18	20	17	20	22
		99.8th%ile 1-hr NO_2 ($\mu g/m^3$)	105	88	86	87	102
Ballyfermot	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	16	17	17	17	20
		99.8th%ile 1-hr NO_2 ($\mu g/m^3$)	127	90	112	101	101
Dun Laoghaire	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	16	19	17	19	15
		99.8th%ile 1-hr NO_2 ($\mu g/m^3$)	91	105	101	91	91
Swords	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	13	16	14	16	15
		99.8th%ile 1-hr NO_2 ($\mu g/m^3$)	93	96	79	85	80
Winetavern Street	Urban Traffic	Annual Mean NO_2 ($\mu g/m^3$)	31	37	27	29	28
		99.8th%ile 1-hr NO_2 ($\mu g/m^3$)	128	120	110	115	115

Note 1 Annual average limit value of 40 $\mu g/m^3$ and hourly limit value of 200 $\mu g/m^3$ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Table 9.3: Trends in Zone A Air Quality – NO_2

Continuous PM_{10} monitoring was carried out at the Zone A locations of Winetavern Street, Rathmines, Dun Laoghaire, Ballyfermot and Phoenix Park from 2015 – 2019. These showed an upper average limit of no more than 15 µg/m³ (Table 9.4). Levels range from 9 – 16 µg/m³ over the five year period with at most 9 exceedances of the 24-hour limit value of 50 µg/m³ in Rathmines and Winetavern Street in 2019 (35 exceedances are permitted per year) (EPA, 2020a). Sufficient data is available for the urban background location in the Phoenix Park to observe long-term trends in the data. Data from 2015 – 2019 suggests an upper average annual mean value of at most 12 µg/m³ as a background concentration at the Phoenix Park location. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 15 µg/m³.

Station	Station Classification	Averaging Period	Year				
			2015	2016	2017	2018	2019
Ballyfermot	Suburban Background	Annual Mean PM_{10} (µg/m³)	12	11	12	16	14
		24-hr Mean > 50 µg/m³ (days)	3	0	1	0	7
Dún Laoghaire	Suburban Background	Annual Mean PM_{10} (µg/m³)	13	13	12	13	12
		24-hr Mean > 50 µg/m³ (days)	3	0	2	0	2
Winetavern Street	Urban Traffic	Annual Mean PM_{10} (µg/m³)	14	14	13	14	15
		24-hr Mean > 50 µg/m³ (days)	4	2	3	1	9
Rathmines	Suburban Background	Annual Mean PM_{10} (µg/m³)	15	15	13	15	15
		24-hr Mean > 50 µg/m³ (days)	5	3	5	2	9
Phoenix Park	Urban Background	Annual Mean PM_{10} (µg/m³)	12	11	9	11	11
		24-hr Mean > 50 µg/m³ (days)	2	0	1	0	2

Note 1 Annual average limit value of 40 µg/m³ and 24-hour limit value of 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Table 9.4: Trends in Zone A Air Quality – PM_{10}

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Monitoring of both PM_{10} and $PM_{2.5}$ takes place at the station in Rathmines which allows for the $PM_{2.5}/PM_{10}$ ratio to be calculated. Average $PM_{2.5}$ levels in Rathmines over the period 2015 – 2019 ranged from 9 – 10 µg/m³, with a $PM_{2.5}/PM_{10}$ ratio ranging from 0.60 – 0.68 (EPA, 2020a). Based on this information, a conservative ratio of 0.7 was used to generate an existing $PM_{2.5}$ concentration in the region of the development of 10.5 µg/m³.

9.3.3 Climate Baseline

Anthropogenic emissions of greenhouse gases in Ireland included in the EU 2020 strategy are outlined in the most recent review by the EPA which details provisional emissions up to 2019 (EPA, 2020b). The data published in 2020 states that Ireland will exceed its 2019 annual limit set under the EU's Effort Sharing Decision (ESD), 406/2009/EC1 by an estimated 6.98 Mt. For 2019, total national greenhouse gas emissions are estimated to be 59.90 million tonnes carbon dioxide equivalent (Mt CO_2eq) with 45.71 MtCO_2eq of emissions associated with the ESD sectors for which compliance with the EU targets must be met. Agriculture is the largest contributor in 2019 at 35.3% of the total, with the transport sector accounting for 20.3% of emissions of CO_2.

GHG emissions for 2019 are estimated to be 4.5% lower than those recorded in 2018. Emission reductions have been recorded in 6 of the last 10 years. However, compliance with the annual EU targets has not been met for four years in a row. Emissions from 2016 – 2019 exceeded the annual EU targets by 0.29 MtCO_2eq, 2.94 MtCO_2eq, 5.57 MtCO_2eq and 6.98 MtCO_2eq respectively. Agriculture is consistently the largest contributor to emissions with emissions from the transport and energy sectors being the second and third largest contributors respectively in recent years.

The EPA 2020 GHG Emissions Projections Report for 2019 – 2040 (EPA 2020c) notes that there is a long-term projected decrease in greenhouse gas emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the National Development Plan (NDP) which was published in 2018 and the Climate Action Plan (CAP) published in 2019. Implementation of these are classed as a "*With Additional Measures scenario*" for future scenarios. A change from generating electricity using coal and peat to wind power and diesel vehicle engines to electric vehicle engines are envisaged under this scenario. While emissions are projected to decrease in these areas, emissions from agriculture are projected to grow steadily due to an increase in animal numbers. However, over the period 2013 – 2020 Ireland is projected to cumulatively exceed its compliance obligations with the EU's Effort Sharing Decision (Decision No. 406/2009/EC) 2020 targets by approximately 13.4 Mt CO_2eq under the *"With Existing Measures"* scenario and 12.6 Mt CO_2eq under the "With Additional Measures" scenario (EPA, 2020c).

9.3.4 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) prior to assessing the impact of dust from a Proposed Development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time or areas where users would expect a high level of amenity. Commercial properties, parks and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Figure 9.2 shows the sensitive receptors within 50m of the Dublin Central Masterplan area.

The surrounding land use in the vicinity of the Proposed Development site is predominantly commercial in nature which would typically be considered of medium sensitivity in terms of dust emissions. However, due to the location of the Proposed Development in the O'Connell Street area and the high level of tourism in the area, users would typically expect a high level of amenity. Therefore, the surrounding area would be considered high sensitivity in terms of dust soiling. It is estimated that there are over 100 receptors within 50m of the site due to the presence of a number of hotels, an apartment block, the Rotunda Hospital, and numerous commercial premises. Based on the IAQM criteria outlined in Table 9.5, the worst case sensitivity of the area to dust soiling is considered to be high.

Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<350
High	>100	High	**High**	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 9.5: Sensitivity of the Area to Dust Soiling Effects on People and Property

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity and the number of receptors affected within various distance bands from the construction works.

In terms of receptor sensitivity to human health impacts, the IAQM guidance defines high sensitivity receptors as "*locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day)*" (IAQM, 2014). Examples include residential properties, schools and hospitals. Office and shop workers are considered of medium sensitivity. Low sensitivity receptors are areas where exposure is transient such as public footpaths and shopping streets.

There are high, medium and low sensitivity receptors within close proximity to the Proposed Development site. However, for the purposes of this assessment the worst-case sensitivity has been used. It is estimated that there are between 10-100 high sensitivity receptors within 50m of the Proposed Development site, this includes the Rotunda Hospital and an apartment building on Moore Street. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the Proposed Development is 15 µg/m^3 (see Section 9.3.2). Based on the IAQM criteria outlined in Table 9.6, the worst case sensitivity of the area to human health is considered to be low.

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)				
			<20	<50	<100	<200	<350
High	< 24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	**Low**	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low	Low

Table 9.6: Sensitivity of the Area to Human Health Impacts.

DCC PLAN NO. 2861/21
REC'D: 01/06/2021

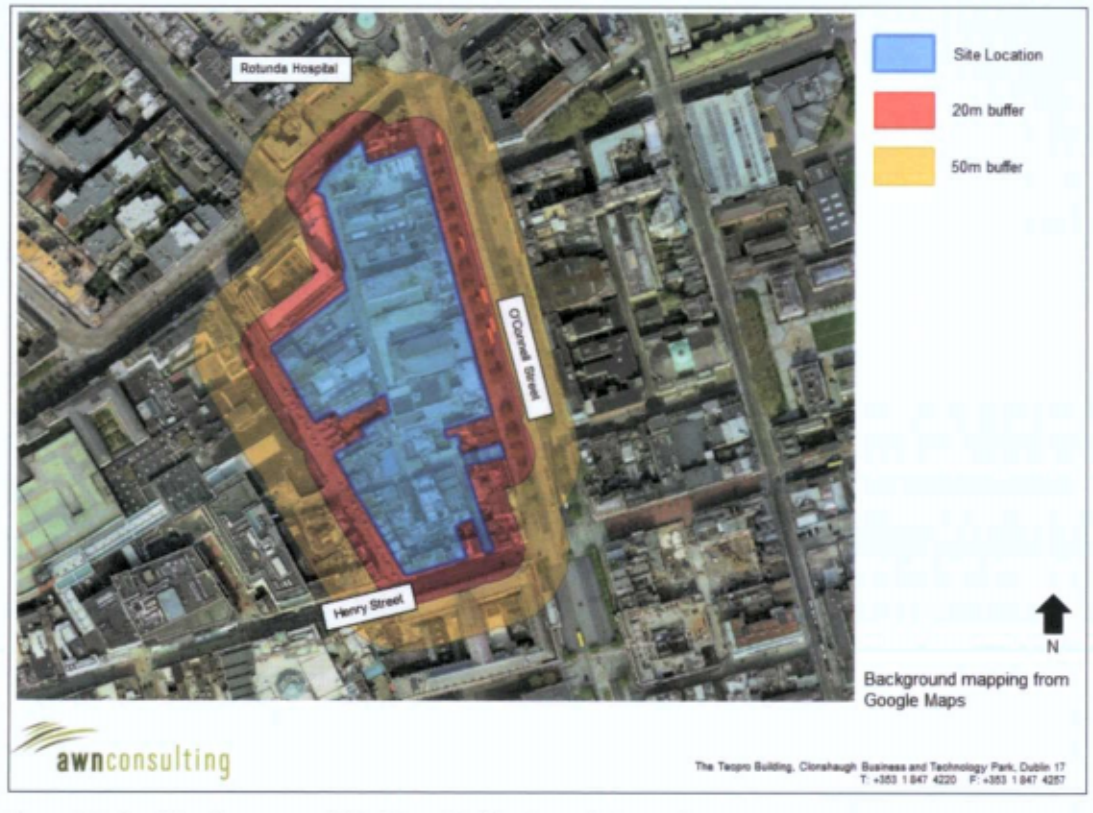


Figure 9.2: Sensitive Receptors within 50m of Dublin Central Masterplan area.

9.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

9.4.1 Dublin Central Masterplan

The Dublin Central Masterplan site is located within Dublin City Centre, it is bounded by O'Connell St. to the east, Parnell St. to the north, Moore St. to the west and Henry St. to the south. A full description of the development is provided in Chapter 3 – Description of Proposed Development.

Air quality and climate impacts have been considered for both the construction and operational phases of the Dublin Central Masterplan. During the demolition and construction phase of the Dublin Central Masterplan (which includes Site 3, Site 4 and Site 5) there will be different sources of potential air quality impacts, primarily construction dust emissions. Construction plant, machinery and site vehicles are a source of GHG emissions which have the potential to impact climate. The primary sources of air and climatic emissions in the operational context are deemed long term and will involve the change in traffic flows in the local areas which are associated with the development.

9.4.2 Proposed Development Site 3, 4 & 5

The Dublin Central Masterplan development is comprised of a number of individual sites (Site 1 – 5). Concurrent planning applications on Site 3, Site 4 and Site 5 are now being made. A full description of the development is provided in Chapter 3: Description of Proposed Development, a brief description is provided below.

The **Site 3** development comprises a mixed-use scheme in 2no. blocks ranging in height from one to nine storeys (over single storey basement) incorporating café / restaurant, retail, hotel, gallery / cultural and residential uses including the creation of a new street from Henry Street to Moore Lane.

The **Site 4** development comprises a mixed-use scheme ranging in height from one to three storeys (over single storey partial basement) incorporating café / restaurant, cultural, retail and residential uses and a new civic plaza (part).

The **Site 5** development comprises a mixed-use scheme ranging in height from three to six (over single storey partial basement) incorporating café / restaurant and office uses and a new civic plaza (part).

The potential air quality and climate impacts identified in Section 9.4 for the Dublin Central Masterplan area is also applicable to the Proposed Development (i.e. Site 3, Site 4 and Site 5). These include construction dust emissions and traffic and plant emissions associated with the proposed works.

9.5 POTENTIAL IMPACTS

9.5.1 Dublin Central Masterplan

9.5.1.1 Construction Stage

9.5.1.1.1 Air Quality

The greatest potential impact on air quality during the demolition and construction phase of the implementation of the Dublin Central Masterplan is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data (see Section 9.3.1) indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature. In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Dublin Airport indicates that on average 191 days per year have rainfall over 0.2 mm (Met Eireann, 2021) and therefore it can be determined that over 50% of the time dust generation will be reduced.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 9.3.4). The magnitude of each of the four dust generating activities: demolition, earthworks, construction and trackout has been determined below based on the Small, Medium or Large classifications outlined in Section 9.2.2.1.

Demolition

There is an amount of demolition work required for the implementation of the Dublin Central Masterplan with significantly greater than 50,000m^3 of buildings to be demolished. Therefore, the demolition works can be classified as large as per the criteria in Section 9.2.2.1. As the overall sensitivity of the area to dust soiling impacts is high there is a high risk of dust soiling impacts from the proposed demolition activities according to the IAQM guidance (see Table 9.7). There is an overall medium risk of human health impacts as a result of the demolition activities as the overall sensitivity of the area to human health impacts is low (Section 9.3.4).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 9.7: Risk of Dust Impacts - Demolition – Dublin Central Masterplan.

DCC PLAN NO. 2861/21
REC: 01/06/2021

Earthworks

Under the IAQM guidance (2014) the proposed earthworks can be classified as large as the total site area is greater than 10,000m^2 and there will be a large volume of material involved in infill and excavation works (see Section 9.2.2.1). The excavation of the Metro Enabling Works in Site 2AB and Site 2C in particular and basements will be the primary sources of excavated materials. This results in an overall high risk of dust soiling impacts and a low risk of human health impacts as a result of earthworks activities (see Table 9.8).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	**High Risk**	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	**Low Risk**	Low Risk	Negligible

Table 9.8: Risk of Dust Impacts - Earthworks – Dublin Central Masterplan.

Construction

The dust emission magnitude from construction associated with the Dublin Central Masterplan works can be classified as large due to the total building volume involved exceeding 100,000m^3 as per the criteria in Section 9.2.2.1. Therefore, there is an overall high risk of dust soiling impacts and a low risk of human health impacts as a result of the proposed construction activities (Table 9.9).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	**High Risk**	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	**Low Risk**	Low Risk	Negligible

Table 9.9: Risk of Dust Impacts – Construction – Dublin Central Masterplan.

Trackout

Dust emission magnitude from trackout can be classified as large under IAQM guidance as there are predicted to be 95 outward HGV movements per day during the worst-case construction phase (see Section 9.2.2.1). This results in an overall high risk of dust soiling impacts and a low risk of human health impacts as a result of the proposed trackout activities (see Table 9.10).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	**High Risk**	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	**Low Risk**	Low Risk	Negligible

Table 9.10: Risk of Dust Impacts – Trackout – Dublin Central Masterplan.

Summary of Dust Emission Risk

The risk of dust impacts as a result of the implementation of the Dublin Central Masterplan are summarised in Table 9.11 for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity in order to prevent significant impacts occurring.

Overall, in order to ensure that no dust nuisance occurs during the demolition, earthworks, construction and trackout activities, a range of dust mitigation measures associated with a high risk of dust impacts must be implemented. In the absence of mitigation there is the potential for **short-term, localised, significant** dust related impacts to air quality as a result of the implementation of the Dublin Central Masterplan.

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Dust Emission Magnitude	Large	Large	Large	Large
Dust Soiling Risk	High Risk	High Risk	High Risk	High Risk
Human Health Risk	Medium Risk	Low Risk	Low Risk	Low Risk

Table 9.11: Summary of Dust Impact Risk used to Define Site-Specific Mitigation – Dublin Central Masterplan.

Construction Phase Traffic Emissions

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and an air quality assessment using the UK Highways Agency DMRB screening model was undertaken (UK Highways Agency, 2007). The air quality assessment focussed on the worst-case construction period in 2025 when the greatest number of HGV movements will likely be taking place.

This period was assessed as a worst-case scenario and traffic emissions associated with individual phases of development will likely be lower than those predicted here. Modelling was undertaken at 2no. worst-case sensitive receptors within 200m of the impacted road links, these include the Rotunda Hospital (R1) and an apartment building on the corner of Moore Street and Parnell Street (R2). Results are compared against the 'Do-Nothing' scenario, which assumes that the implementation of the Dublin Central Masterplan is not in place in future years, in order to determine the degree of impact.

NO_2 emissions as a result of the worst-case construction phase of the implementation of the Dublin Central Masterplan are in compliance with the ambient air quality standards for NO_2 set out in Table 9.1. Concentrations of NO_2 are at most 71% of the annual limit value during the worst-case construction period in 2025. In addition, the maximum 1-hour NO_2 concentration is not predicted to be exceeded at the receptors modelled. Compared to 'Do Nothing' levels, concentrations of NO_2 will increase by 0.1% of the annual limit value at receptor R1 and by 0.2% of the limit value at receptor R2 (see Table 9.12). As per the TII assessment criteria outlined in Appendix 10 of the TII guidance document "*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*" (2011) the changes in NO_2 concentrations as a result of the construction phase of the implementation of the Dublin Central Masterplan are considered negligible. Therefore, the impact of construction traffic emissions on air quality is predicted to be **short-term, localised, negative** and **imperceptible.**

DCC PLAN NO. 2861/21
RECD: 01/06/2021

Receptor	Impact Construction Year 2025				
	DN	DS	DS – DN	Magnitude	Description
R1: Rotunda Hospital	27.4	27.4	0.06	Imperceptible	Negligible Increase
R2: Parnell Street Apartment Building	28.2	28.3	0.08	Imperceptible	Negligible Increase

Note 1 Calculated using UK DEFRA guidance IAN 170/12 V3 Long Term NO_2 Trend Projections Technique.

Table 9.12: Predicted Annual Mean NO_2 Concentrations – Construction Year 2025 ($\mu g/m^3$).

9.5.1.1.2 Climate

There is the potential for a number of greenhouse gas emissions to atmosphere during the demolition and construction phase of the implementation of the Dublin Central Masterplan. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions. The Institute of Air Quality Management document *Guidance on the Assessment of Dust from Demolition and Construction* (2014) states that site traffic and plant is unlikely to make a significant impact on climate. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term**.

9.5.1.1.3 Human Health

Dust emissions from the demolition and construction phase of the implementation of the Dublin Central Masterplan have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Table 9.6 the surrounding area is considered of low sensitivity to significant dust related human health impacts. Therefore, in the absence of mitigation there is the potential for **slight**, **negative**, **short-term** impacts to human health as a result of the implementation of the Dublin Central Masterplan.

Traffic emissions from construction vehicles also have the potential to impact human health. However, as per section 9.4.2.1.1 the change in local air quality as a result of construction traffic is considered **short-term, localised, negative** and **imperceptible.**

9.5.1.2 Operational Stage

9.5.1.2.1 Air Quality

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the implementation of the Dublin Central Masterplan. However, as there is minimal car parking (33no. in total) associated with the Dublin Central Masterplan it is not predicted to significantly change the existing traffic on the nearby road links. Therefore, according to the DMRB scoping criteria in section 9.2.2.1 none of the local road links can be classed as 'affected'. The potential impact to air quality during the operational phase is considered **long-term, neutral** and **imperceptible.**

9.5.1.2.2 Climate

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. However, adequate attenuation and drainage have been provided for to account for increased rainfall in future years as part of the design of Dublin Central. Therefore, the impact will be **long-term**, **localised**, **neutral** and **imperceptible**.

There is also the potential for increased traffic volumes to impact climate. The change in AADT values is not of the magnitude to require a detailed climate assessment as per the DMRB screening criteria outlined in Section 9.2.3.2 (UK Highways Agency, 2019b). It can therefore be determined that traffic related CO_2 and N_2O emissions during the operational phase are **long-term, localised**, **neutral** and **imperceptible**.

- In addition, the Dublin Central Masterplan has been designed to minimise the impact to climate where possible during operation. The Energy & Sustainability Statement prepared in relation to the development details the incorporated design measures which will reduce climatic impacts. As per the Energy & Sustainability Statement the following key performance targets have been set for the Dublin Central Masterplan development: The buildings are aspiring to meet a Net Zero Carbon strategy to align with the aspirations set out by Dublin City Council within Section 16.2 (Design, Principles & Standards) of the DCC Development Plan.
- The design intent at present for the developments hot water, heating and cooling system designs are based on a combination of highly efficient air source and water to water heat pumps with no fossil fuels being consumed throughout the entire project, avoiding the production of large amounts of local pollution within an urban environment.
- The buildings will meet and exceed the new NZEB (Nearly Zero Energy Buildings) requirements set out in the revised Part L document.
- The development will achieve an "A" rated energy certificate for all buildings.
- The development will target a reduction in mains water consumption of more than 60% when compared to similar developments and this will be further explored post planning.

- The development has set progressive targets for embodied carbon in its brief, based on recently published LETI (London Energy Transformation Initiative) targets for 2030.
- The development has benchmarked itself against up to planning against Sustainability Assessments including; BREEAM, LEED, WELL Building Standard, WIRED Score and Passive House. As a minimum, the scheme will adopt the principles of all and pursuing the formal rating and certification will be subject to cost/benefit feasibility post planning.

Due to the location of the development within Dublin City Centre the site has a number of sustainable travel options such as bus, LUAS and cycling. Sustainable travel modes will be encouraged within the Dublin Central through support facilities for cycling, minimal onsite parking and infrastructure for electrical vehicle charging points. It is also proposed to retain high quality buildings and facades to reduce the environmental impact and embodied carbon of the development. With the inclusion of these sustainability measures the impact to climate during the operational phase will be reduced.

9.5.1.2.3 Human Health

Traffic related air emissions have the potential to impact human health if they do not comply with the ambient Air Quality Standards detailed in Table 9.1. However, as there is minimal car parking associated with the Dublin Central Masterplan, the traffic generated does not satisfy the assessment criteria to require an air modelling assessment as outlined in Section 9.2.3.1 and therefore there is no potential for significant impacts. It can be determined that the impact to human health during the operational stage is neutral, local, long-term and imperceptible.

DCC PLAN NO 2861/21
01/06/2021

9.5.1.3 Do-Nothing Impact

The Do Nothing scenario includes retention of the current site without the Dublin Central Masterplan in place. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

As the Dublin Central Masterplan site is zoned for development, in the absence of the Proposed Development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the implementation of the Dublin Central Masterplan.

9.5.2 Proposed Development – Site 3, 4 & 5

9.5.2.1 Construction Stage

9.5.2.1.1 Air Quality

As with the implementation of the Dublin Central Masterplan, the greatest potential impact on air quality during the demolition and construction phase of the Proposed Development (i.e. Site 3, Site 4 and Site 5) is from construction dust emissions and the potential for nuisance dust.

In order to determine the risk of dust impacts in the absence of mitigation during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 9.3.4). The magnitude of each of the four dust generating activities: demolition, earthworks, construction and trackout has been determined below based on the Small, Medium or Large classifications outlined in Section 9.2.2.1 for the Proposed Development.

Demolition

The dust emission magnitude for the Site 3 development can be classified as small as per the criteria in Section 9.2.2.1. There will be less than 20,000m^3 of buildings to be demolished (approximately 16,753m^3) as part of the Site 3 works. This results in an overall medium risk of dust soiling impacts and a negligible risk of human health impacts as a result of the Site 3 demolition activities (see Table 9.13).

For the Site 4 development there is the requirement for approximately 11,300m^3 of buildings to be demolished. As a result, the proposed demolition activities can be categorised as small as per the IAQM criteria in Section 9.2.2.1. This results in an overall medium risk of dust soiling impacts and a negligible risk of human health impacts as a result of the Site 4 demolition activities.

For the Site 5 development there is the requirement for approximately 5,781m^3 of buildings to be demolished. As a result, the proposed demolition activities can be categorised as small as per the IAQM criteria in Section 9.2.2.1. This results in an overall medium risk of dust soiling impacts and a negligible risk of human health impacts as a result of the Site 5 demolition activities.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 9.13: Risk of Dust Impacts - Demolition – Proposed Development.

Earthworks

Under the IAQM guidance (2014) (see Section 9.2.2.1) the proposed earthworks for the Site 3 development can be classified as medium as the total site area is less than 10,000m^2 and there will be approximately 25,780 tonnes of material involved in infill and excavation works. This results in an overall medium risk of dust soiling impacts and a low risk of human health impacts as a result of the Site 3 earthworks activities (see Table 9.14).

The site area for Site 4 is slightly above 2,500m^2 and there will be approximately 224 tonnes of material involved in infill and excavation works. As a worst-case the earthworks magnitude has been classified as medium as per the criteria in Section 9.2.2.1. This results in an overall medium risk of dust soiling impacts and a low risk of human health impacts as a result of the Site 4 earthworks activities.

The site area for Site 5 is less than 2,500m^2, however there will be approximately 9,500 tonnes of material involved in infill and excavation works and therefore the magnitude has been classed as medium. This results in a medium risk of dust soiling impacts and a low risk of human health impacts as a result of the Site 5 earthworks activities when combined with the previously established sensitivity of the area (see Section 9.3.4).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 9.14: Risk of Dust Impacts - Earthworks – Proposed Development.

Construction

The dust emission magnitude from construction associated with the proposed Site 3 development works can be classified as large due to the total building volume involved exceeding 100,000m^3 over one to nine storeys as per the criteria in Section 9.2.2.1. Therefore, there is an overall high risk of dust soiling impacts and a low risk of human health impacts as a result of the proposed construction activities (Table 9.15).

The dust emission magnitude for Site 4 construction can be categorised as medium as the total building volume is less than 100,000m^3 over one to three storeys. Therefore, there is a medium risk of dust soiling impacts and a low risk of human health impacts as a result of the Site 4 construction works.

The dust emission magnitude for the Site 5 construction can be categorised as large as the total building volume will exceed 100,000m^3. This results in a high risk of dust soiling impacts and a low risk of human health impacts from the Site 5 construction works.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 9.15: Risk of Dust Impacts – Construction – Proposed Development.

Trackout

The construction stages of the individual sites of the development will overlap and therefore HGVs associated with various sites will access the site simultaneously. For the purposes of this assessment worst-case construction phase traffic figures have been used to determine the dust emission potential from trackout.

The dust emission magnitude from trackout can be classified as large under IAQM guidance as there are likely to be over 50 outward HGV movements per day during worst-case stages of the development (see Section 9.2.2.1). This results in an overall high risk of dust soiling impacts and a low risk of human health impacts as a result of the proposed trackout activities (see Table 9.16).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 9.16: Risk of Dust Impacts – Trackout – Proposed Development.

Summary of Dust Emission Risk

The risk of dust impacts as a result of the Proposed Development are summarised in Table 9.17 for each activity for the Site 3, Site 4 and Site 5 developments. In the absence of mitigation there is the potential for **short-term, localised, significant** dust related impacts to air quality as a result of the Proposed Development.

As the Proposed Development is part of a wider Dublin Central Masterplan development as per Section 9.4, the level of mitigation required for the masterplan development will be applied to each individual site of the development to ensure the highest level of dust mitigation is employed. Therefore, a high level of dust control will be required across the site.

Potential Impact	Dust Emission Category			
	Demolition	Earthworks	Construction	Trackout
Site 3				
Dust Emission Magnitude	Small	Medium	Large	Large
Dust Soiling Risk	Medium Risk	Medium Risk	High Risk	High Risk
Human Health Risk	Negligible Risk	Low Risk	Low Risk	Low Risk
Site 4				
Dust Emission Magnitude	Small	Medium	Medium	Large
Dust Soiling Risk	Medium Risk	Medium Risk	Medium Risk	High Risk
Human Health Risk	Negligible Risk	Low Risk	Low Risk	Low Risk
Site 5				
Dust Emission Magnitude	Small	Medium	Large	Large
Dust Soiling Risk	Medium Risk	Medium Risk	High Risk	High Risk
Human Health Risk	Negligible Risk	Low Risk	Low Risk	Low Risk

Table 9.17: Summary of Dust Impact Risk used to Define Site-Specific Mitigation – Proposed Development

Construction Phase Traffic Emissions

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. A detailed air dispersion model of worst-case construction stage traffic emissions was conducted (see Section 9.5.1.11.). This included traffic associated with the worst-case construction phase of the development and traffic emissions during individual phases of the development will be lesser than predicted within this assessment. It was determined that the impact to air quality is **short-term, localised, negative** and **imperceptible.**

9.5.2.1.2 Climate

As per the IAQM guidance, site traffic and machinery are unlikely to have a significant impact on climate. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term.**

9.5.2.1.3 Human Health

Dust emissions from the demolition and construction phase of the Proposed Development have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Table 9.6 the surrounding area is considered of low sensitivity to significant dust related human health impacts. There is an overall low risk of significant human health impacts as a result of the demolition and construction works from the Proposed Development (see Table 9.17). Therefore, in the absence of mitigation there is the potential for slight, negative, short-term impacts to human health as a result of the Proposed Development.

Traffic emissions from construction vehicles also have the potential to impact human health. However, as per section 9.5.1.1.1 the change in local air quality as a result of construction traffic is considered **short-term, localised, negative** and **imperceptible.**

9.5.2.2 Operational Stage

9.5.2.2.1 Air Quality

As per section 9.5.1.2.1, a detailed air dispersion model of operational traffic emissions has been scoped out of this assessment as the traffic generated by the Proposed Development does not meet the assessment criteria. The cumulative traffic data for the full Dublin Central Masterplan development was assessed as a worst-case scenario, this also included traffic for existing and permitted developments within the area where available. The operational phase impact to air quality is deemed **long-term, localised, neutral** and **imperceptible.**

9.5.2.2.2 Climate

As per Section 9.5.1.2.2, the traffic generated by the Proposed Development did not meet the screening criteria requiring a detailed modelling assessment of CO_2 emissions. Operational traffic impacts to climate are considered **long-term, neutral** and **imperceptible.**

As per Section 9.5.1.2.2 a number of sustainable design measures have been incorporated into the Proposed Development in order to reduce the impact to climate during operation. These measures will be incorporated throughout each Site within the Dublin Central Masterplan in order to ameliorate potential operational phase climate impacts.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

9.5.2.2.3 Human Health

Traffic related air emissions have the potential to impact human health if they do not comply with the ambient Air Quality Standards detailed in Table 9.1. However, as mentioned above the traffic generated by the development does not satisfy the assessment criteria to require an air modelling assessment as outlined in Section 9.2.3.1 and therefore there is no potential for significant impacts. It can be determined that the impact to human health during the operational stage **is neutral, local, long-term** and **imperceptible.**

9.5.2.3 Do-Nothing Impact

The Do Nothing impact outlined in Section 9.5.1.3 for the proposed Dublin Central Masterplan development is also applicable to the Proposed Development.

9.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

9.6.1 Dublin Central Masterplan

9.6.1.1 Construction Stage

A detailed dust minimisation plan associated with a high level risk of dust impacts is outlined in Appendix 9.2. This plan draws on best practice mitigation measures from Ireland, the UK and the USA in order to ensure the highest level of mitigation possible. Care has specifically been paid to the requirements and recommendations within the Dublin City Council's guidance entitled *"Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition"*.

In summary some of the measures which will be implemented will include: -

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Public roads and footpaths outside the site will be regularly inspected for cleanliness and cleaned as necessary. If sweeping using a road sweeper is not possible due to the nature of the surrounding area then a suitable smaller scale street cleaning vacuum will be used.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Hoarding or screens shall be erected around works areas to reduce visual impact. This will also have an added benefit of preventing larger particles of dust from travelling off-site and impacting receptors.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

9.6.1.2 Operational Stage

The impact of the Proposed Development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no additional site specific mitigation measures are required beyond the incorporated design mitigation as described in Section 9.5.1.2.2 and 9.5.2.2.2.

9.6.2 Proposed Development Site 3, 4 & 5

9.6.2.1 Construction Stage

The mitigation measures outlined in Section 9.6.1.1 and Appendix 9.2 will be applied across the site for each phase of the development.

9.6.2.2 Operational Stage

No mitigation is required for the operational phase of the development as no significant impacts to air quality or climate are predicted.

9.7 RESIDUAL IMPACT

9.7.1 Dublin Central Masterplan

9.7.1.1 Construction Stage

9.7.1.1.1 Air Quality

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a dust minimisation plan which will be incorporated into the construction environmental management plan (CEMP) for the site. Provided the dust minimisation measures outlined in the plan (see Appendix 9.2 and Section 9.6.1.1) are adhered to, the air quality impacts during the construction phase will be short-term, negative, localised and imperceptible.

Construction traffic emissions will have a **long-term, localised, negative** and **imperceptible** impact on air quality as per Section 9.5.1.1.1.

DCC PLAN NO. 2861/21
01/06/2021

9.7.1.1.2 Climate

According to the IAQM guidance (2014) site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term.**

9.7.1.1.3 Human Health

Best practice mitigation measures are proposed for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 9.1). Therefore, the impact of construction of the Proposed Development is likely to be **negative, short-term** and **imperceptible** with respect to human health.

9.7.1.2 Operational Stage

9.7.1.2.1 Air Quality

As the traffic generated by the Proposed Development does not meet the criteria detailed in Section 9.2.2.1 for requiring a detailed air quality assessment the impact to air quality from traffic emissions during the operational stage is **neutral, long-term** and **imperceptible.**

9.7.1.2.2 Climate

The traffic associated with the operational phase of the Proposed Development is below the criteria requiring a detailed climate assessment. The impact to climate as a result of traffic emissions is predicted to be **long-term, neutral** and **imperceptible.**

In addition, the Proposed Development has been designed to reduce the impact to climate where possible through incorporated design measures. Full details of all measures included are outlined within the Energy & Sustainability Statement submitted as part of the concurrent planning applications.

9.7.1.2.3 Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **long-term, neutral** and **imperceptible.**

9.7.1.3 Worst Case Impact

In terms of construction phase impacts, worst-case assumptions regarding volumes of excavation materials and number of vehicle movements have been used in order to determine the highest level of mitigation required in relation to potential dust impacts (see Section 9.5.1.1). The Dublin Central Masterplan development is the worst-case scenario in terms of dust emissions, emissions from each individual phase will be lower than the cumulative Dublin Central Masterplan.

Worst-case traffic data was used in the assessment of construction and operational phase impacts. In addition, conservative background concentrations were used in order to ensure a robust assessment. Thus, the predicted results of the construction and operational stage assessment are worst-case and the significance of effects is most likely overestimated.

9.7.2 Proposed Development Site 3, 4 & 5

9.7.2.1 Construction Stage

9.7.2.1.1 Air Quality

Once the dust minimisation measures outlined in Section 9.6.1.1 and Appendix 9.2 are adhered to, the air quality impacts during the construction phase will be **short-term, negative, localised** and **imperceptible.**

9.7.2.1.2 Climate

According to the IAQM guidance (2014) site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term.**

9.7.2.1.3 Human Health

Best practice mitigation measures are proposed for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 9.1). Therefore, the impact of construction of the Proposed Development is likely to be **negative, short-term** and **imperceptible** with respect to human health.

9.7.2.2 Operational Stage

9.7.2.2.1 Air Quality

As the traffic generated by the Proposed Development does not meet the criteria detailed in Section 9.2.2.1 for requiring a detailed air quality assessment the impact to air quality from traffic emissions during the operational stage is **neutral, long-term** and **imperceptible.**

9.7.2.2.2 Climate

The traffic associated with the operational phase of the Proposed Development is below the criteria requiring a detailed climate assessment. The impact to climate as a result of traffic emissions is predicted to be **long-term, neutral** and **imperceptible.**

In addition, the Proposed Development has been designed to reduce the impact to climate where possible through incorporated design measures. Full details of all measures included are outlined within the Energy & Sustainability Statement submitted as part of the concurrent planning applications.

9.7.2.2.3 Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **long-term, neutral** and **imperceptible.**

9.7.2.3 Worst Case Impact

The worst case impact described in Section 9.7.1.3 for the implementation of the Dublin Central Masterplan is also applicable to the Proposed Development.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

9.7.3 Cumulative

9.7.3.1 Construction Stage

The proposed Dublin Central Masterplan development will be constructed in a number of sites (Site 1 – 5), the construction stage for the individual phases will overlap with each other thus leading to cumulative construction dust emissions. However, a high level of dust control will be implemented across the full Dublin Central Masterplan site which will control dust emissions from each phase of the development. Therefore, cumulative dust emissions associated with the full Dublin Central Masterplan development will be **short-term, localised, negative** and **imperceptible.**

According to the IAQM guidance (2014) should the construction phase of the Proposed Development or Dublin Central Masterplan development coincide with the construction phase of any other development within 350m then there is the potential for cumulative construction dust impacts. However, as stated above a high level of dust control will be implemented across the full Dublin Central Masterplan site which will avoid significant dust emissions. Provided these mitigation measures are in place for the duration of the demolition and construction phase cumulative dust related impacts to nearby sensitive receptors are not predicted to be significant. Cumulative impacts to air quality will be **short-term, localised, negative** and **imperceptible.**

Due to the short-term duration of the construction phase and the low potential for significant CO_2 and N_2O emissions cumulative impacts to climate are considered neutral.

There are no significant cumulative impacts to air quality or climate predicted for the construction phase.

9.7.3.2 Operational Stage

The traffic data reviewed for the operational stage impacts to air quality and climate included the cumulative traffic associated with other existing and permitted developments in the local area as well as traffic associated with the full Dublin Central Masterplan development. Therefore, the cumulative impact is included within the operational stage impact for the Proposed Development. The impact is predicted to be **long-term, neutral** and **imperceptible** with regards to air quality and climate.

In addition, the proposed Dublin Central Masterplan development will facilitate the development of the proposed Metrolink with a station located within the development. The development of the Metrolink, if permitted, will provide for an alternative, more sustainable method of transport in comparison to personal passenger cars. This will result in a positive impact to air quality and climate by reducing emissions associated with cars.

9.7.3.3 Worst Case Impact

The worst case impact described in Section 9.7.1.3 for the development of the Dublin Central Masterplan is also applicable to the cumulative development.

9.8 MONITORING

9.8.1 Dublin Central Masterplan

9.8.1.1 Construction Stage

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the Proposed Development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m^2*day) during the monitoring period between 28 - 32 days. Monitoring shall ensure that all sites within the Dublin Central Masterplan are adequately covered as demolition and construction works progress

9.8.1.2 Operational Stage

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.

9.8.2 Proposed Development Site 3, 4 & 5

9.8.2.1 Construction Stage

The monitoring set out in Section 9.8.1.1 for the proposed Dublin Central Masterplan development will ensure that each Site is adequately monitored to ensure dust emissions are not causing nuisance at nearby sensitive receptors.

9.8.2.2 Operational Stage

No monitoring is proposed for the operational phase as impacts will be imperceptible.

9.9 REINSTATEMENT

9.9.1 Dublin Central Masterplan

Not applicable to air quality and climate.

9.9.2 Proposed Development Site 3, 4 & 5

Not applicable to air quality and climate.

9.10 DIFFICULTIES ENCOUNTERED

There were no difficulties encountered when undertaking this assessment.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

10 CLIMATE (DAYLIGHT & SUNLIGHT)

10.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact on the surrounding environment in relation to daylight, sunlight and overshadowing of the Proposed Development. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 10.1 below indicating the Dublin Central Masterplan area) which will be assessed also.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

This chapter was completed by Patrick Kavanagh of Building Design Partnership. Patrick is a Chartered Engineer with a BE Hons degree in Building Services Engineering. Patrick is an SEAI Energy Auditor, BER Assessor, LEED Green Associate, BREEAM and WELL Accredited Professional.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

10.2 ASSESSMENT METHODOLOGY

The assessment of daylight was prepared using the methodology outlined in BS 8206-2: 2008 '*Lighting for Buildings Part 2*', whilst the impact of overshadowing was prepared using the methodology set out in BRE 209, '*Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*', Second Edition 2011, by P. J. Littlefair. This is the non-statutory guide referred to in the Dublin City Council Development Plan 2016 – 2022, and sets out guidelines that are most commonly used in Ireland and the UK to assess the impacts of development on daylight, sunlight and overshadowing.

The BRE 209 guide provides advisory numerical targets that represent good practice; however, the location specific characteristics of each site must also be taken into account. It should be noted that the BRE 209 guidance document is for guidance only and not standards that a development must achieve in order to receive development consent.

The daylight modelling and shadow assessment were assessed and created using Integrated Environmental Solutions (IES). IES is a software package that dynamically calculates environmental conditions within a defined space. The software uses 3D geometry to represent the building design, configuration and external shading provisions, as well as the shape and form of any surrounding buildings that could have an influence on the solar access of the building. IES is certified in accordance with the ANSI/ASHRAE Standard 140-2007 "Standard Method of Test for Evaluation of Building Energy Analysis Computer Programs" (*Grey buildings modelled below are existing neighbours*).

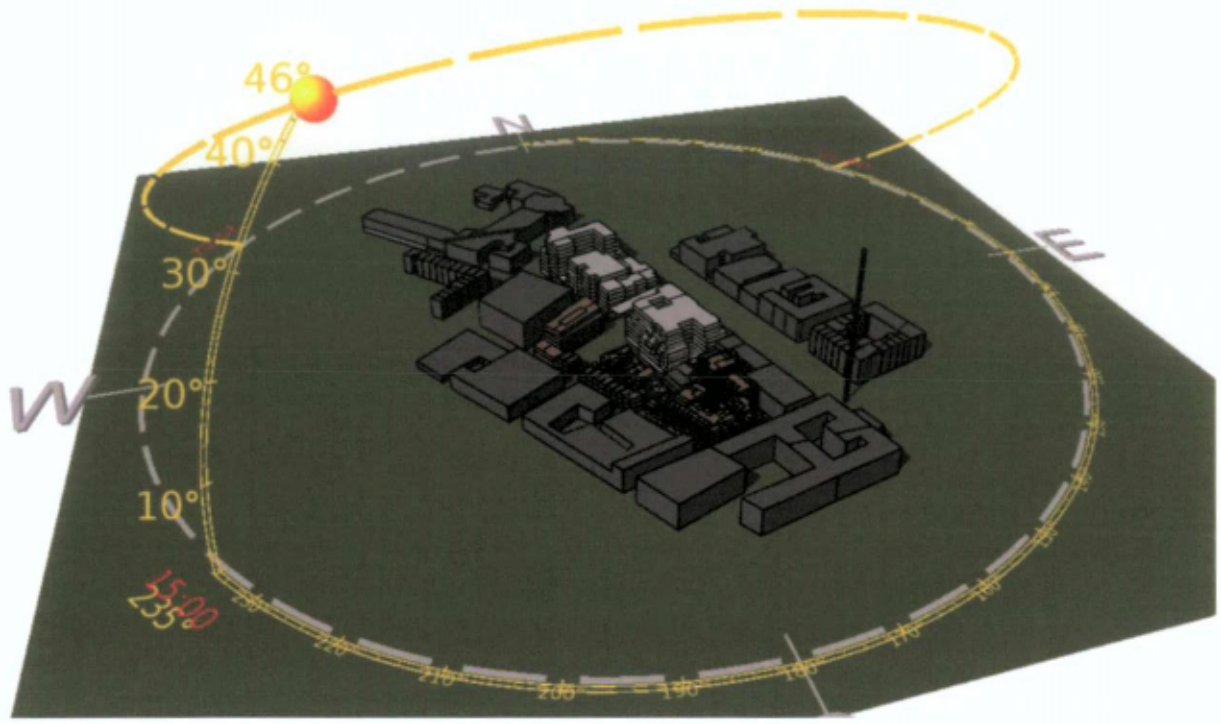


Figure 10.1: IES Geometric Model of Dublin Central Masterplan and surrounding context.

A Daylight Sunlight and Overshadowing assessment is normally carried out with particular regard to potential impacts on the living spaces and private open spaces of neighbouring residential properties both within the site curtilage itself and neighbouring properties. In the case of the Proposed Development the assessment will look at neighbouring residential units at first floor level on Moore Street and the bedrooms and open plan living / kitchen spaces within the new apartments. Furthermore, it will verify the sites amenity space receives levels of sunlight meeting BRE 209 recommendations.

IES VE Simulation software uses an application called SunCast (based on Sunpath diagram) which calculates the position of the sun in the sky, tracks solar penetration through the building interior and calculates shadows. The software was therefore used to plot the direction and altitude of the sun for every two minutes and every day of the year and checks whether any elements of the 3D model obstruct the line of sight from the sun to particular reference points. It then calculates the total number of hours of daylight during which sun obstruction will occur.

The guidance documents, referenced above, indicate that site specific characteristics be taken into account when carrying out assessments. As such, the locations of the spaces assessed in this report are provided below in Section 10.3.

10.2.1 Daylight

The BRE Report recommends that loss of daylight and sunlight should be checked for main living rooms of dwellings, where they have a window facing within 90° of due south.

The Sunlight will be quantified in terms of the Annual Probable Sunlight Hours (APSH) for any given location. Annual Probable Sunlight Hours is the total number of hours in the year that the sun is expected to shine on unobstructed ground while allowing for average monthly levels of cloud cover for the specific location.

The APSH for any given location depends on its latitude and longitude which determines the number of daylight hours for any particular location, but also on statistical records for that location which indicates the number of daylight hours that are likely to experience sunshine.

The BRE Report recommends that the centre of the window in a dwelling living space; a point 1.6m above floor level, should receive at least 25% of the APSH, including at least 5% of the APSH from 21st September to 21st March. If the available sunlight hours become less than this, and less than 0.8 times their former value, either over the whole year or just in the winter months, then a noticeable loss of sunlight can occur.

IES VE Simulation software uses an application called SunCast (based on Sunpath diagram) which calculates the position of the sun in the sky, tracks solar penetration through the building interior and calculates shadows. The software was therefore used to plot the direction and altitude of the sun for every two minutes and every day of the year and checks whether any elements of the 3D model obstruct the line of sight from the sun to particular reference points. It then calculates the total number of hours of daylight during which sun obstruction will occur.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

10.2.2 Sunlight & Overshadowing Impact

The BRE Report acknowledges the value of sunlight in external spaces in enhancing their overall appearance, ambience and amenity. Relevant spaces noted in the report include private gardens of dwellings, amenity spaces such as parks, playing fields and playgrounds, and also public spaces between non-domestic buildings and in streetscapes.

The BRE report recommends that at least half of the area of relevant spaces should receive at least two hours of sunlight on 21st March. The 21st March (Spring Equinox) is used for overshadowing analysis as this date illustrates an average level of shadowing for the year.

In the context of the Proposed Development, the areas of interest are as follows: -

- New landscaped amenity spaces for Site 3 residents.
- New landscaped amenity spaces for Site 4 residents.
- New public spaces with the Dublin Central Masterplan in front of Site 5.
- New public square created south of Site 2AB at the rear of No. 59 O'Connell Street

Sunlight Exposure Plans and Shadow Plans are provided to show the effect of overshadowing of the Proposed Development on the adjoining public spaces and properties, using 3D digital models of existing buildings and structures in and around the site and of the Proposed Development.

Shadow plans are prepared for 09:00am, 12:00 noon, and 03:00pm on the 21st March (equinox).

10.3 RECEIVING ENVIRONMENT

A Sunlight and Overshadowing assessment is normally carried out with particular regard to potential impacts on the living spaces and private open spaces of residential properties. In the case of the Proposed Development, there are no existing residential properties impacted by overshadowing due to the site location and orientation to other existing buildings. This is illustrated in the shadow plans appended to this report.

Whilst it should be noted there are apartments on the north end of Moore Street that face the existing Jurys Inn, Parnell Street; Sunlight analysis completed by BDP shows the roof top amenity space is not affected by the new development at Site 5 due to the orientation and height relative to the building. The apartment windows are facing North East and therefore are overshadowed by the existing Jurys Inn and as the elevation angle is more than 90 degrees from due south the impact on sunlight is not significant or considered relevant under BRE 209 guidance.

10.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

10.4.1 Dublin Central Masterplan

The Dublin Central Masterplan is divided into six sites. The overall development site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. The development is a mixed use development, and includes office, hotel, residential, café / restaurant and retail spaces. There is also provision made in Site 2A/B and Site 2C for a proposed Metrolink station, to be implemented separately by Transport Infrastructure Ireland (TII).

Sites 3, 4 & 5 for which this EIAR chapter is detailed around are 3 of the 5 Sites associated with the Dublin Central Masterplan. For this reason the cumulative impact of the new Dublin Central Masterplan massing is added to each individual Daylight, Sunlight and Overshadowing Assessment. This ensures the Dublin Central development itself does not reduce the access to Daylight and Sunlight for the Site 3 & 4 apartments, Site 3 hotel bedrooms, Site 5 office space and all amenity space results noted within this report.

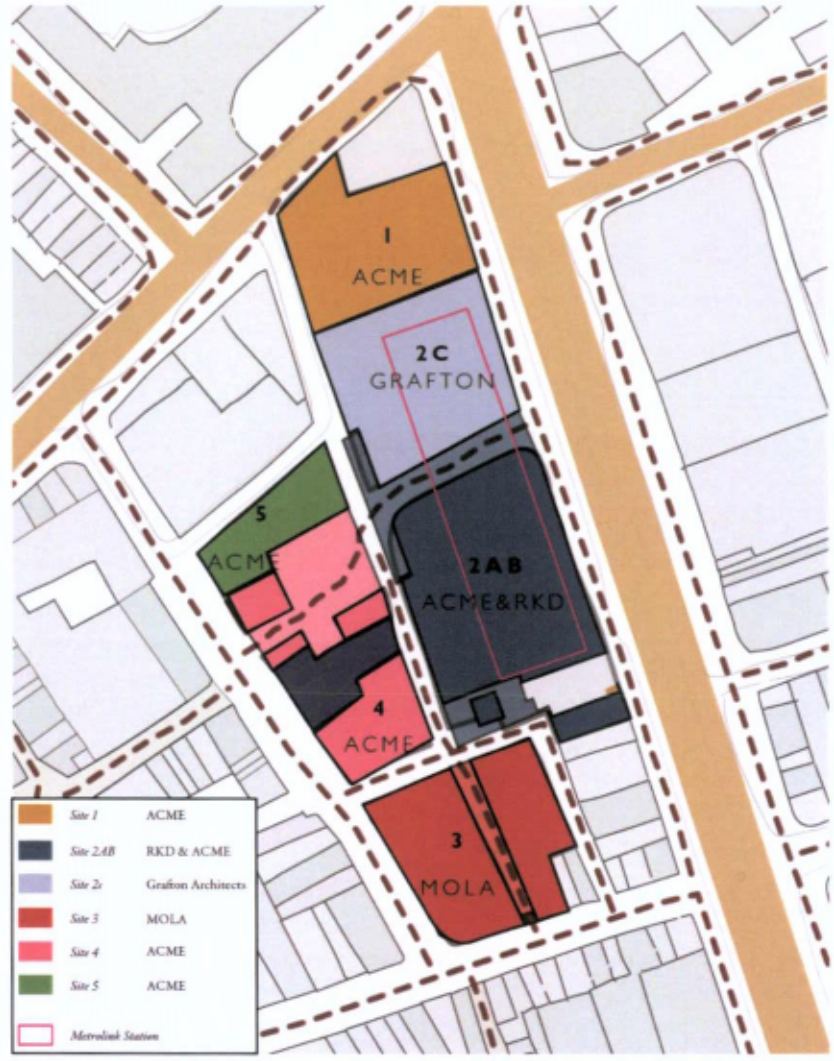


Figure 10.2: The Dublin Central Masterplan & Phasing Identification.

The analysis notes the low density of the site at present and therefore it should be noted that this will exaggerate the impact of the Proposed Development on the surrounding area.

10.4.2 Proposed Development – Site 3, 4 & 5

10.4.2.1 Site 3 – Hotel and Residential Development

The Proposed Development comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses (c. 15,842 sq. m gross floor area) in 2no. Blocks ranging in height from 1 – 9 storeys over 2no. new independent single storey basements. Provision of a new street/laneway linking Henry Street with Henry Place / Moore Lane.

The proposed Site 3 is indicated in red on Figure 10.3 below.



Figure 10.3: Location of Proposed Development (within red line).

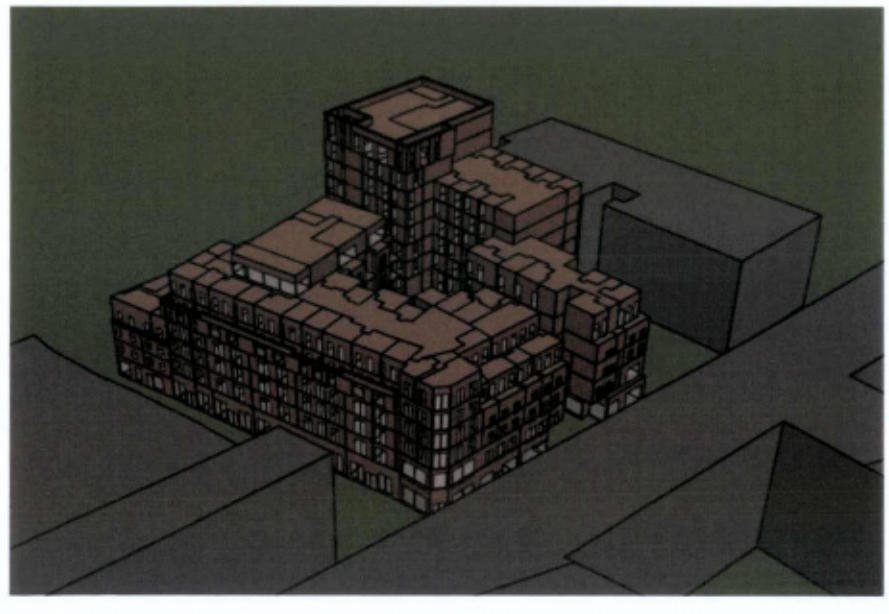


Figure 10.4: IES Geometric Model with Site 3 Highlighted.

10.4.2.2 Site 4 – Residential Development

The proposed Site 4 is indicated in white on Figure 10.5 below. The Proposed Development comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (National Monument/Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. Provision of a part of the new public plaza and archway onto new public plaza.

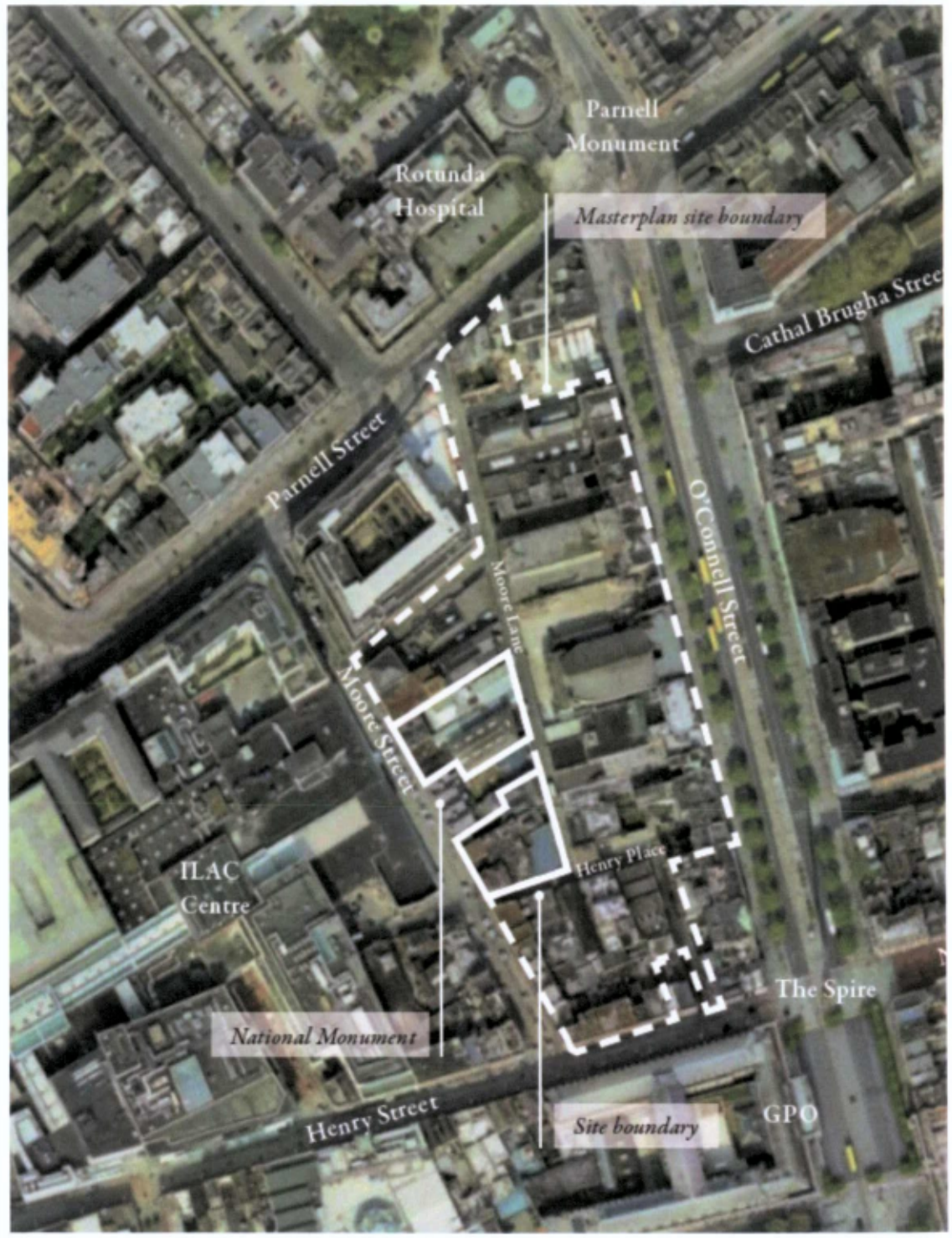


Figure 10.5: Location of Proposed Development (within solid white line).

10.4.2.3 Site 5 – Office Development

The proposed site 5 is indicated in white on Figure 10.6 below. The Proposed Development comprises a mixed-use scheme accommodating office and café / restaurant uses (c. 6,478 sq. m gross floor area) in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

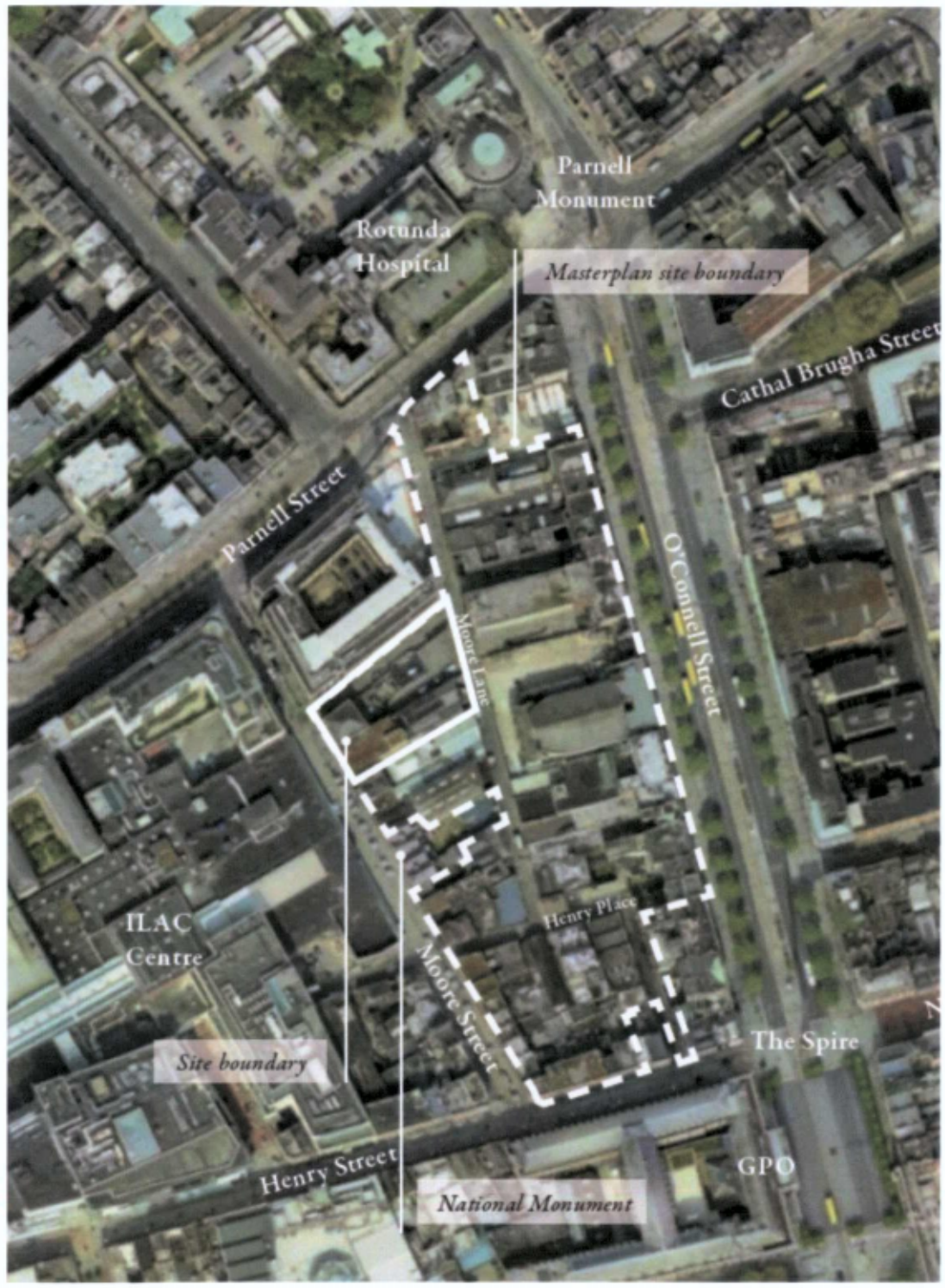


Figure 10.6: Location of Proposed Development (within solid white line)

10.5 POTENTIAL IMPACTS

10.5.1 Dublin Central Masterplan

Following a site survey and shadow assessment it was determined that there are no existing residential properties impacted by the Proposed Dublin Central Masterplan Development. The extent of the impact of a development is usually proportional to the extent to which that development is large in scale and/or height and its proximity to the location. This proportionality may be modified by the extent to which the development is seen as culturally or socially acceptable, and on the interaction between the Proposed Development, the character of the existing shadow environment and the land use pattern of the receiving environment.

The impact of the Proposed Development on sunlight access to the adjacent properties is therefore defined as **Not Significant:** *An effect which causes noticeable changes in the character of the environment but without significant consequences.* This is the second lowest definition of impact taken from the *Guidelines on the Information to be Contained in Environmental Impact Statements prepared* by the Environmental Protection Agency (2017 Draft).

The definition is chosen because the scale of the Dublin Central Masterplan development will have a minor impact on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

10.5.1.1 Construction Stage

The potential impact of the construction phase of the Proposed Dublin Central Masterplan Development on daylight and sunlight is likely to be, initially, lesser than the potential impact of the completed development. As the Proposed Development nears completion, the potential impact of the emerging development is likely to be similar in all material respects to that of the completed development. It is noted that temporary structures and machinery (e.g. hoarding, scaffolding, cranes, etc.) have the potential to result in changes in daylight access in buildings, although any additional impacts arising from temporary structures or machinery are likely to be **temporary** and **minor**.

10.5.1.2 Operational Stage

A Sunlight and Overshadowing assessment is normally carried out with particular regard to potential impacts on the living spaces and private open spaces of residential properties. In the case of the Proposed Dublin Central Masterplan Development, there are no existing residential properties impacted by overshadowing due to the site location and orientation to other existing buildings. This is illustrated in the shadow plans appended to this report.

10.5.1.3 Do-Nothing Impact

In a 'do-nothing' scenario, the daylight and sunlight environment within existing buildings will remain unchanged.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

10.5.2 Proposed Development Site 3, 4 & 5

10.5.2.1 Construction Stage

The potential impact of the construction phase of the Proposed Development on daylight and sunlight is likely to be, initially, lesser than the potential impact of the completed development. As the Proposed Development nears completion, the potential impact of the emerging development is likely to be similar in all material respects to that of the completed development. It is noted that temporary structures and machinery (e.g. hoarding, scaffolding, cranes, etc.) have the potential to result in changes in daylight access in buildings, although any additional impacts arising from temporary structures or machinery are likely to be **temporary** and **minor**.

10.5.2.2 Operational Stage

10.5.2.2.1 Impact on Sunlight from Proposed Development

A Sunlight and Overshadowing assessment is normally carried out with particular regard to potential impacts on the living spaces and private open spaces of residential properties. In the case of the Proposed Development, there are no existing residential properties impacted by overshadowing due to the site location and orientation to other existing buildings. This is illustrated in the shadow plans appended to this report.

Whilst it should be noted there are apartments on the North of Moore Street that face the existing Jurys Inn, Parnell Street; Sunlight analysis completed by shows the roof top amenity space is not affected by the new development at site 5 due to the orientation and height relative to the building. The apartment windows are facing North East and therefore are overshadowed by the existing Jurys Inn and as the elevation angle is more than 90 degrees from due south the impact on sunlight is **not significant or considered relevant** under BRE 209 guidance.

However for completeness BDP did carry out a detailed assessment on the residential properties within the vicinity of Site 3 which appear to be at 1st floor level of No. 62 Moore Street (above FX Buckley's). A review of the DCC Planning Portal and granted / refused permissions showed us that Permission (DCC Reg. Ref. 3908/19 – No. 62 Moore Street) was sought for the construction of a pitched roofed structure to accommodate additional living space and refurbishment/improvements to the upper floors. It appears from looking at the planning documentation that there are 4no. Bedrooms already above the shop with no living areas. The proposed additional floor would have created a 5th bedroom however DCC refused permission on 25 Oct 2019 and was subject to a First party appeal. ABP upheld DCC's decision and Refused Permission on 20 March 2020. To ensure an accurate input to the Shadow Analysis model and to verify that Site 3 would have no significant impact on the existing bedrooms, a detailed survey was carried out by Murphy Surveys.



Figure 10.7: No. 62 Moore Street Survey.

The orientation of the No.62 Moore Street 1st & 2nd Floor Bedroom windows is North East. The morning sun rises from either North East, East or South East depending on the time of the year.

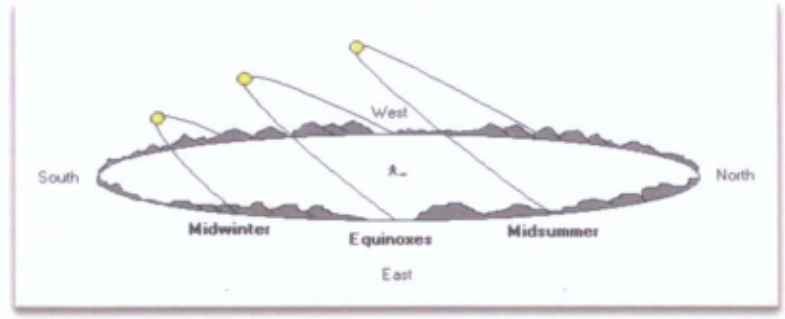


Figure 10.8: Sun Path.

The existing 3 storey buildings on the Site 3 site at present already block this view to the east horizon which is not unusual in a city centre environment. As the sun's altitude increases throughout the day the orientation of the sun is also moving to the South and therefore the building's shadow is moving to the North away from the bedrooms at No. 62 Moore Street.



Figure 10.9: Existing Context adjacent Site 3.

Following detailed analysis there was a negligible difference in the number of sunlight hours the existing bedroom windows achieved. This study demonstrates that the building height has **no impact** on the access to daylight for the bedroom windows at No. 62 Moore Street and the existing north easterly orientation of the windows has the highest impact. It can therefore be concluded that any development of reasonable height (3 storeys or more) would maintain the same number of sunlight hours as the morning sun's low altitude is blocked to the East.

10.5.2.2.2 Overshadowing Impact on Sunlight from Proposed Development

The BRE 209 guide recommends that in all relevant amenity spaces; at least half of the area should receive at least two hours of sunlight on 21st March.

The amenity space within Site 3 is at roof level and receives well in excess of 2 hours of direct sunlight on over 50% of the area. In fact the space receives almost 6 hours on 80% of the amenity space on the 21st March. It is therefore clear that residents will receive high levels of sunlight and the BRE 209 guidelines are met.



Figure 10.10: Site 3 Amenity Space.

The Proposed Development will have a slight overshadowing impact on the new Dublin Central Site 4 amenity space. The residential amenity space within Site 4 is at 1st loor level in a courtyard and receives at least 2 hours of direct sunlight on over 80% of the designated amenity area for residents (see Figure 10.12 overleaf). It is clear that residents will receive high levels of sunlight and the BRE 209 guidelines are met.



Figure 10.11: Site 4 Amenity Space.



Figure 10.12: Site 4 Amenity Space Sunlight Exposure.

The new public square created in Dublin Central also receives high levels of sunlight throughout the year with over 90% of the space achieving 2 hours of direct sunlight on the 21st March (see figure 10.14 overleaf).



Figure 10.13: Site 4 Public Amenity Space & New Public Square for Dublin Central.

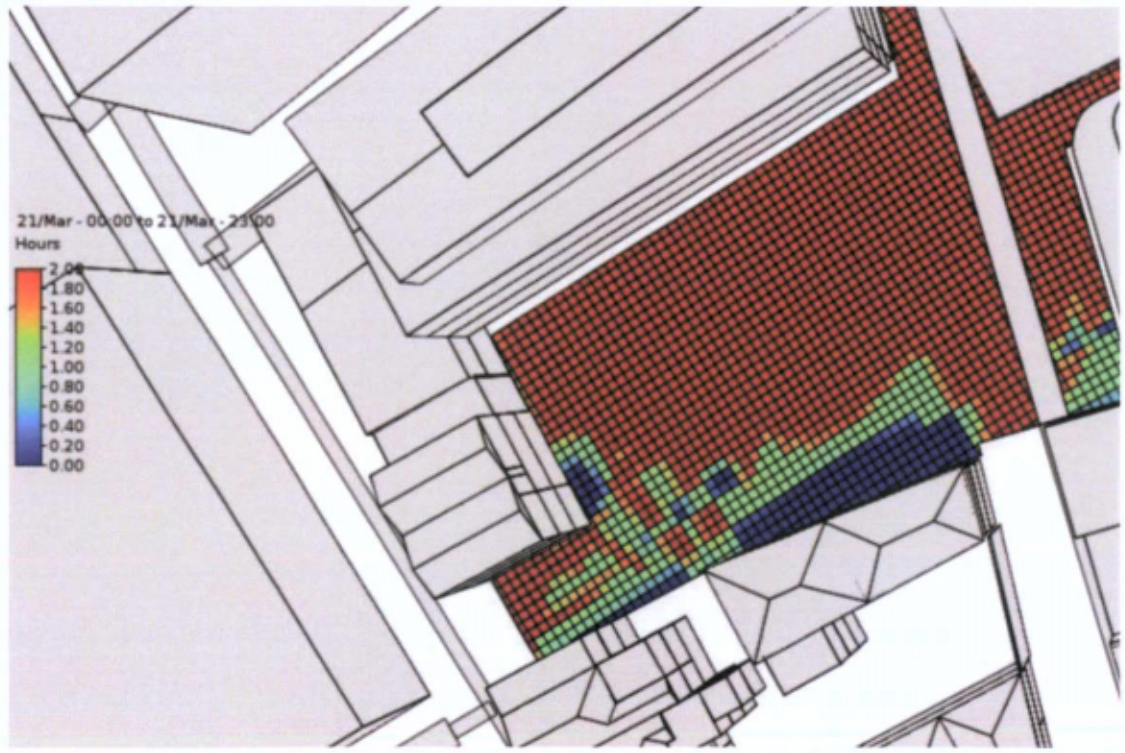


Figure 10.14: Site 4 Public Amenity Space & New Public Square for Dublin Central

The new public square created in the southern portion of Site 2AB at the back of No. 59 O'Connell Street in Dublin Central also receives high levels of sunlight throughout the year with over 70% of the space achieving 2 hours of direct sunlight on the 21st March (see figure 10.14 overleaf).



Figure 10.15: Site 4 Public Amenity Space & New Public Square for Dublin Central.

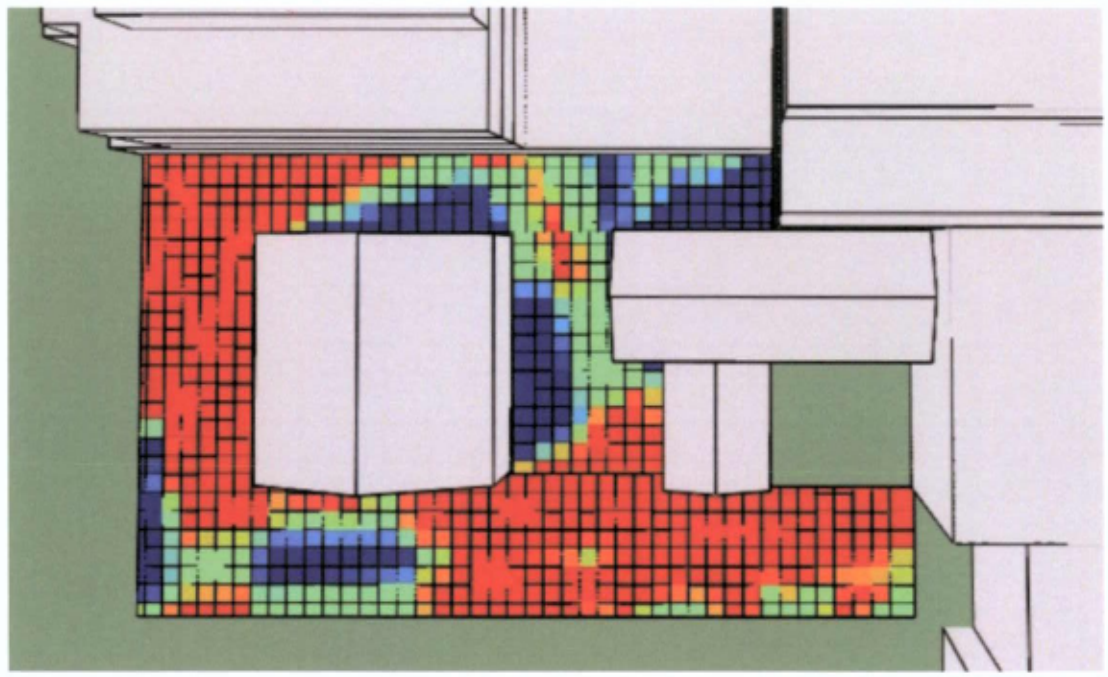


Figure 10.16: Site 2AB Public Amenity Space Sunlight Exposure.

The analysis demonstrates that the design of Dublin Central Masterplan maximises access to sunlight in amenity spaces for both residents and the public and so the BRE 209 guidelines are easily achieved.

10.5.2.2.3 Summary of Development Impact

To conclude this study a 'Definition of Impacts on Sunlight Access' is given below. The list of definitions given below is taken from the *Guidelines on the Information to be Contained in Environmental Impact Statements prepared* by the Environmental Protection Agency (2017 Draft).

- **Imperceptible Impact:** An effect capable of measurement but without significant consequences.
- **Not Significant:** An effect which causes noticeable changes in the character of the environment but without significant consequences.
- **Slight Effects**: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- **Moderate Effects:** An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
- **Significant Effects:** An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
- **Very Significant:** An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
- **Profound Impact:** An impact which obliterates sensitive characteristics.

The extent of the impact of a development is usually proportional to the extent to which that development is large in scale and/or height and its proximity to the location. This proportionality may be modified by the extent to which the development is seen as culturally or socially acceptable, and on the interaction between the Proposed Development, the character of the existing shadow environment and the land use pattern of the receiving environment.

The impact of the Proposed Development on sunlight access to the adjacent properties is therefore defined as **Not Significant:** *An effect which causes noticeable changes in the character of the environment but without significant consequences.* This is the second lowest definition of impact taken from the *Guidelines on the Information to be Contained in Environmental Impact Statements prepared* by the Environmental Protection Agency (2017 Draft).

The definition is chosen because the scale of the development at Sites 3, 4 & 5 will have a minor impact on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

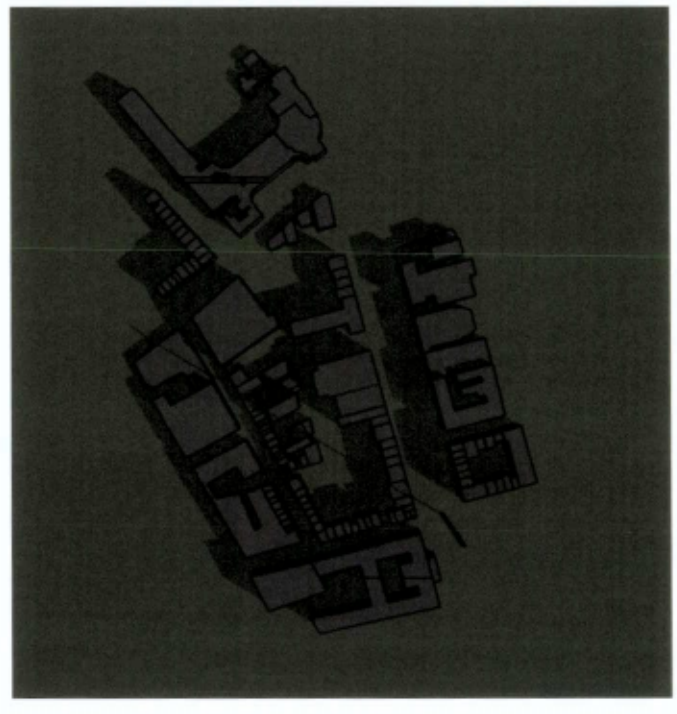
10.5.2.3 Overshadowing Impact on Sunlight from Proposed Development

The shadow plans are prepared for 09:00am, 12:00 noon, 3:00pm and 5:00pm on the 21st March (equinox), 21st June (summer solstice) and 21st December (winter solstice) for reference. The dark grey massing is the existing context. The light grey massing is the Proposed Masterplan for Dublin Central future planning permission (Sites 1, 2AB and 2C). The brown massing are the Proposed Developments for Site 3, 4 & 5 of the Dublin Central Masterplan.

9am – 21st March



Proposed



Existing

12pm – 21st March

DCC PLAN NO.2861/21
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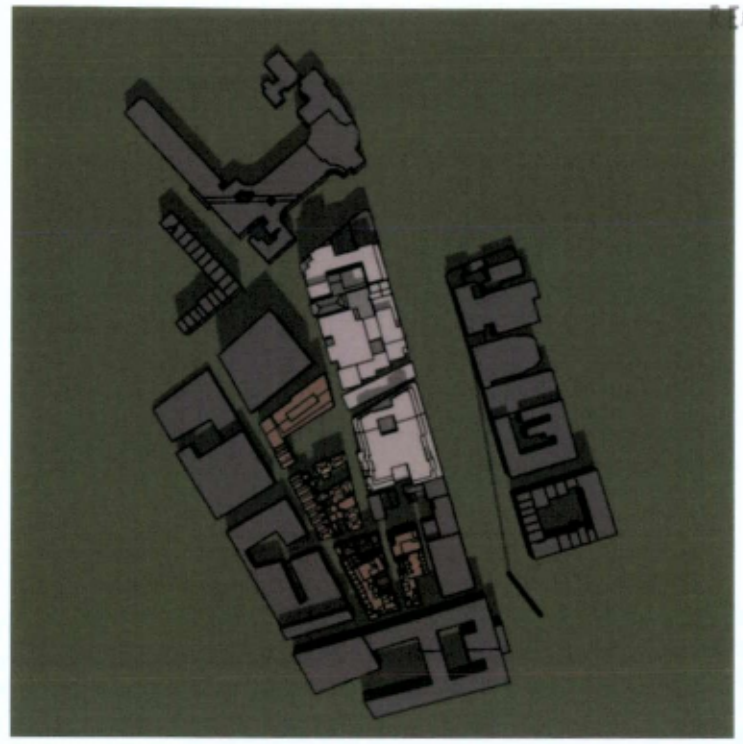

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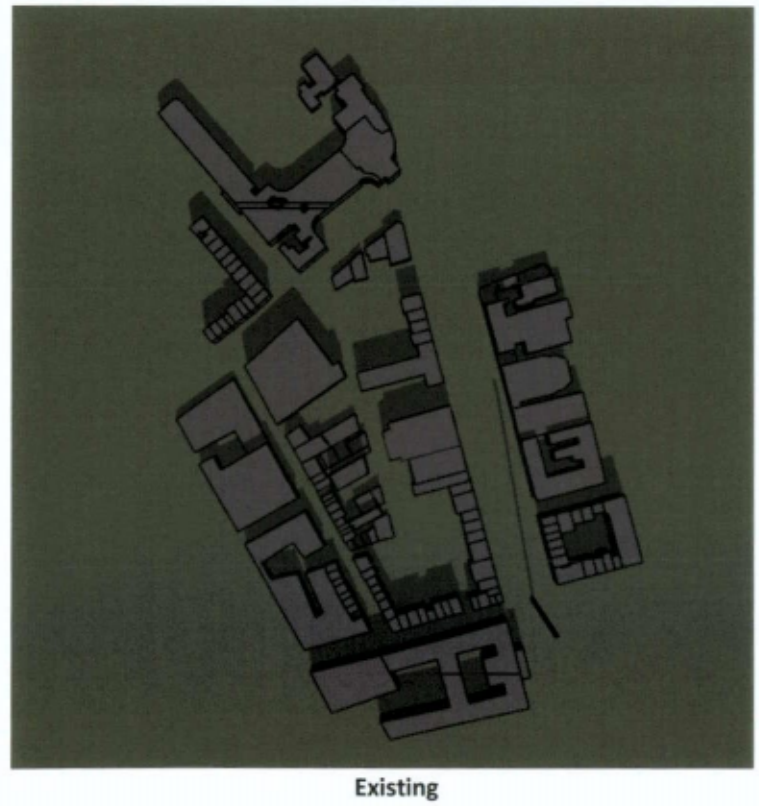
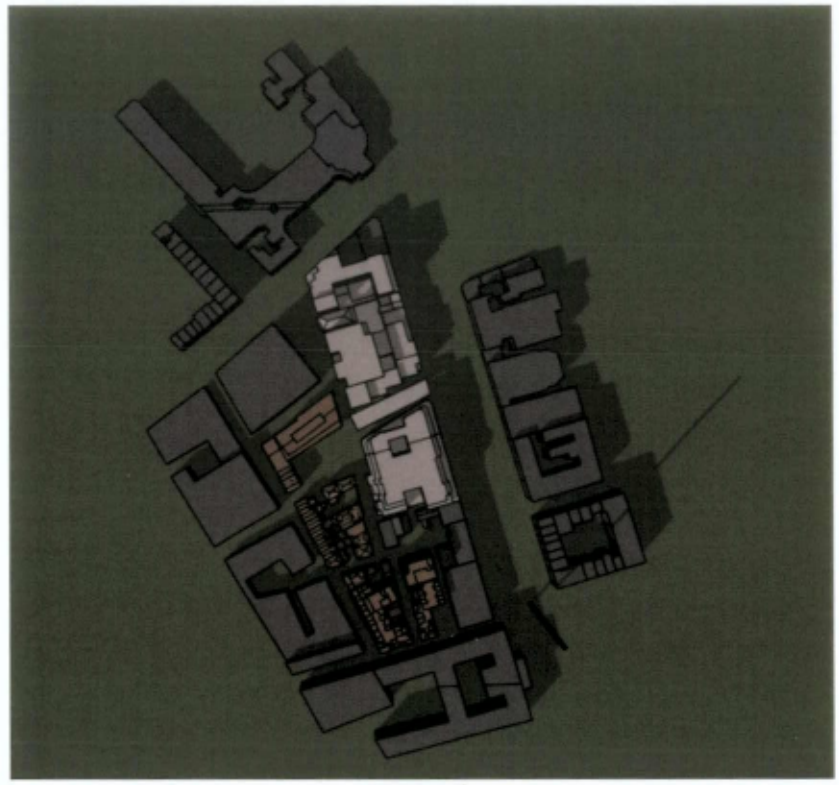


Existing

3pm – 21st March



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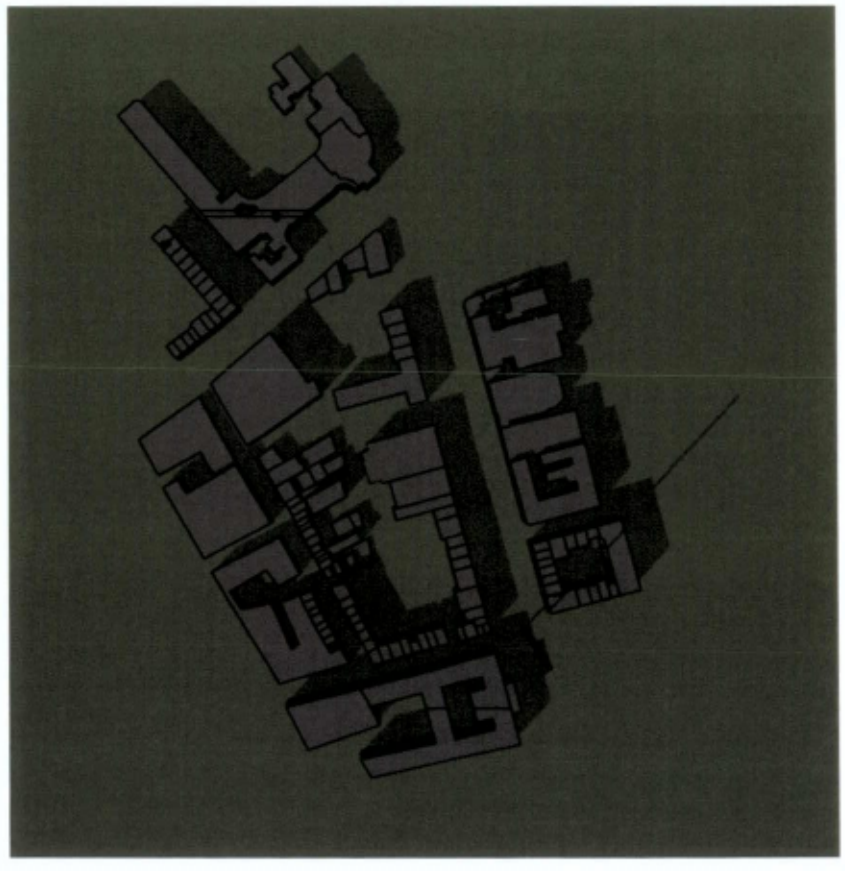

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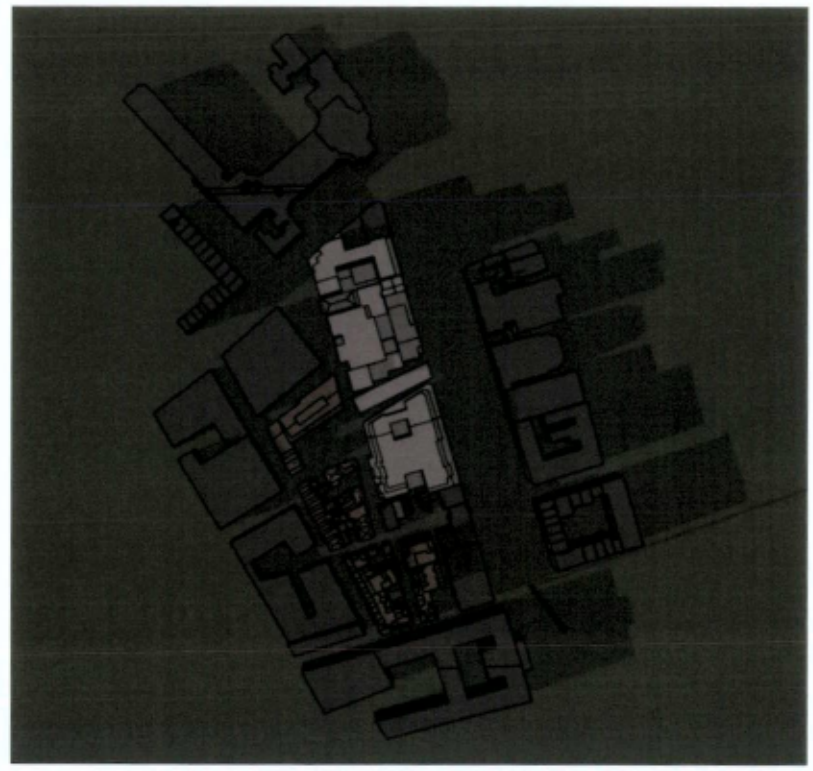
5pm – 21st March



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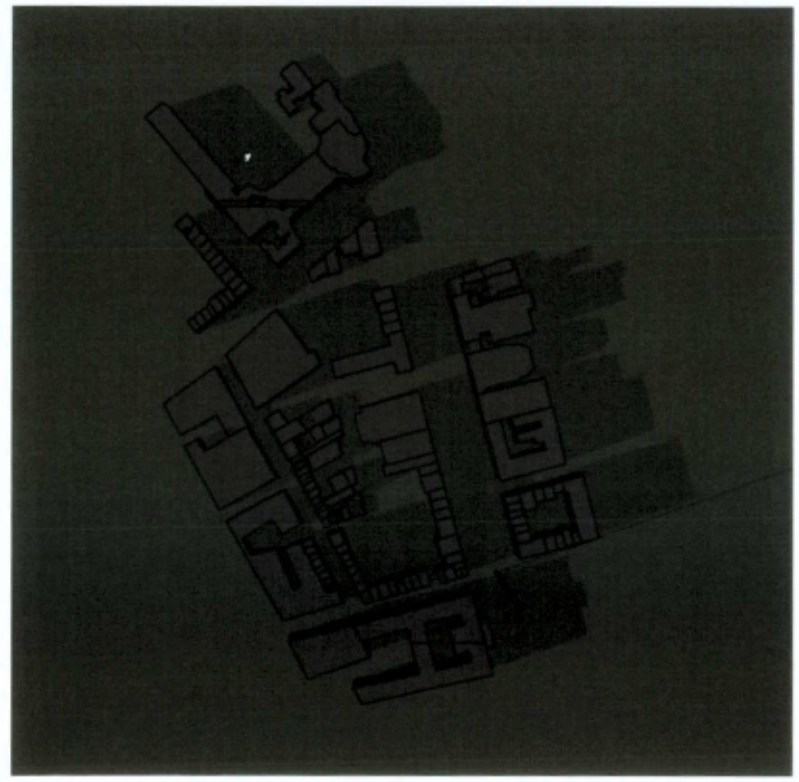
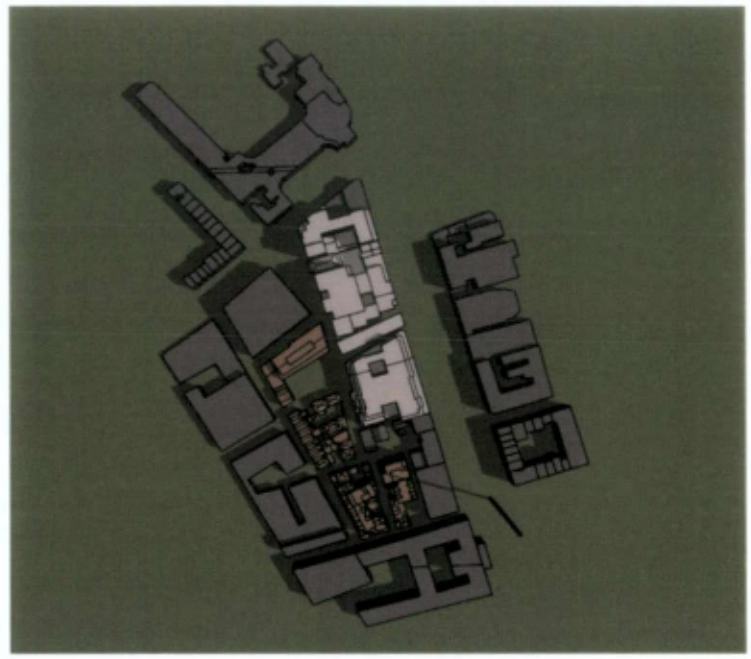
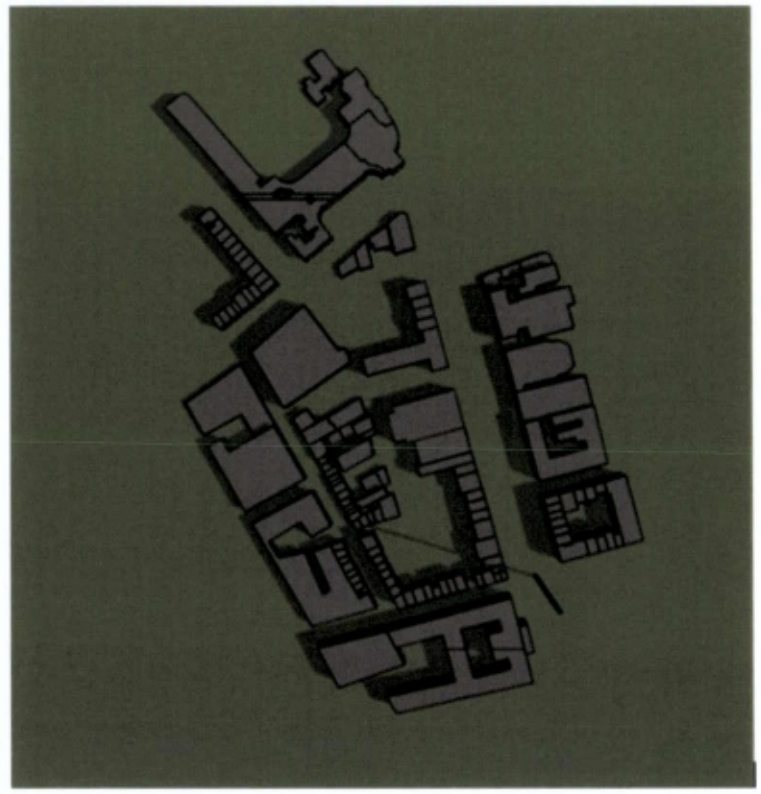


Existing

9am – 21st June

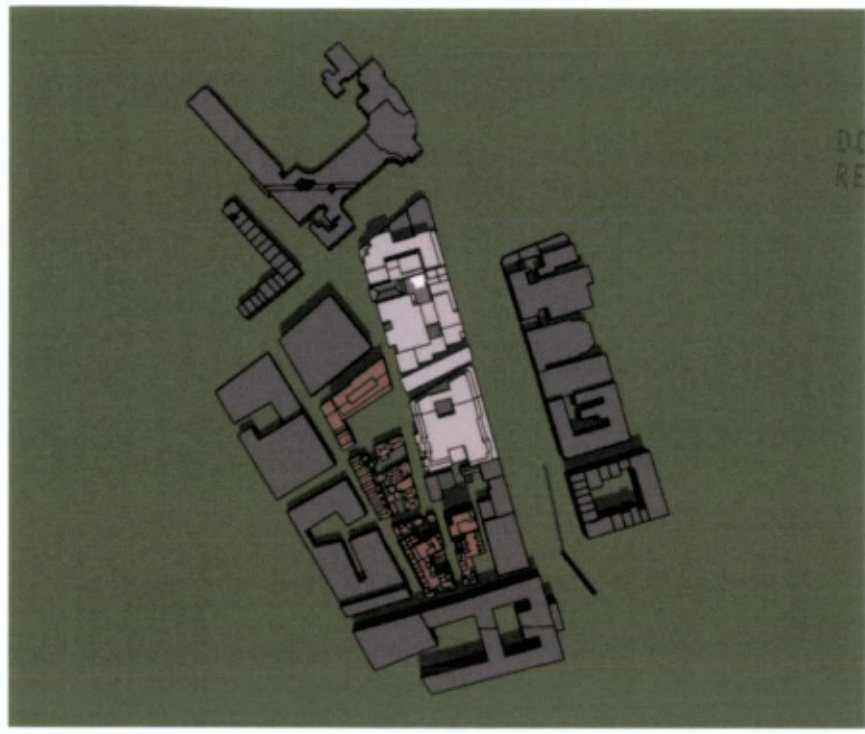


Proposed Site



Existing Site

12pm – 21st June



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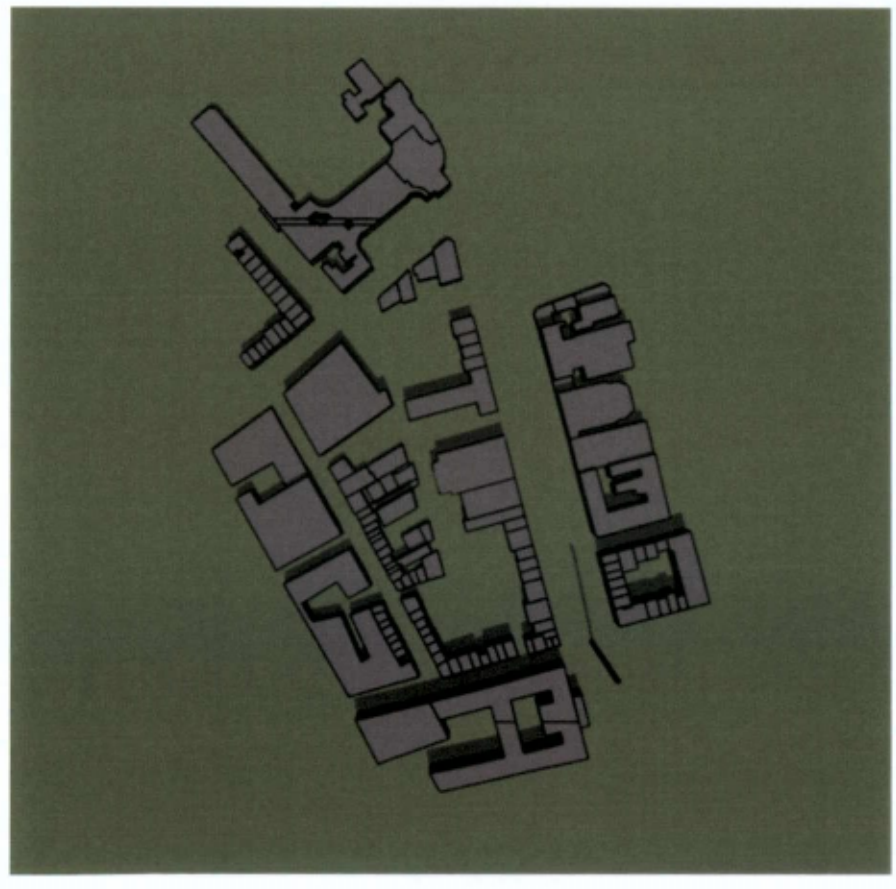
Proposed Site

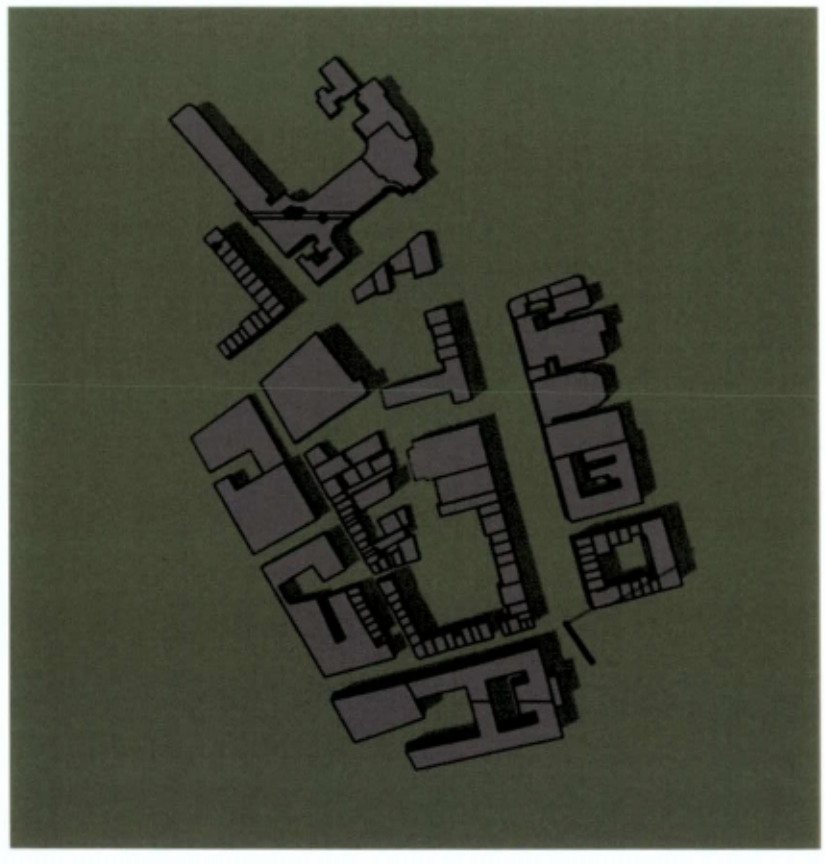


Existing Site

3pm – 21st June



Proposed Site



Existing Site

5pm – 21st June

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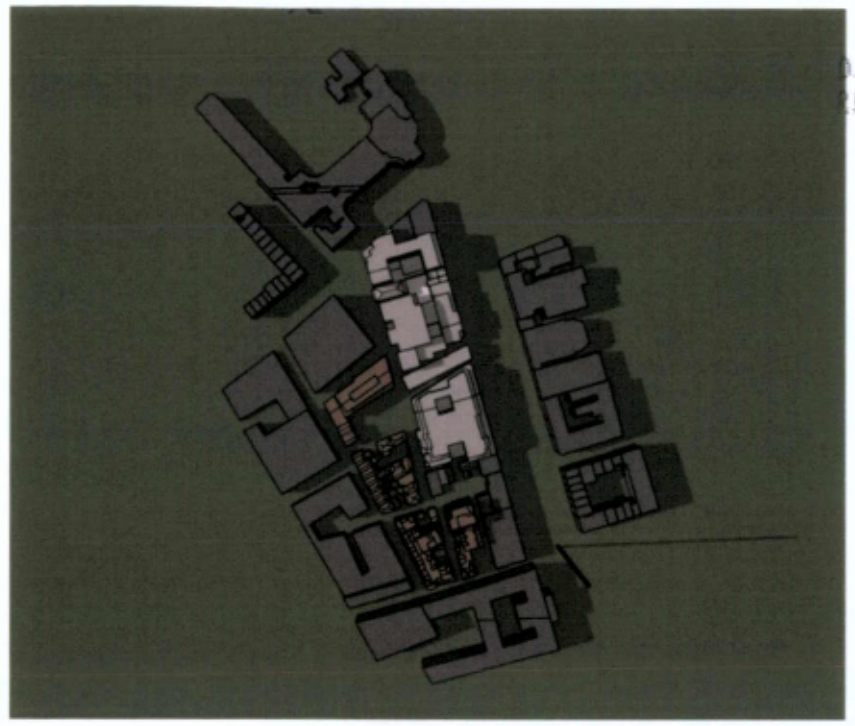
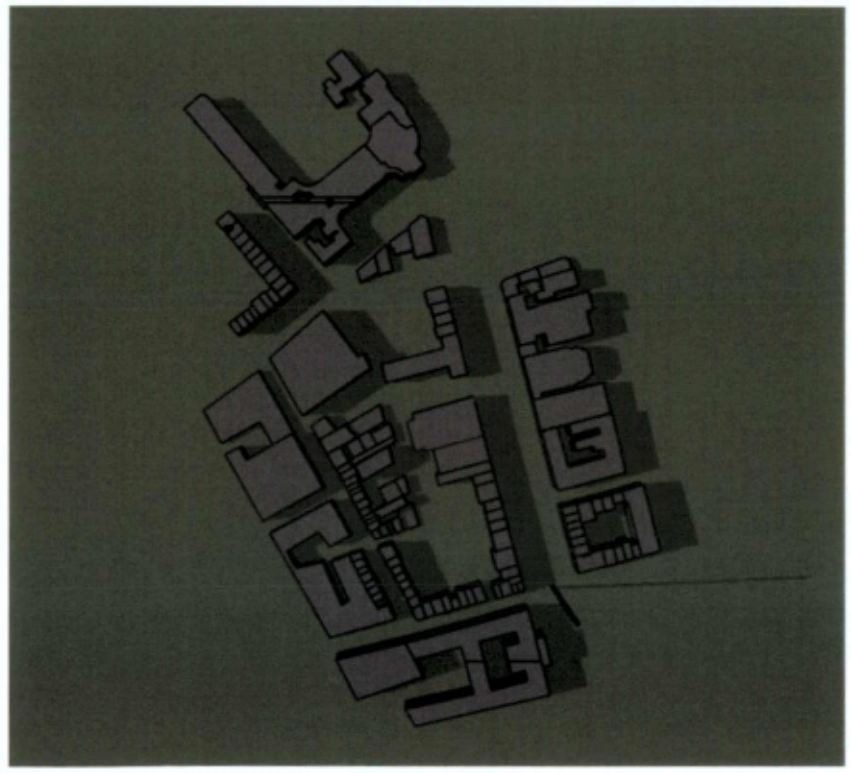
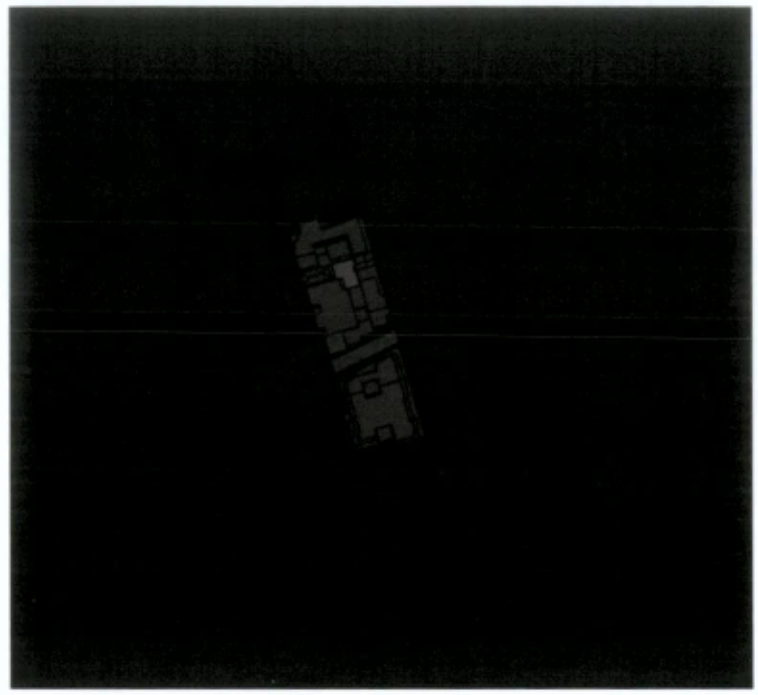


Proposed Site

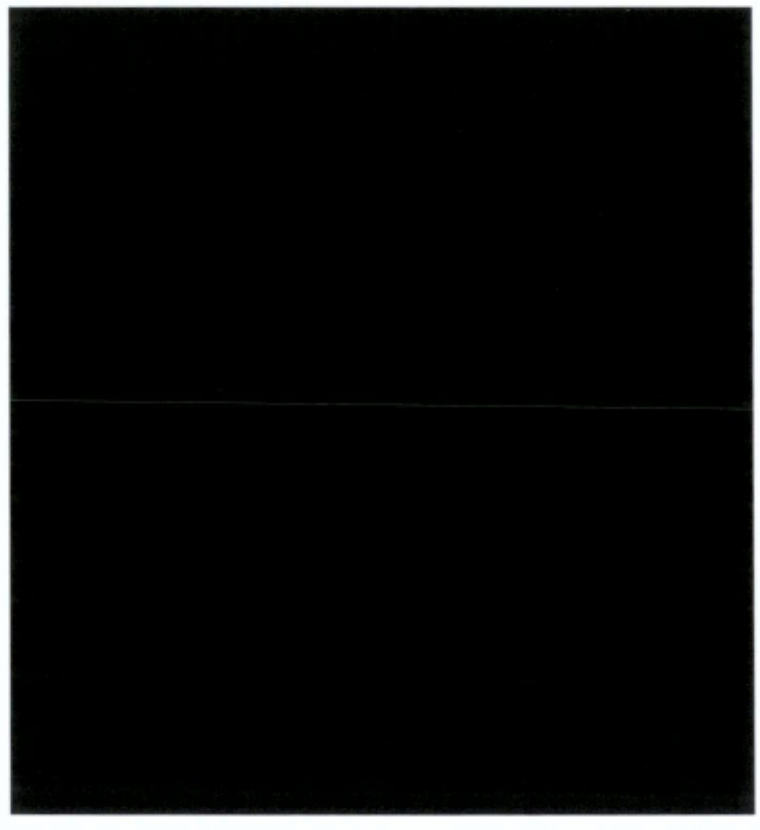


Existing Site

9am – 21st December



Proposed Site



Existing Site

12pm – 21st December

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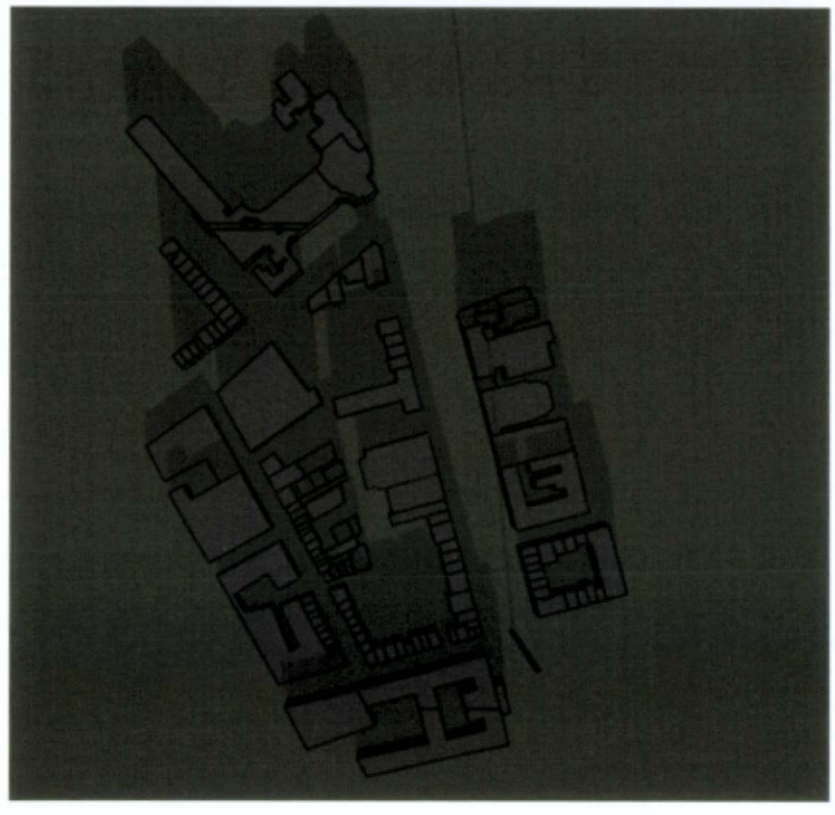
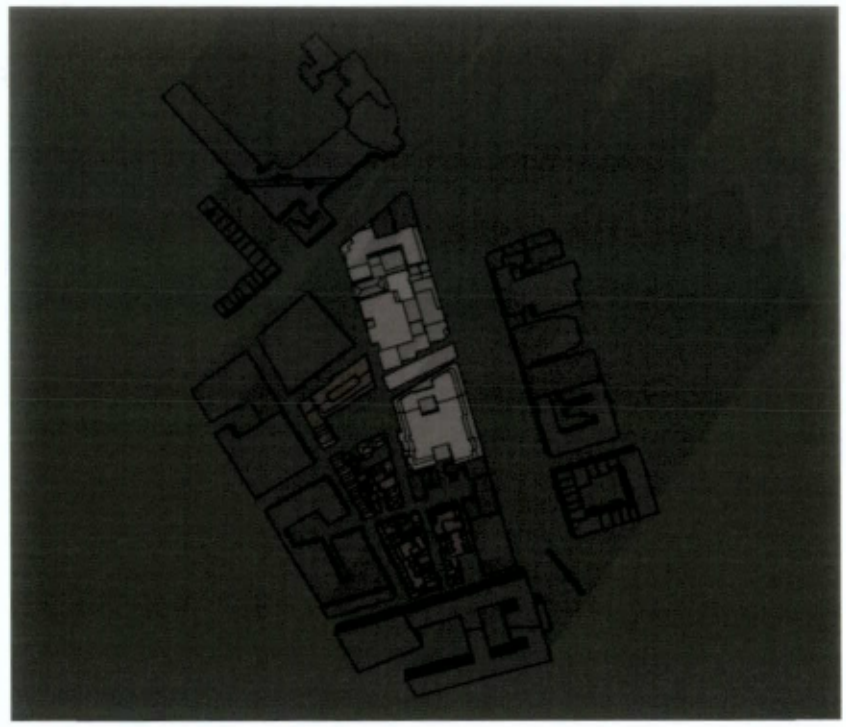
Proposed Site

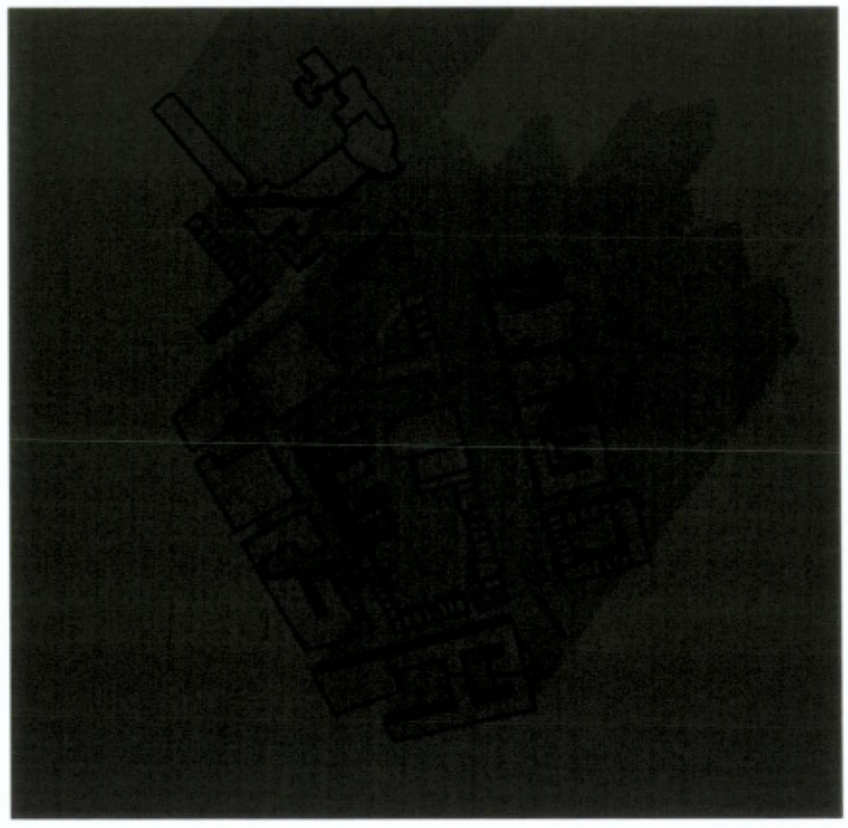


Existing Site

3pm – 21st December



Proposed Site



Existing Site

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

10.5.2.4 Do-Nothing Impact

In a 'do-nothing' scenario, the daylight and sunlight environment within existing buildings will remain unchanged.

10.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

No mitigation measures are proposed as the impact of Sunlight and Daylight is relatively insignificant and considered consistent with development within a city centre environment.

10.7 RESIDUAL IMPACT

The scale of the development at Sites 3, 4 & 5 will have a **minor impact** on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

10.8 MONITORING

Monitoring is not relevant to this assessment.

10.9 REINSTATEMENT

Reinstatement is not relevant to this assessment.

10.10 DIFFICULTIES ENCOUNTERED

There were no difficulties encountered when undertaking this assessment.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11 AIR (NOISE AND VIBRATION)

11.1 INTRODUCTION

Potential noise and vibration effects are assessed in this chapter. This section will provide information on the assessment of noise and vibration effects on the surrounding environment during both the construction and operational stages of the Proposed Development. Dublin Central is underpinned by a Masterplan which will be assessed also. The principal objectives of the noise and vibration assessment will be to specify appropriate threshold values and mitigation measures to ensure that the effect on the environment is minimised.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

The subject site is located within an urban setting and is surrounded by a mixture of commercial, retail and residential buildings. The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration in line with best practice standards applicable.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development (i.e. the potential effect of the buildings and commercial activities on existing sensitive receptors in the study area) and the inward effect of the existing noise and vibration sources on the development itself.

This Chapter was completed by Dr. Aoife Kelly (Senior Acoustic Consultant) who holds a BSc (Hons) in Environmental Health, a Diploma in Acoustics and Noise Control, a PhD in Occupational Noise and is a member of the Institute of Acoustics. Aoife has specialised in acoustics since 2014 and has extensive knowledge in the field of occupational noise risk assessments, environmental noise and vibration effect assessment and inward effect assessments. She has extensive experience in environmental and occupational noise surveying and environmental acoustics.

This Chapter was completed by Leo Williams (Acoustic Consultant) who holds a BAI and MAI in Mechanical & Manufacturing Engineering, a Diploma in Acoustics and Noise Control and is a Member of the Institute of Acoustics. Leo has specialised in acoustics since 2014 and has extensive knowledge in the field of environmental noise and vibration impact assessment and noise modelling.

The Chapter was reviewed by Stephen Smyth (Associate – Acoustics) who holds a BAI and a PhD in Mechanical Engineering from TCD and is a member of both Engineers Ireland and the Institute of Acoustics. Stephen has worked in the field of acoustics since 2003 gaining experience in both environmental and architectural acoustics.

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this chapter and included in the references section. In addition to specific noise guidance documents, the following guidelines were considered and consulted for the purposes of this chapter: -

- EPA Guidelines on the Information to be contained in Environmental Impact Statements, (EPA, 2002).
- EPA Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), (EPA, 2003).;
- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports Draft August 2017 (hereinafter referred to as the EPA EIAR Guidelines).
- EPA Advice Notes for Preparing Environmental Impact Statements, (Draft, September 2015).

11.2 ASSESSMENT METHODOLOGY

The following methodology has been prepared based on the requirements of the EPA EIAR Guidelines and on our experience of preparing the noise and vibration chapters for similar large scale developments.

The study has been undertaken using the following methodology: -

- Baseline noise monitoring has been undertaken at the nearest noise sensitive locations (NSLs) and the planning boundary.
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational stages of the Proposed Development.
- Predictive calculations have been performed to estimate the likely noise and vibration emissions during the construction stages of the project at the nearest noise and vibration sensitive receptors to the site, inclusive of the Luas transport line.
- Predictive calculations have been performed to assess the potential effects associated with the operation of the development at the most sensitive locations surrounding the development site and inward on the development itself.
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational stages of the Proposed Development.
- The inward effect of noise from the surrounding environment into the proposed residential buildings has also been assessed to determine the requirements, for additional noise mitigation to ensure a suitable internal noise environment for residential amenity.

Typical ambient noise levels across the local area have been measured and these are used to identify appropriate construction stage noise threshold criteria. Proposed construction activities are also identified and expected noise output data used to predict likely noise levels at surrounding NSLs. Predicted levels are assessed in the context of identified criteria, and mitigation measures, where required, are outlined.

Appendix 11.1 presents a glossary of acoustic terminology that is used throughout this chapter.

11.3 RECEIVING ENVIRONMENT

11.3.1 Dublin Central Masterplan

The Proposed Dublin Central Masterplan Development is located within Dublin City Centre, it is bounded by O'Connell St. to the east, Parnell St. to the north, Moore St. to the west and Henry St. to the south. Moore Lane runs through the middle of the site in a north / south direction. O'Rahilly Parade bounds the northwest of the site and Henry Place to the southwest. A full description of the development is provided in Chapter 3: Description of Proposed Development.

The nearest existing residential NSLs to the Proposed Development are those located at Greeg Court Apartments, to the northwest site boundary. The Rotunda Hospital is located to the north of the site boundary.

Apart from the receptors identified above, there are protected buildings identified at 14 to 17 Moore Street to the northwest of the site boundary.

Commercial NSLs include Jurys Inn Hotel Parnell Street and Lynams Hotel, which are located beyond the north and east boundaries respectively. Other hotels in close proximity to the eastern site boundary are Holiday Inn Express and The Gresham Hotel on O'Connell Street.

A full description of the development is provided in Chapter 3: Description of Proposed Development.

The existing noise and vibration environments across the Dublin Central Masterplan site and in the vicinity of the nearest existing NSLs are dictated by transportation sources in the study area including the existing local road network and Luas line to the north and east of the Dublin Central Masterplan site.

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11.3.1.1 Desk Based Study of Published Data

Reference has been made to the strategic noise maps produced by the EPA as part of the Round 3 noise mapping study in accordance with the requirements of the Environmental Noise Regulations (S.I. No. 140/2006) to review published data relating to noise sources in the area.

As part of the mapping round, roads with >3 million vehicle movements and rail exceeding the flow threshold of 30,000 vehicle passages per annum are modelled and noise contours produced in terms of two noise indicators, L_{den} and L_{night}. These are defined as follows: -

- L_{den} is the day-evening-night noise indicator based on year-long averages of the day (07:00-19:00), evening (19:00-23:00) and night (23:00-07:00) time periods. It is 'weighted' to account for extra annoyance in the evening and night periods.
- L_{night} is the night-time noise indicator over the night-time period (23:00-07:00hrs).

As part of this noise mapping process for the Round 3 study the following roads have been modelled and mapped using traffic flow data for the year 2016: -

- O'Connell Street (Road).
- Parnell Street (Road).

There was no mapped rail traffic noise data available for the Dublin Central Masterplan site as the Luas line to the north and east of the development became operational after 2016 when the EPA noise maps were produced.

Figure 11.1 presents the road noise mapping for the long-term day-evening-night (L_{den}) period in the vicinity of the Dublin Central Masterplan site, identified in red.

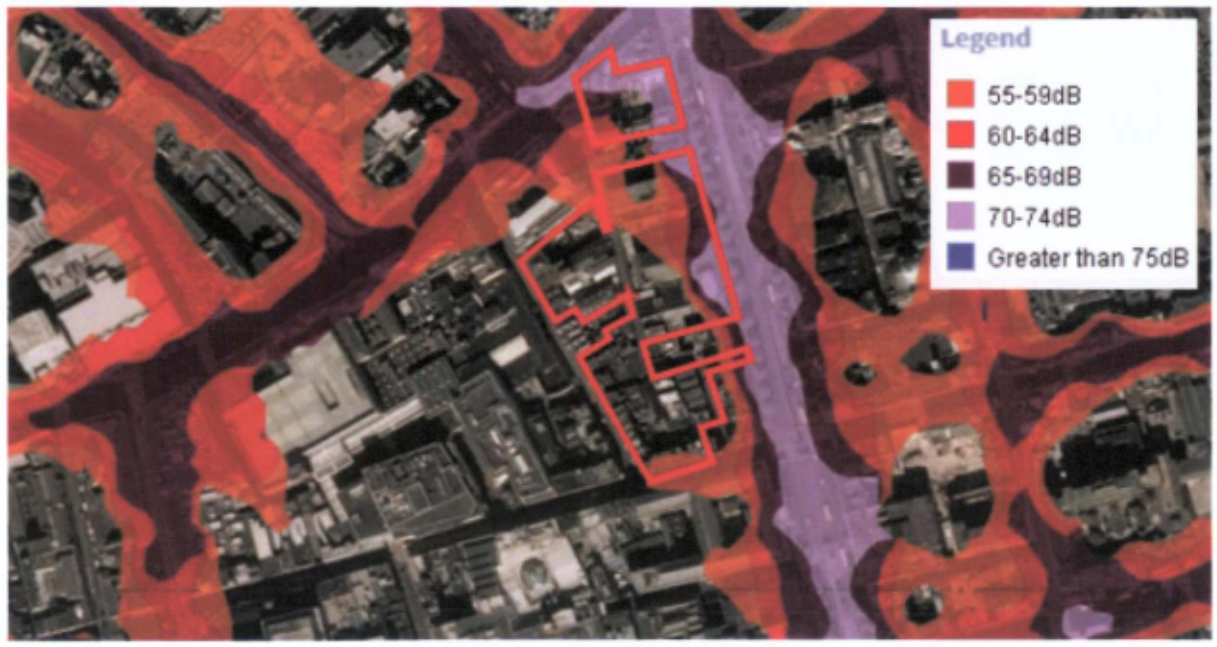


Figure 11.1: Road Traffic L_{den} Noise Contours (Source: epa.ie).

Reference to Figure 11.2 indicates that road traffic noise across the Dublin Central Masterplan site is in the range of <55 to 74 dB L_{den} with highest noise levels along the eastern end of the Dublin Central Masterplan site in proximity to the O'Connell Street Upper and at the northern end of the Dublin Central Masterplan in proximity to the Parnell Street junction. The lowest noise values are mapped across the remainder of the Dublin Central Masterplan as the distance from the road traffic sources increases along Henry Street, Moore Street, Henry Lane, O Rahilly Parade and Moore Place.

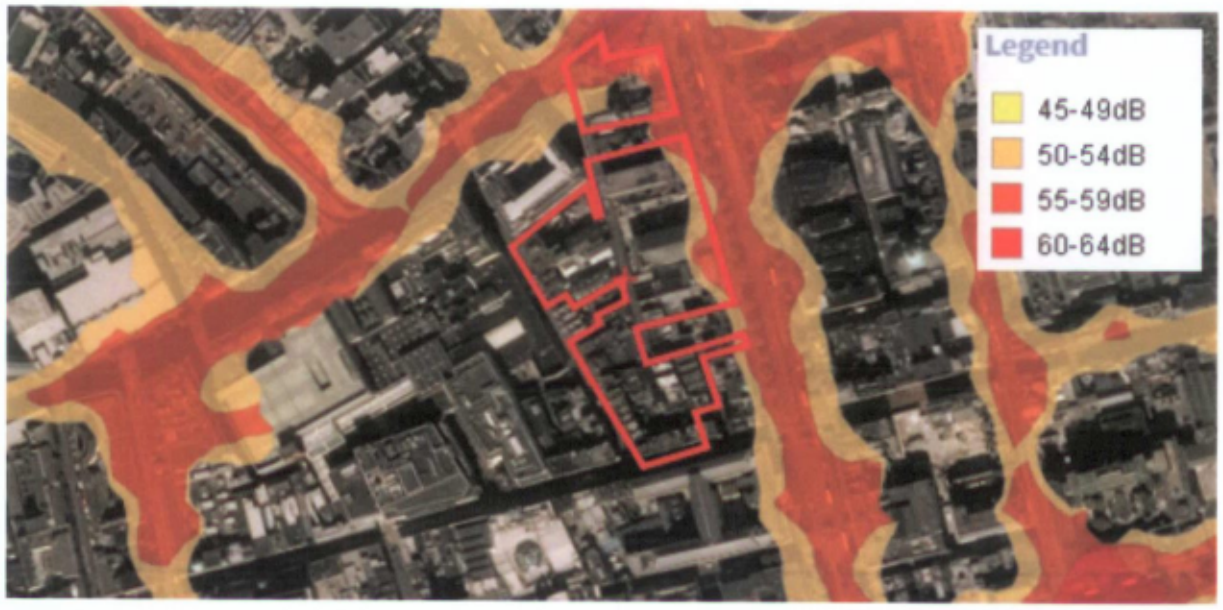


Figure 11.2: Road Traffic L_{night} Noise Contours (Source: epa.ie).

Figure 11.2 presents the road traffic noise mapping for the night-time period (L_{night}) period in the vicinity of the Dublin Central Masterplan site, identified in red. Reference to Figure 11.2 indicates that road traffic noise across the Dublin Central Masterplan site is in the range of <45 to 64dB L_{night}, similarly with highest noise levels along the eastern and northern end of the Dublin Central Masterplan site and lowest values along remainder of the site.

11.3.1.2 Baseline Noise Environment

In July / August 2020 AWN was commissioned to undertake baseline noise monitoring from the existing site, prior to planning permission. The baseline noise monitoring was undertaken during Level 2 Covid-19 pandemic restrictions i.e. non-essential retail reopened and employees were permitted to return to work in businesses if working from home was not an option. To quantify any potential reductions in baseline noise levels due to the pandemic, a review of historical noise monitoring data from the site in June / July 2019 was also carried out.

Combined the 2019 and 2020 noise surveys quantify the existing varying noise environment across the Dublin Central Masterplan site namely: -

- The screened noise environment at the rear of the existing buildings facing onto O'Connell Street (east of site) and Moore Lane (west of site) and unscreened noise environment for the facades facing directly onto O'Connell Street and Moore Street (inward noise assessment) and,
- The noise environment at the nearest noise sensitive locations (NSLs) (outward noise assessment), including the rear facades of NSLs located along O 'Rahilly Parade and Moore Street.

All surveys were conducted in general accordance with ISO 1996-2: 2017: *Acoustics – Description and measurement and assessment of environmental noise. Part 2 – Determination of sound pressure levels.* The specific details will be set out in the following sections.

Measurement Parameters

Noise Parameters

The noise survey results are presented in terms of the following parameters.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFMax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

Vibration Parameters

Vibration measurements were conducted in general accordance with the guidance contained in British Standard BS 7385. Part 1: *Guide for measurement of vibrations and evaluation of their effects on buildings (1990).*

Vibration was measured in the three orthogonal axes. The accelerometer was secured in place with a 5kg sandbag.

The equipment was set to log for 5 minute intervals on a continual basis.

The following vibration parameters are discussed within this report.

PPV Peak Particle Velocity (PPV) is a measure of the velocity of vibration displacement in terms of millimetres per second (mm/s). It is defined as follows within BS 7385: (1990) as:

"the maximum instantaneous velocity of a particle at a point during a given time interval".

Historical Unattended Environmental Noise & Vibration Survey Conducted June / July 2019

Survey Positions

In June and July 2019 unattended noise monitoring was undertaken at three locations within the Dublin Central Masterplan site (UN1 to UN3) representative of the existing noise environment at the closest NSLs and the noise climate within the Dublin Central Masterplan site. The locations are described below in Table 11.1 and shown in Figure 11.3.

Vibration monitoring was undertaken at one location along O' Connell Street to rear of the temporary scaffold façade adjacent to noise monitoring location UN1.

Location	ITM Co-ordinates	Description	Rationale
UN1	715758, 734852	Unattended noise monitor. Externally positioned in line eastern boundary of the proposed site, facing onto O'Connell Street.	The data collected at this location has been used to predict expected noise levels along the eastern facades along the Proposed Development, which in turn will be used to inform the ProPG assessment included in this EIAR chapter.
UN2	715729, 734936	Unattended noise monitor. Externally positioned set back 7m from north-eastern boundary of the proposed site, facing towards O'Connell Street Upper.	The data collected at this location has been used to predict expected noise levels towards the screened centre of the Proposed Development, which in turn will be used to inform the ProPG assessment included in this EIAR chapter.

Location	ITM Co-ordinates	Description	Rationale
UN3	715683, 734915	Unattended noise monitor. Externally positioned to northwest boundary of the proposed site, facing towards Moore Lane.	The data collected at this location has been used to predict expected noise levels along the western facades along across the Proposed Development site, which in turn will be used to inform the ProPG assessment included in this EIAR chapter.
VM1	715758, 734852	Externally positioned in line eastern boundary of the proposed site, facing onto O'Connell Street.	The location was chosen to represent sensitive locations adjacent to existing sources of vibration (i.e. existing Luas line).

Table 11.1: Unattended Measurement Locations June / July 2019.

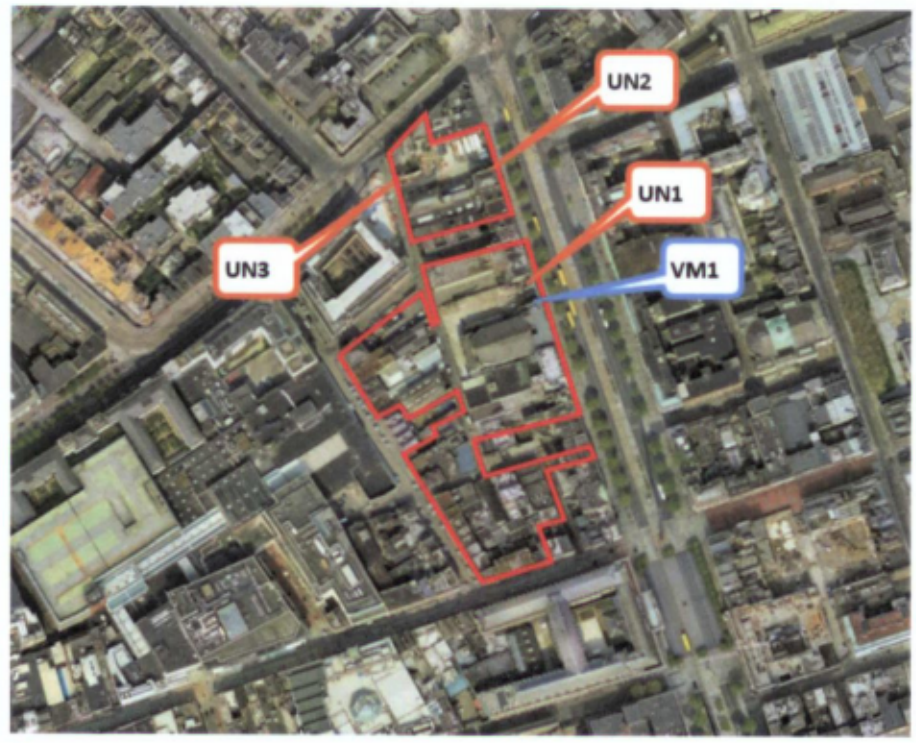


Figure 11.3: Noise and Vibration Monitoring Locations UN1 to UN3 (Source: Google Earth).

Survey Periods and Personnel

The following equipment was installed by AWN Consulting personnel over the following periods: -

Survey Position	Survey Period
UN1	10:50 hrs 25 June to 09:33 hrs 02 July 2019
UN2	10:52 hrs 18 June to 10:19 hrs 25 June 2019
UN3	10:26 hrs 18 June to 10:14 hrs 25 June 2019
VM1	10:50 hrs 25 June to 09:33 hrs 02 July 2019

Table 11.2: Survey Periods June / July 2019.

Instrumentation

The surveys were performed using the equipment listed in Table 11.3.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Survey Position	Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
UN1	Sound Level Meter	Rion	NL-52	1076328	15 August 2018
UN2					
UN3				586940	16 August 2018
All	Calibrator	Brüel & Kjær	Type 4231	2394086	26 February 2019
VM1	Vibration Meter	Rion	VM-56	680043	01 November 2019

Table 11.3: Noise Monitoring Equipment Details June / July 2019.

The unattended microphones were protected using WS-15 outdoor microphone kit. Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator. Calibration certificates are available on request.

Vibration measurements were conducted in general accordance with the guidance contained in *British Standard BS 7385. Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings (1990).*

Vibration was measured in the three orthogonal axes. The accelerometer was secured in place with a 5kg sandbag. The equipment was set to log for 5 minute intervals on a continual basis.

Noise Survey Results June / July 2019

Survey Position UN1

Table 11.4 summarises the measured day, evening and night-time noise levels for survey location UN1. Subjective observations during the setup and removal of the monitoring equipment noted that the primary contributors to noise build-up were road traffic along O'Connell Street, and the Luas rail line in addition to traffic along the surrounding road network. Local sources from retail and commercial units in addition to local urban sources (e.g. pedestrian movements, plant noise etc.) also contribute to the noise environment at this location.

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tues, 25 June 2019	67	62	66	60	63	52
Wed, 26 June 2019	66	61	67	61	63	53
Thurs, 27 June 2019	66	61	67	61	64	54
Fri, 28 June 2019	67	62	66	62	64	56
Sat, 29 June 2019	72	63	66	61	65	56
Sun, 30 June 2019	66	61	65	60	63	53
Mon, 1 July 2019	66	62	67	61	62	51
Average	*68*[1]	*62*[2]	*66*[3]	*61*[4]	*63*[3]	*54*[4]

Table 11.4: Summary of Measured Noise Levels at UN1 (dB re. 2x10-5 Pa)

[1] Logarithmically averaged.
[2] Arithmetically averaged.

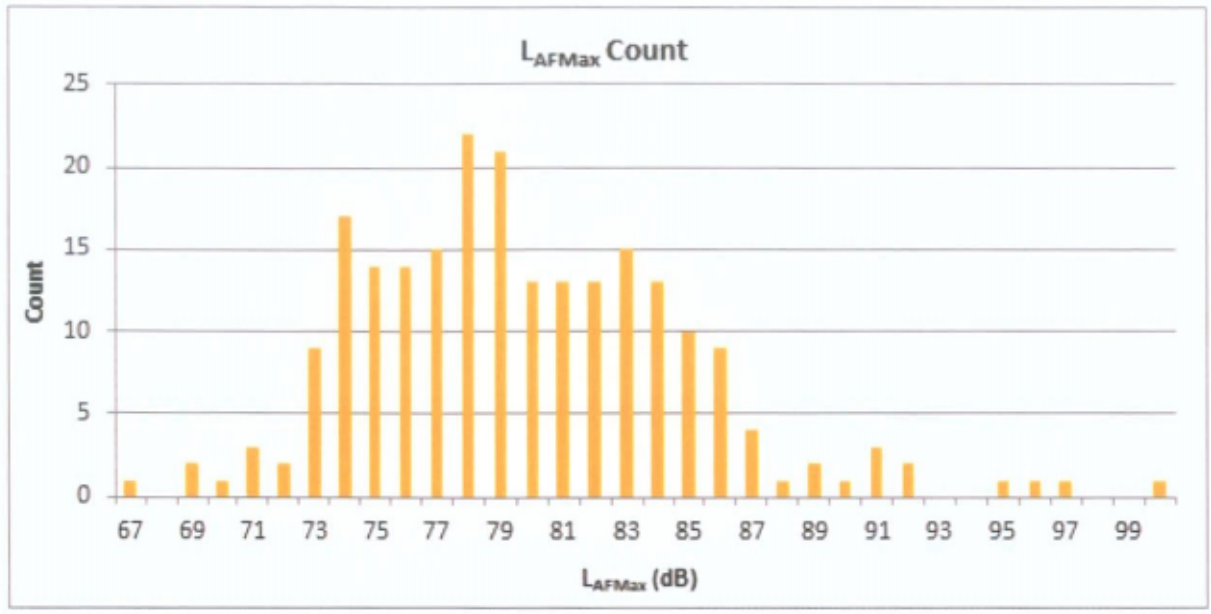


Figure 11.4: Number of L_{AFMax} events at each decibel level measured during the night period at location UN1.

During the 7 day survey period at UN1 all events measured above 60 dB L_{AFMax}. More than 100 events were measured at or above 80 dB L_{AFMax}, however no survey day exceeded 20 events in one night period. Based on the Figure above the most commonly occurring L_{AFMax} value is 78 dB. The arithmetic L_{AFMax} value is 79 dB.

Survey Position UN2

Table 11.5 summarises the measured day, evening and night-time noise levels for survey location UN2. Subjective observations during the setup and removal of the monitoring equipment noted that the primary contributors to noise build-up were road traffic along O'Connell Street, Parnell Street and the Luas rail line in addition to traffic along the surrounding road network. Local sources from retail and commercial units in addition to local urban sources (e.g. pedestrian movements, plant noise etc.) also contribute to the noise environment at this location.

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tues, 18 June 2019	60	54	57	52	54	48
Wed, 19 June 2019	59	54	58	54	55	50
Thurs, 20 June 2019	59	54	57	53	56	50
Fri, 21 June 2019	59	54	58	54	57	50
Sat, 22 June 2019	58	54	58	53	55	50
Sun, 23 June 2019	58	54	59	56	56	49
Mon, 24 June 2019	59	54	58	52	55	47
Average	*59*[3]	*54*[4]	*58*[3]	*54*[4]	*56*[3]	*49*[4]

Table 11.5: Summary of Measured Noise Levels at UN2 (dB re. 2x10-5 Pa)

[3] Logarithmically averaged.
[4] Arithmetically averaged.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Note these levels were measured 7m inside the perimeter of the Dublin Central Masterplan site and some consideration needs to be given to slightly elevated noise levels that will be expected at the facades of the proposed buildings, in line with UN2. This will be discussed and considered as appropriate in relation to the inward noise impact assessment presented in the body of this report.

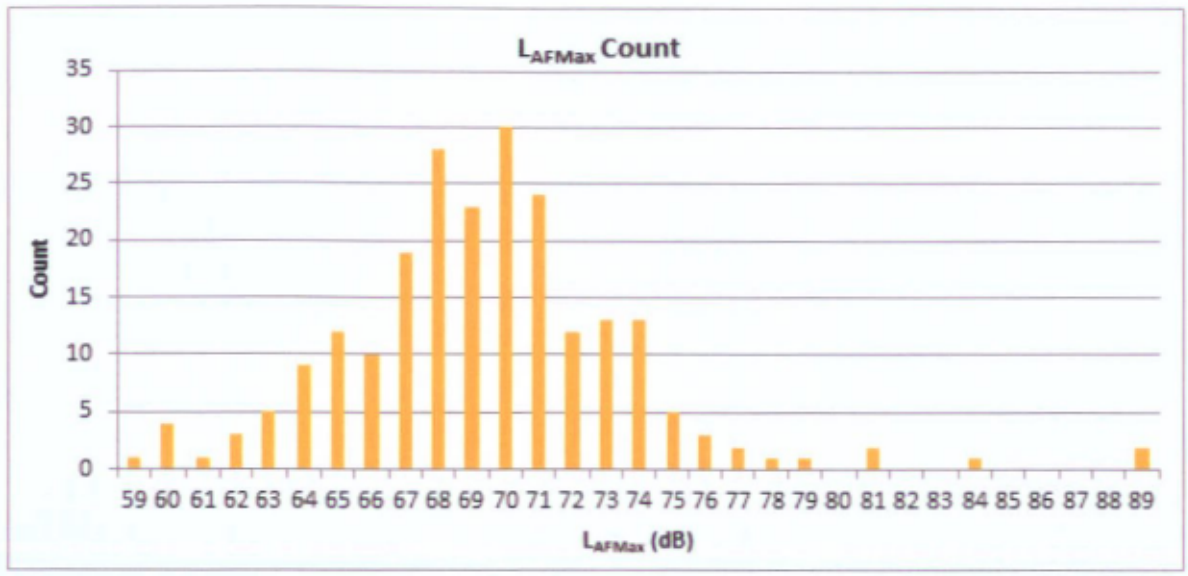


Figure 11.5: Number of L_{AFMax} events at each decibel level measured during the night period at location UN2.

During the 7 day survey period at UN2 all but one event measured above 60 dB L_{AFMax}. Five events were measured at or above 80 dB L_{AFMax},. Based on the Figure above the most commonly occurring L_{AFMax} value is 70 dB. The arithmetic L_{AFMax} value is 69 dB.

Survey Position UN3

Table 11.6 summarises the measured day, evening and night-time noise levels for survey location UN3. Subjective observations during the setup and removal of the monitoring equipment noted that the primary contributors to noise build-up were road traffic along Parnell Street and the Luas rail line in addition to traffic along the surrounding road network. Local sources from retail and commercial units in addition to local urban sources (e.g. pedestrian movements, plant noise etc.) also contribute to the noise environment at this location.

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tues, 18 June 2019	61	54	58	52	57	48
Wed, 19 June 2019	61	55	59	53	58	50
Thurs, 20 June 2019	60	55	59	53	58	51
Fri, 21 June 2019	61	55	60	53	57	50
Sat, 22 June 2019	59	53	58	53	57	50
Sun, 23 June 2019	59	54	61	55	59	50
Mon, 24 June 2019	61	56	58	52	56	48

Day	Sound Pressure Level (dB re. 2x10^{-5} Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Average	*60*[5]	*55*[6]	*59*[3]	*53*[4]	*58*[3]	*50*[4]

Table 11.6: Summary of Measured Noise Levels at UN3 (dB re. 2x10-5 Pa).

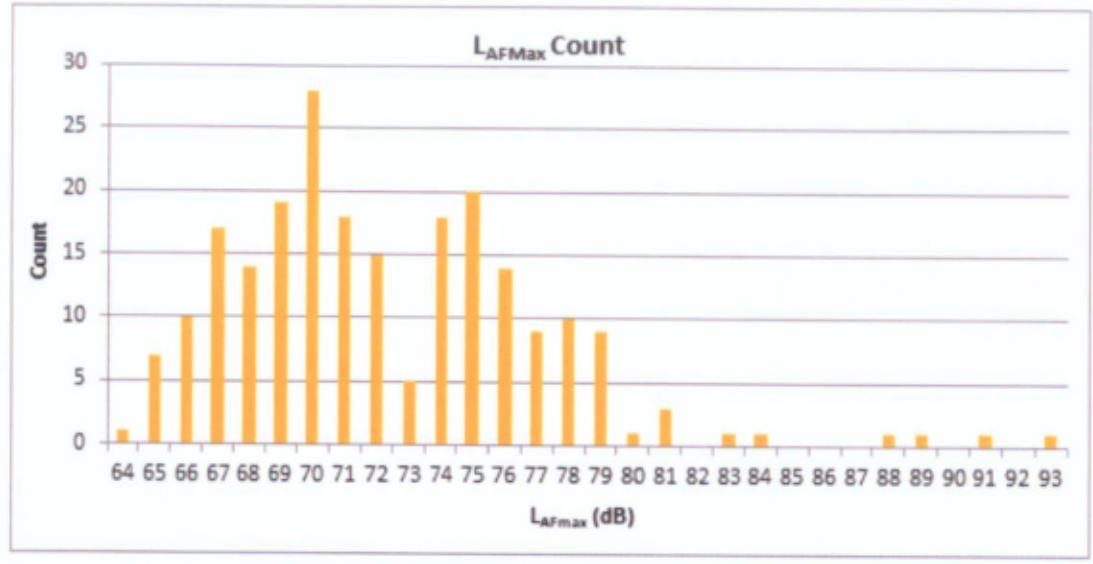


Figure 11.6: Number of L_{AFMax} events at each decibel level measured during the night period at location UN3.

During the 7 day survey period at UN3 all events measured above 60 dB L_{AFMax}. Fifteen events were measured at or above 80 dB L_{AFMax}, and as a result no survey days exceeded 20 events in one night period. Based on the Figure above the most commonly occurring L_{AFMax} value is 70 dB. The arithmetic L_{AFMax} value is 72 dB.

Vibration Survey Results June / July 2019

Survey Position VM1

Unattended vibration monitoring was undertaken at one location within the Dublin Central Masterplan site (VM1) representative of the existing noise environment at the closest NSLs and the noise climate within the Dublin Central Masterplan site.

The monitoring data has been reviewed against the Luas timetables to align measurement periods against passing tram times along the adjacent line. Measured vibration values significantly in excess of those associated with tram pass by's have been removed as outlier values associated with the activities at the accelerometer which were noted to occur for a small number of periods.

Peak Particle Velocity

Table 11.7 summarises the monitoring results for this location for the horizontal and vertical axes. The range of maximum, minimum and median PPV values recorded over each daytime period (07:00 to 23:00hrs) and each night-time period (23:00 to 07:00hrs) over the 8 day monitoring period are presented. The typical PPV value associated with tram pass bys are also included.

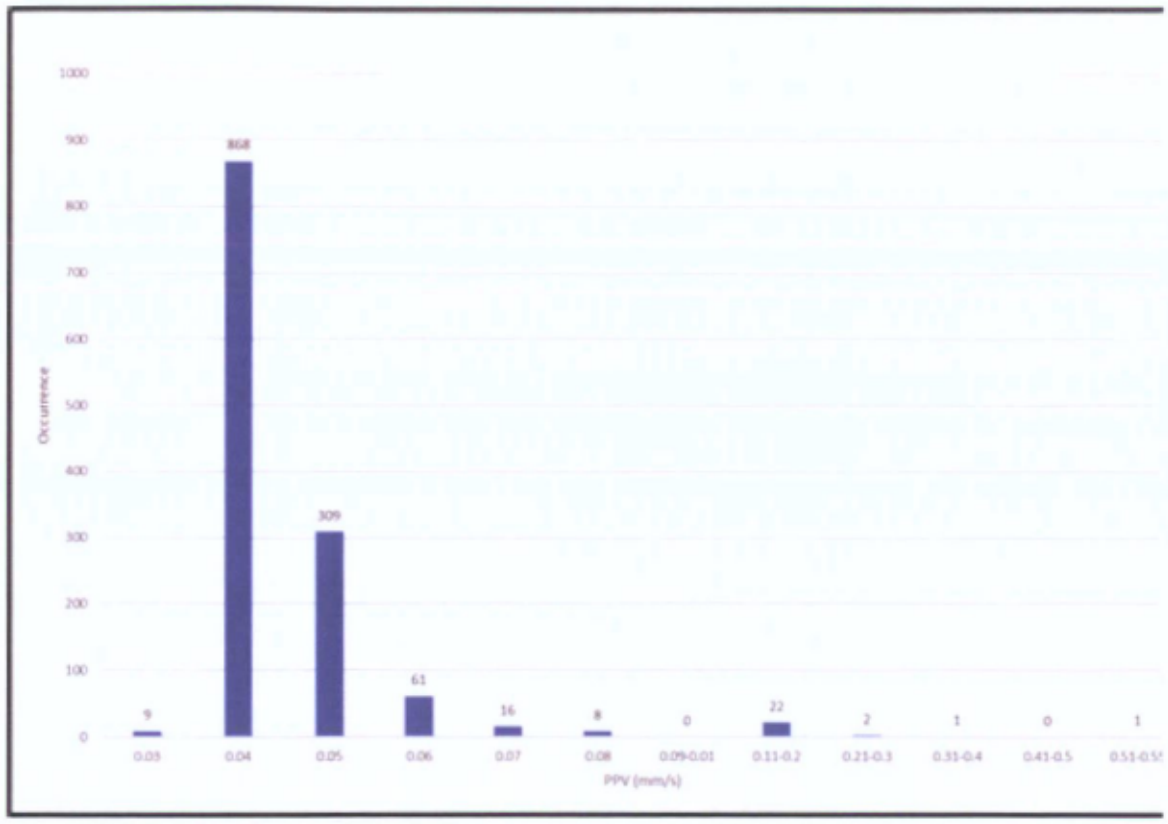
5 Logarithmically averaged
6 Arithmetically averaged

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

	Maximun PPV mm/	Minimum PPV mm/s	Median PPV (mm/s)	laximum PV mm/s	ıimum ' mm/s		Typical trair pass by - PP (mm/s)
	0.15 – 0.4	0.03	0.04	.07 – 0.13	3		0.05 – 0.08

Table 11.7: PPV values for VM1.

Figure 11.7 presents the distribution of measured PPV values over the 8 day monitoring period during daytime hours (07:00 to 23:00hrs) for the vertical axis.



PPV values are in the range of 0.03 to 0.04 in the absence of passing trains. During a passing train event, measured PPV values are measured in the range of 0.05 to 0.08mm/s. The dominant frequency associated with a tram pass by is in the range of 15 to 20Hz. A low number of PPV events were recorded in the range of 0.1 to 0.5mm/s over day and night-time periods which are also potentially attributed to tram pass by's. The maximum events recorded are expected, however, to be as a result of activities adjacent to the accelerometer.

Figure 11.8 presents the distribution of measured PPV values over the 8 day monitoring periods during night-time hours (23:00 to 07:00hrs) for the vertical axis.

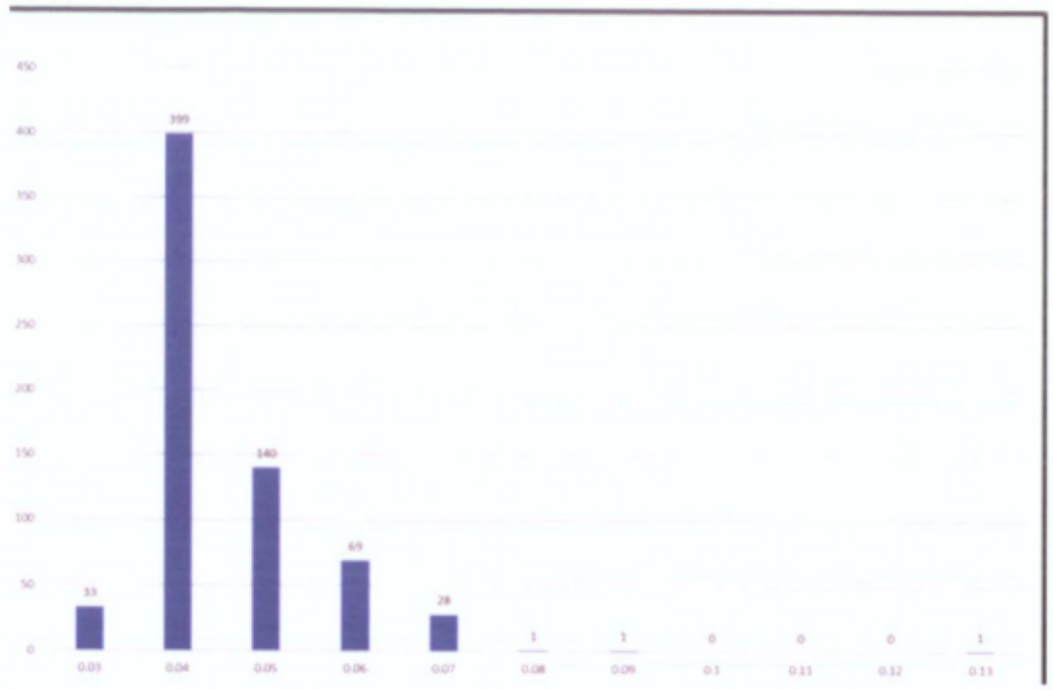


Figure 11.8: Night-time PPV Vertical Distribution at VM1

PPV values are in the range of 0.03 to 0.04mm/s in the absence of passing trams. During a passing train event, measured PPV values are measured in the range of 0.05 to 0.07mm/s. The dominant frequency associated with a train pass by is in the range of 20 to 40Hz.

Vibration Baseline Overview

The baseline vibration environment is low. Vibration levels associated with passing tram traffic was detectable above the baseline environment. The overall range of vibration levels measured was however, low and would not give rise to levels of vibration typically perceptible to building occupants.

Environmental Noise Survey Conducted July / August 2020

Survey Positions

In July and August 2020 unattended noise monitoring was undertaken at one location within the Dublin Central Masterplan site (UN4). An additional four attended monitoring locations (AN1 to AN4) were undertaken in the close vicinity of the Dublin Central Masterplan site, representative of the existing noise environment at the closest NSLs and the noise climate within the Dublin Central Masterplan site. The locations are described below in Table 11.8 and shown in Figure 11.9.

4		Unattended noise monitor. Externally positioned 1m outside first storey window to north-eastern boundary of the proposed site, overlooking O'Connell Street.	data collected at this location been cross referenced with UN1 used to predict expected noise els across the Proposed elopment site which in turn will used to inform the ProPG essment to be presented in the EIAR chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Location	ITM Co-ordinates	Description	Rationale
AN1	715626, 734915	Attended monitoring approximately 50m northwest of northern boundary of site, in line with facades of nearest NSLs (Rotunda Hospital).	Representative of the nearest NSLs situated to the north of the site along Parnell Street.
AN2	715762, 734853	Attended monitoring approximately 2.5m from mid-point along eastern boundary of site, in line with facades of nearest NSLs (Lynam Hotel) along O' Connell Street.	Representative of the nearest NSLs situated to the east of the site along O'Connell Street.
AN3	715751, 734682	Attended monitoring approximately 2.5m from southern boundary of site, in line with commercial property facades. Located 60m from O'Connell Street junction.	Representative of the nearest commercial properties situated to the south of the site, along Henry Street.
AN4	715642, 734793	Attended monitoring approximately 10m northwest of western boundary of site, in line with facades of nearest NSLs (Greeg Court Apartments) along Moore Street. Located 80m from Parnell Street Junction.	The data collected at this location is representative of the nearest commercial NSLs along More Street and has been used to predict expected noise levels across the Proposed Development site which in turn will be used to inform the ProPG assessment to be presented in the full EIAR chapter.

Table 11.8: Measurement Locations.

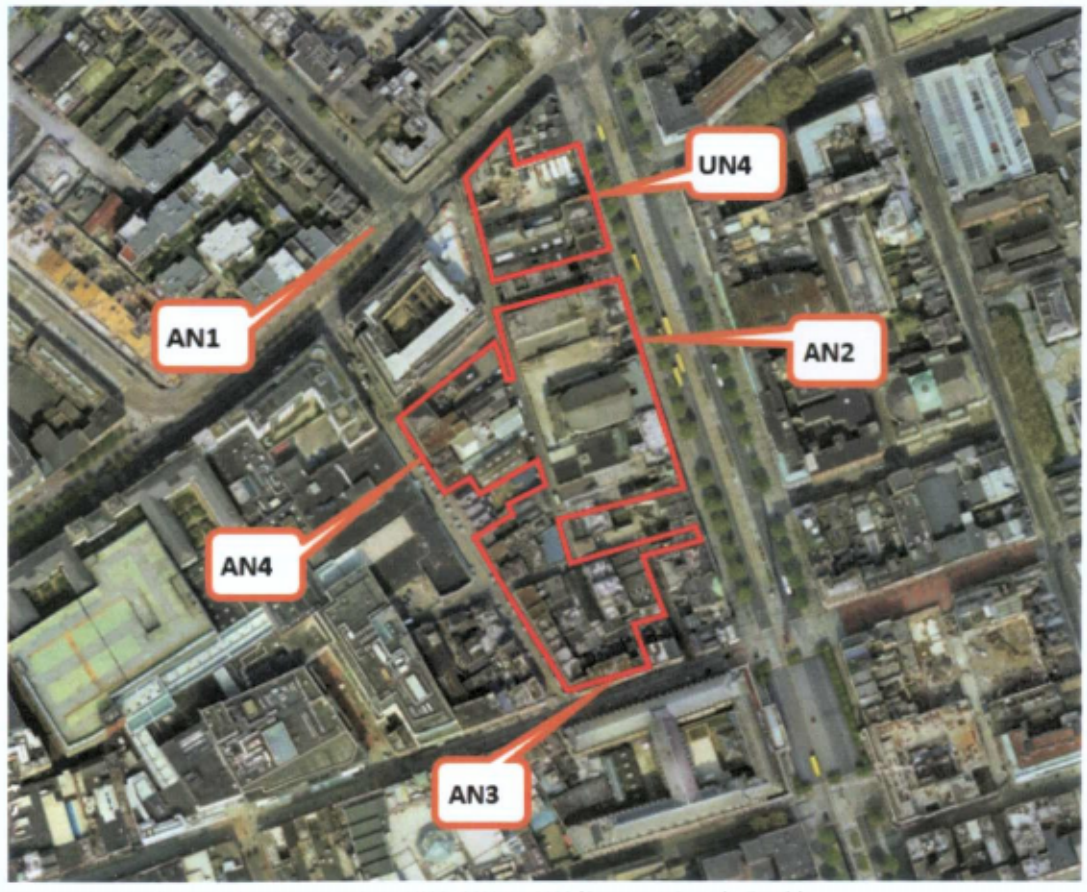


Figure 11.9: Noise Monitoring Locations UN4, AN1 to AN4 (Source : Google Earth)

Survey Periods and Personnel

The following equipment was installed by AWN Consulting personnel over the following periods:

Survey Position	Survey Period
UN4	11:00 hrs 28 July 2020 to 08:25 hrs 08 August 2020
AN 1 to AN4	11:54 hrs to 15:33 hrs 11 August 2020
AN 1 to AN4	23:00 hrs 11 August to 02:16 hrs 12 August 2020

Table 11.9: Survey Periods.

Instrumentation

The surveys were performed using the equipment listed in Table 11.10.

Survey Position	Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
UN4	Sound Level Meter	Rion	NL-52	586940	15 August 2018
AN1 to AN4				186668	07 May 2020
All	Calibrator	Brüel & Kjær	Type 4231	2394086	3 March 2020

Table 11.10: Noise Monitoring Equipment Details.

The unattended microphone was protected using WS-15 outdoor microphone kit and the attended microphone was protected using a proprietary windshield. Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator. Calibration certificates for the equipment are available on request.

Noise Environment Results

Survey Position UN4

Table 11.11 summarises the measured day, evening and night-time noise levels for survey location UN4. Subjective observations during the setup and removal of the monitoring equipment noted that the primary contributor to noise build-up was road traffic noise from O'Connell Street with intermittent Luas pass-by and bell ringing.

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tues, 28 July 2020	65	58	64	56	62	48
Wed, 29 July 2020	64	57	65	55	63	52
Thurs, 30 July 2020	66	59	64	56	64	49
Fri, 31 July 2020	66	59	64	57	61	50
Sat, 01 August 2020	64	56	65	56	62	50
Sun, 02 August 2020	62	54	64	57	59	48
Mon, 03 August 2020	62	54	64	55	59	47

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Day	Sound Pressure Level (dB re. 2x10^{-5} Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (07:00 to 23:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tues, 04 August 2020	65	58	65	57	58	47
Wed, 05 August 2020	64	57	64	57	60	47
Thurs, 06 August 2020	64	58	65	57	61	48
Fri, 07 August 2020	66	58	65	57	61	49
Average	*65*[7]	*57*[8]	*65*[3]	*56*[4]	*61*[3]	*49*[4]

Table 11.11: Summary of Measured Noise Levels at UN1 (dB re. 2x10-5 Pa)

The L_{AFMax} values were measured at 5 minute intervals over the duration of the unattended monitoring survey. Figure 11.10 presents the distribution of the magnitude of L_{AFMax} events during the night period.

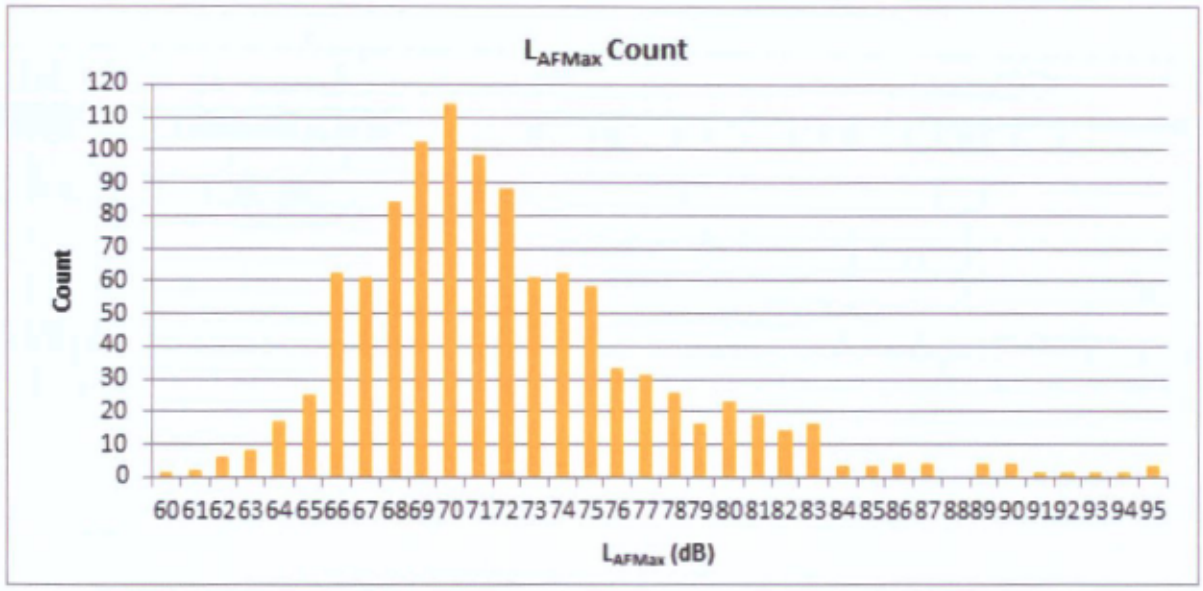


Figure 11.10: Number of L_{AFMax} events at each decibel level measured during the night period at location UN4.

During the 11 day survey period all events measured above 60 dB L_{AFMax}. More than 100 events were measured at or above 80 dB L_{AFMax}, however none survey days exceeded 20 events in one night period. The most commonly occurring L_{AFMax} value is 70 dB. The arithmetic L_{AFMax} value is 72 dB.

Table 11.12 presents the L_{AFMax} noise level assumed for the purpose of this assessment. Spectral data has been derived from the mode of the frequency content measured at the magnitude of 72 dB L_{AFMax}. At survey locations UN1 to UN3, the spectrum has been adjusted accordingly[9] from the frequency content collated at UN4.

7 Logarithmically averaged.
8 Arithmetically averaged.
9 The LAFMax value for each unattended location (UN1 to UN3) was chosen from either the most commonly occurring value or arithmetic average, whichever is the higher value.

Survey Location Reference	Overall dB L_{AFMax}	Octave Band Centre Frequency (Hz)					
		125	250	500	1k	2k	4k
UN4	72	64	66	65	66	63	60
UN1	79	71	73	72	73	70	67
UN2	70	62	64	63	64	61	58
UN3	72	64	66	65	66	63	60

Table 11.12: Night-time L_{AFMax} Noise Levels.

Survey Position AN1

All daytime measurements were affected to some degree by construction works that are ongoing in the surrounding area. The contribution from construction noise has been minimised through location of the noise monitor and careful operation of the meter to remove any excessive noise emissions that are not considered a part of the normal noise environment.

The survey results for Location AN1 are presented in Table 11.13. During the day time period road traffic noise from Parnell Street and the surrounding city centre roads were the dominant noise source at this location with intermittent Luas pass-by and bell ringing, sirens, distant construction noise and pedestrian activity. At night-time road traffic noise continued as the dominant noise source with intermittent street sweeper pass-by, and alarms sounding in the distance.

Date	Period	Measurement Period	Measured Noise Levels, dB re 2×10^{-5} Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
Tues, 11 August 2020	Day	11:54 – 12:09	69	86	63
		13:09 – 13:24	72	99	63
		14:23 – 14:38	78	104	63
	Night	23:00 – 23:15	67	83	52
		23:15 – 23:00	65	81	54
		23:30 – 23:45	67	86	57

Table 11.13: Measured Noise Levels at Location AN1.

Daytime ambient noise levels at this location were dominated by road traffic noise from Parnell Street and local roads. Noise levels were in the range of 69 to 78 dB $L_{Aeq,15min}$ and in the order of 63 dB $L_{A90,15min}$ during the measurement periods. The third day time measurement was influenced by a fire engine passing by towards the end of the measurement period.

Night-time ambient noise levels at this location were dominated by road traffic noise from Parnell Street and local roads. Noise levels were in the range of 65 to 67 dB $L_{Aeq,15min}$ and in the range of 52 to 57 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Survey Position AN2

The survey results for Location AN2 are presented in Table 11.14. During the day time period road traffic noise from O' Connell Street and the surrounding city centre roads were the dominant noise source at this location with intermittent Luas pass-by and bell ringing, street sweeper pass-by, car horns, sirens, pedestrian activity and birdsong. At night-time road traffic noise continued as the dominant noise source with constant plant noise audible. Intermittent street sweeper, pedestrians and a traffic light beacon were also noted as contributors to the noise build up.

Date	Period	Measurement Period	Measured Noise Levels, dB re 2×10^{-5} Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
Tues, 11 August 2020	Day	12:50 – 13:05	67	79	61
		14:04 – 14:19	67	76	61
		15:18 – 15:33	69	93	61
Wed, 12 August 2020	Night	01:30 – 01:45	63	79	48
		01:45 – 02:00	67	88	45
		02:00 – 02:15	59	74	49

Table 11.14: Measured Noise Levels at Location AN2.

Daytime ambient noise levels at this location were dominated by road traffic noise from O Connell Street. Noise levels were in the range of 67 to 69 dB $L_{Aeq,15min}$ and in the order of 61 dB $L_{A90,15min}$ during the measurement periods.

Night-time ambient noise levels at this location were dominated by road traffic noise from O'Connell Street and continuous plant noise sources. Noise levels were in the range of 59 to 67 dB $L_{Aeq,15min}$ and in the range of 45 to 49 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Survey Position AN3

The survey results for Location AN3 are presented in Table 11.15. During the day time period pedestrians passing by with distant buskers, road traffic noise and Luas noise from O'Connell Street were the dominant noise sources at this location. Intermittently aircraft flyover and street sweepers pass-by also contributed to the noise build up. At night-time distant road traffic noise continued as the dominant noise source. Intermittent street sweeper, pedestrians, running water, distant alarms / sirens were also noted as contributors to the noise build up.

Date	Period	Measurement Period	Measured Noise Levels, dB re 2×10^{-5} Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
Tues, 11 August 2020	Day	12:31 – 12:46	65	82	61
		13:45 – 14:00	65	88	61
		14:59 – 15:14	67	84	61
Wed, 12 August 2020	Night	00:40 – 00:55	53	67	47
		00:55 – 01:10	52	69	46
		01:11 – 01:26	54	67	48

Table 11.15: Measured Noise Levels at Location AN3.

Daytime ambient noise levels at this location were dominated by city centre activity along Henry Street, namely buskers and pedestrians, along with distant road / Luas traffic noise from O Connell Street. Noise levels were in the range of 65 to 67 dB $L_{Aeq,15min}$ and in the order of 61 dB $L_{A90,15min}$ during the measurement periods.

Night-time ambient noise levels at this location were dominated by road traffic noise from O'Connell Street. Noise levels were in the range of 52 to 54 dB $L_{Aeq,15min}$ and in the range of 46 to 48 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Survey Position AN4

The survey results for Location AN4 are presented in Table 11.16. During the day time period pedestrians passing by with plant noise and intermittent road traffic were the dominant noise sources at this location. Distant construction noise, intermittent street sweeper pass-by and alarms ringing also contributed to the noise build up. During the first two night-time noise measurements a delivery along Moore Street with truck pass-by and idling with pallet truck movements were the dominant noise sources. Continuous plant noise, distant road traffic noise, intermittent Luas pass-by and shouting from pedestrians along Parnell Street were also noted as contributors to the noise build up. During the final measurement, the truck delivery had finished and the dominant noise source was continuous plant noise with distant road traffic noise also audible.

Date	Period	Measurement Period	L_{Aeq}	L_{AFMax}	L_{A90}	L_{Aeq} Octave Band Centre Frequency (Hz)					
						125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Tues, 11 August 2020	Day	12:12 – 12:27	65	82	62	61	59	57	55	52	45
		13:27 – 13:42	64	83	61	60	57	58	56	51	45
		14:41 – 14:56	69	93	63	62	60	64	62	58	52
	Night	23:49 – 00:04	72	98	54	61	65	69	64	58	51
Wed, 12 August 2020		00:04 – 00:19	68	91	54	60	55	58	67	54	48
		00:20 – 00:35	51	68	49	49	41	40	37	33	26

Table 11.16: Measured Noise Levels at Location AN4.

Daytime ambient noise levels at this location were dominated by plant noise and intermittent local road traffic and pedestrians passing by. Noise levels were in the range of 64 to 69 dB $L_{Aeq,15min}$ and in the range of 61 to 63 dB $L_{A90,15min}$ during the measurement periods.

Night-time ambient noise levels at this location were dominated by truck deliveries and plant noise from Moore Street commercial developments. Noise levels were in the range of 51 to 72 dB $L_{Aeq,15min}$ and in the range of 49 to 54 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Noise Baseline Overview

The measured noise levels reflect typical city centre locations. At roadside positions, traffic on the busy main road and pedestrian activity dominate while at positions further from main roads, individual vehicle movements and pedestrian activity dominate with constant distant traffic contributing to measured levels.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Comment on Covid-19 Pandemic on 2020 Survey Noise Environment

The unattended noise monitor at UN4 installed in 2020 was positioned on eastern boundary of the Dublin Central Masterplan site, in a comparable location to the 2019 UN1 noise monitor. Comparison between the average L_{Aeq} values at the two locations indicate that there was a reduction no greater than 3 dB at the UN4 location due to the Covid-19 travel restrictions.

As a worst-case assessment, the highest noise environments identified during 2019 or 2020 will be used to inform the inward impact assessment, with the lowest noise environments used to inform the outward impact assessment.

11.3.2 Proposed Development – Site 3, 4 & 5

The receiving environment in terms of baseline noise and vibration is expected to be the same for the Dublin Central Masterplan development and each individual site within the development. Therefore, the baseline environment outlined in Section 11.3.1 do not differentiate between the Dublin Central masterplan development or the individual site of the development being assessed within this EIAR chapter.

In the Proposed Development (Sites 3, 4 and 5) the nearest existing residential NSLs to the Proposed Development are those located at Greeg Court Apartments, to the northwest site boundary along Moore Street. The Rotunda Hospital is located to the north of the site boundary on Parnell Street.

Apart from the receptors identified above, there are protected buildings identified at 14 to 17 Moore Street to the northwest of the site boundary.

Commercial NSLs include Jurys Inn Hotel Parnell Street and Lynams Hotel, which are located beyond the northern boundary on O 'Rahilly Parade and eastern boundary on Henry Place respectively. Other hotels in close proximity to the eastern site boundary are Holiday Inn Express and The Gresham Hotel on O'Connell Street.

11.3.2.1 Proposed Development Site 3

Site 3 site is located to the south west of the Dublin Central Masterplan development and is bounded by Henry Place to the north and east, Henry Street to the south and Moore Street to the west. A full description of the development is provided in Chapter 3: Description of Proposed Development.

11.3.2.2 Proposed Development Site 4

Site 4 is located to the west of the Dublin Central Masterplan development, and is bounded by Moore Lane to the east, Henry Place to the south, Moore Street to the west and the proposed Site 5 to the north. A full description of the development is provided in Chapter 3: Description of Proposed Development.

11.3.2.3 Proposed Development Site 5

Site 5 site is located to the northwest of the Dublin Central Masterplan development and is bounded by Moore Street to the west, O' Rahilly Parade to the north, Moore Lane to the east and the proposed Site 4 to the south. A full description of the development is provided in Chapter 3: Description of Proposed Development.

11.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

When considering a development of this nature, the potential noise and vibration impacts on the surroundings are considered for each of two distinct stages, the short to medium-term construction stage and the long term operational stage.

11.4.1 Dublin Central Masterplan

11.4.1.1 Construction Stage

The construction stage of the development of the Dublin Central Masterplan will be undertaken over all five sites, each which involve key stages which will involve site preparation, demolition, basement excavation and building construction. Site 2AB and Site 2C also includes the construction of a basement under 43 to 60 O'Connell Street which will facilitate the future provision of the MetroLink Station by Transport Infrastructure Ireland (TII), the CEMP for which will be made by the TII under a separate application. The full assessment of Site 2AB and Site 2C and the cumulative impact of the development of the MetroLink Station by TII will be assessed fully as part of a subsequent planning application.

The different stages will involve a number of potential noise and vibration sources including excavators, crushing plant, piling rigs, demolition equipment and other general building construction works including landscaping. In addition, there will be construction traffic to and from the development site over the course of the works. The construction stage of the Dublin Central Masterplan development is expected to have the highest potential for noise and vibration impacts on the surrounding environment. This stage will be of medium-term impact and is assessed in the following sections.

The phasing of construction works over the Dublin Central Masterplan will need to consider potential impacts on NSLs external to the development site and those within the earlier stages of the Dublin Central Masterplan for the following scenarios: -

- Site 3 and Site 4 may be in construction phase when Site 1 is completed and may be occupied.
- Site 2AB and Site 2C may be in construction phase when Sites 1, 3 and 4 are completed and may be occupied.
- Site 5 may be in construction phase when Sites 1, 2AB, 2C, 3 and 4 are completed and may be occupied.

11.4.1.2 Operational Stage

During the operational stage the Dublin Central Masterplan will comprise several functions including residential, commercial offices, retail, café / restaurant and cultural units, hotel accommodation and transport link.

Noise sources associated with the operational phase will include noise from mechanical plant items serving the various buildings, traffic noise associated with private vehicles of residents, workers and visitors journeying to and from the development, delivery and servicing vehicles and entertainment noise.

The inward impact of the noise environment on the development itself is also considered during the operational stage.

11.4.2 Proposed Development – Site 3, 4 & 5

11.4.2.1 Construction Stage

Due to the nature of the Proposed Development under consideration, typically the same characteristics apply to both the Proposed Development (Sites 3, 4 and 5) and the Dublin Central Masterplan. Outlined in the sections below, the specific works associated with each site within the Proposed Development are listed.

11.4.2.1.1 Construction Stages – Site 3

Site 3 involves the construction of two separate multistorey buildings, Block A and Block B. As discussed in Section 11.4.1.1 the main site activities will include: -

- Site preparation.
- Demolition.
- Basement excavation, including piling works and secant retaining wall construction.
- General construction.
- Landscaping.

These activities will have the greatest potential noise and vibration impacts on the surrounding environment, however the construction stage will be of short-term impact.

During the stages of construction works on Site 3, the assessment will need to consider potential impacts on noise sensitive locations external to the development site only i.e. none of the buildings constructed in the earlier stages of the Dublin Central Masterplan site will be occupied.

11.4.2.1.2 Construction Stages – Site 4

Site 4 involves the construction of a mixture of two and three storey structures and includes the retention the protected buildings identified at 14 to 17 Moore Street adjacent to the centre of the Site 4 boundary. As discussed in Section 11.4.1.1 the main site activities will include: -

- Site preparation.
- Demolition.
- It is proposed to re-use the existing foundations to support new floor slab and rising walls. The existing basements, where present will also be retained and incorporated into the scheme. Therefore, no significant ground works are anticipated.
- General construction.
- Landscaping.

These activities will have the greatest potential noise and vibration impacts on the surrounding environment, however the construction stage will be of short-term impact.

During the stages of construction works on Site 4, the assessment will need to consider potential impacts on noise sensitive locations external to the development site only i.e. none of the buildings constructed in the earlier stages of the Dublin Central Masterplan site will be occupied.

11.4.2.1.3 Construction Stages – Site 5

Site 5 involves the construction of a six storey building. As discussed in Section 11.4.1.1 the main site activities will include: -

- Site preparation.
- Demolition, including façade demolition.
- Basement excavation, including piling works and secant retaining wall construction.
- General construction.
- Landscaping.

These activities will have the greatest potential noise and vibration impacts on the surrounding environment, however the construction stage will be of short-term impact.

During the stages of construction works on Site 5, the assessment will need to consider potential impacts on NSLs external to the development site. Additionally as it is expected that Site 5 will commence construction when Sites 1, 2, 3 and 4 are completed and may be occupied, therefore the assessment will also consider potential impacts on NSLs within the Dublin Central Masterplan development site.

11.4.2.2 Operational Stage

11.4.2.2.1 Operational Phase – Site 3

Site 3 comprises two separate multistorey buildings, Block A (hotel, retail and café / restaurant) Block B (residential, retail, café / restaurant and cultural). The anticipated operational noise sources associated with this site include: -

- Mechanical plant noise.
- Entertainment noise.
- Servicing and delivery noise.

The above noise sources are linked to the operation of the development and are therefore the resultant impacts are designated permanent in duration.

11.4.2.2.2 Operational Phase – Site 4

Site 4 comprises a mixture of two and three storey structures and includes the retention the protected buildings identified at 14 to 17 Moore Street adjacent to the centre of the Site 4 boundary. This site provides for residential, retail and café / restaurant uses. The anticipated operational noise sources associated with this site include: -

- Mechanical plant noise.
- Entertainment noise.
- Servicing and delivery noise.

The above noise sources are linked to the operation of the development and are therefore the resultant impacts are designated permanent in duration.

11.4.2.2.3 Operational Phase – Site 5

Site 5 comprises a six storey office building that also provides café / restaurant uses at ground floor. As above the anticipated operational noise sources associated with this site include: -

- Mechanical plant noise.
- Entertainment noise.
- Servicing and delivery noise.

The above noise sources are linked to the operation of the development and are therefore the resultant impacts are designated permanent in duration.

11.5 POTENTIAL IMPACTS

11.5.1 Dublin Central Masterplan

11.5.1.1 Construction Stage

11.5.1.1.1 Relevant Criteria – Noise

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction stage of a project. Dublin City Council (DCC) typically controls construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

DCC – Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Dublin City Council's *"Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition"* (hereinafter referred to as DCC GPG) outlines a risk assessment methodology directly applicable to the specific construction activities on the proposed site.

The Proposed Development has been classed as a high risk category site based on the DCC GPG risk assessment factors as detailed below: -

- Duration of the works.
- Distance to NSLs.
- Ambient noise levels.
- Site operating hours.
- Location of works.
- Duration of demolition.
- Intrusive noise activities, including vibration generating activities.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

As the Proposed Development is in the high risk category, the monitoring section (S.6) of the DCC GPG document identifies that: -

> *"The ABC Method detailed in Paragraph E.3.2 of BS 5228-1:2009 shall be used to determine acceptable noise levels for day, evening and night time work."*

Please note that construction works in relation to this development are proposed during normal working hours only as set out below: -

- Monday to Friday: 08:00 to 18:00hrs
- Saturdays: 08:00 to 14:00hrs
- Sundays and Bank Holidays: No construction works.

British Standard BS 5228 – 1: 2009+A1:2014

DCC GPG refers to British Standard BS *5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* (hereinafter referred to as BS 5228-1:2009+A1:2014) as appropriate criteria relating to permissible construction noise threshold levels for a development of this scale may be found in BS 5228-1:2009+A1:2014.

Potential noise impacts during the construction stage of a project are often assessed in accordance with BS 5228-1:2009+A1:2014. Various mechanisms are presented as examples of determining if an impact is occurring, these are discussed in the following paragraphs.

ABC Method

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities.

This document sets out guidance on permissible noise levels relative to the existing noise environment. Table 11.17 sets out the values which, when exceeded, signify a potential significant effect at the facades of residential receptors as recommended by BS 5228-1:2009+A1:2014.

Assessment Category and Threshold Value Period (L_{Aeq})	Threshold Value (dB)		
	Category A [A]	Category B [B]	Category C [C]
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings & Weekends [D]	55	60	65
Daytime (07:00 – 19:00hrs) and Saturdays (07:00 – 13:00hrs)	65	70	75

Table 11.17: Maximum Permissible Noise Levels at the Façade of Dwellings during the Construction Stage

Note A: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B: Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this assessment method is only valid for residential properties and if applied to commercial premises without consideration of other factors may result in an excessively onerous thresholds being set.

Fixed Limits

BS 5228-1:2009+A1:2014 gives several examples of acceptable limits for construction or demolition noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

> *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."*

Paragraph E.2 goes on to state: -

> *"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -*
>
> *70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;*
>
> *75 decibels (dBA) in urban areas near main roads in heavy industrial areas".*

Other Largescale Developments Granted Permission in Dublin City

It is also appropriate to reference other large developments that have been granted planning permission in Dublin City. In this instance the following two project examples are presented: -

- DART Underground.
- New Children's Hospital, St. James' Hospital.

The following tables present the noise limits for each of these developments at the façade of residential NSLs.

Day	Period & Limit	Notes
Monday to Friday	75dB $L_{Aeq\ 1hr}$ 07:00 – 19:00hrs 65dB $L_{Aeq\ 1hr}$ 19:00 – 22:00hrs 45dB $L_{Aeq\ 15mins}$ 22:00 – 07:00hrs *	*Non tonal, non impulsive
Saturdays	70dB $L_{Aeq\ 1hr}$ 08:00 – 16:30hrs 55dB $L_{Aeq\ 1hr}$ 16:30 – 22:00hrs 45dB $L_{Aeq\ 15mins}$ 22:00 – 08:00hrs *	
Sundays, Bank & Public Holidays	60dB $L_{Aeq\ 1hr}$ 08:00 – 16:30hrs 50dB $L_{Aeq\ 1hr}$ 16:30 – 22:00hrs 45dB $L_{Aeq\ 15mins}$ 22:00 – 08:00hrs *	

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Table 11.18: Dart Underground Construction Noise Level Criteria at any Façade of a Normal Residence

Day	Period & Limit	Notes
Monday to Friday	70dB $L_{Aeq,1hr}$ 07:00 – 19:00hrs 60dB $L_{Aeq,1hr}$ 19:00 – 22:00hrs * The higher of 45dB $L_{Aeq\ 1hr}$ or the ambient level 22:00 – 07:00hrs *	* Construction activity at these times, other than that required for emergency works, will require the explicit permission of the relevant local authority
Saturdays	65dB $L_{Aeq,1hr}$ 08:00 – 16:00hrs 45dB $L_{Aeq\ 1hr}$ outside of these hours*	
Sundays, Bank & Public Holidays	60dB L_{Aeq} 08:00 – 16:00hrs *	

Table 11.19: New Children's Hospital Construction Noise Level Criteria at any Façade of a Normal Residence

Proposed Threshold Levels for Noise

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see Section11.3.1.2), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise in line with the DCC GPG.

The following construction noise threshold levels are proposed for the construction stage of this development: -

- For residential NSLs it is considered appropriate to adopt the 70 dB(A) threshold level, given the baseline monitoring carried out, it would indicate that Category B values are appropriate using the ABC method.
- For commercial NSLs it is considered appropriate to adopt the 75 dB(A) threshold level, given the urban environment in which the closest commercial properties reside, in line with BS 5228-1:2009+A1:2014 and DCC GPG.
- For clinical NSLs it is considered appropriate to adopt the 75 dB(A) threshold level, given the urban environment in which the Rotunda Hospital resides. In addition, if the ABC method were applied to the Rotunda Hospital, given the baseline monitoring carried out, it would indicate that Category C values are appropriate i.e. 75 dB(A) threshold level.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, Table 11.20 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the threshold value. This guidance is taken from Table 3.16 of DMRB: Noise and Vibration (UKHA 2020) and adapted to include the EPA EIAR Guidelines.

Impact Guidelines for Noise Impact Assessment Significance (Adapted from DMRB)	CNL per Period	EPA EIAR Guidelines	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on range of CNL and baseline noise level
Minor	Above baseline and below or equal to CNL	Slight to Moderate	
Moderate	Above CNL and below or equal to CNL +5 dB	Moderate to Significant	
Major	Above CNL +5 dB	Significant to Very Significant	

Table 11.20: Example Threshold of Significant Effect at Dwellings

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

Additional Traffic on Public Roads – Construction Stage

In order to assist with interpretation of construction traffic noise, Table 11.21 includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This guidance is taken from Table 3.17 of DMRB: Noise and Vibration (UKHA 2020).

Change in Sound Level, dB(A)	Magnitude of Impact
<1.0	Negligible
1.0 – 2.9	Minor
3 – 4.9	Moderate
<5.0	Major

Table 11.21: Likely Effect Associated with Change in Traffic Noise Level – Construction Noise. Source: (DMRB 2020).

In accordance with the DMRB guidance (UKHA 2020), construction traffic shall constitute a significant effect where it is determined that a major or moderate magnitude will occur for a duration exceeding: -

- Ten or more days or nights in any 15 consecutive day or night period.
- A total number of days exceeding 40 in any 6 consecutive months.

The DMRB guidance outlined will be used to assess the predicted increases in traffic levels on public roads associated with the Proposed Development and comment on the likely impacts during the construction stage.

11.5.1.1.2 Potential Impacts During Construction

Given that the construction stage is highly transient in nature and involves a number of various stages which will encompass a range of different activities on a day to day and week to week basis, it is not possible to calculate with a high degree of accuracy the specific levels of noise associated with each stage. The construction stage will be undertaken over a number of stages from site preparation through to building construction and internal fit out. In terms of the potential noise and vibration impacts, the key stages and activities are expected to involve: -

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- Site Preparation & Demolition.
- Façade Demolition.
- Secant Piled Wall.
- Basement Excavation.
- Retaining Wall.
- Piling & Basement Foundation Slab Construction.
- Super-Structure Construction.
- General Construction.

The impact at nearby NSLs will depend upon a number of variables, the most notable of which are: -

- the amount of noise generated by plant and equipment being used at any one time, expressed in terms of sound pressure or sound power.
- the periods of operation of the plant at the development site, known as the "on-time".
- the distance between the noise source and the receptor.
- the attenuation due to ground absorption or barrier screening effects from walls, buildings, site hoarding etc.

The construction phase will be controlled through the use of construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed.

Sensitive Receptors

Noise and vibration impacts will be assessed to the nearest sensitive locations to the Dublin Central Masterplan site boundaries i.e. a worst-case assessment of the closest sensitive locations during any

of the construction stages of the five sites. These closest locations are identified in Figure **11.11**.



NSL1 Residential apartments on Moore Lane located approximately 15m to the west of Site 5 boundary.

NSL 2 The Rotunda Hospital on Parnell Street located approximately 20m to the north of Site 1 boundary.

NSL 3 AIB Bank offices on O'Connell Street / Parnell Street located directly adjacent to the north of Site 1 boundary.

NSL 4 Hotel rooms located in Jurys Inn Hotel Parnell Street, located approximately 10m to the north of the Site 5 boundary and 10m to the west of Site 1 and Site 2C boundaries.

NSL 5 Hotel rooms located in Holiday Inn Express on O'Connell Street Upper, located approximately 45m to east of the Site 1 boundary.

NSL 6 Hotel rooms located in Gresham Hotel on O'Connell Street Upper, located approximately 45m to east of the Site 1 and Site 2C boundaries.

NSL 7 Hotel rooms located in Lynams Hotel on Henry Place, located approximately 10m to the east of the Site 3 boundary.

NSL 8 Commercial properties located on Henry Street, located directly adjacent to the southeast of Site 3 boundary.

VSL 1 The Rotunda Hospital on Parnell Street located approximately 20m to the north of Site 1 boundary.

VSL 2 Protected buildings at 14 to 17 Moore Street, located directly adjacent to the Site 4 boundary.

VSL 3 The Luas Line rail tracks located on O'Connell Street, located approximately 20m to the east of the Site 2AB boundary.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

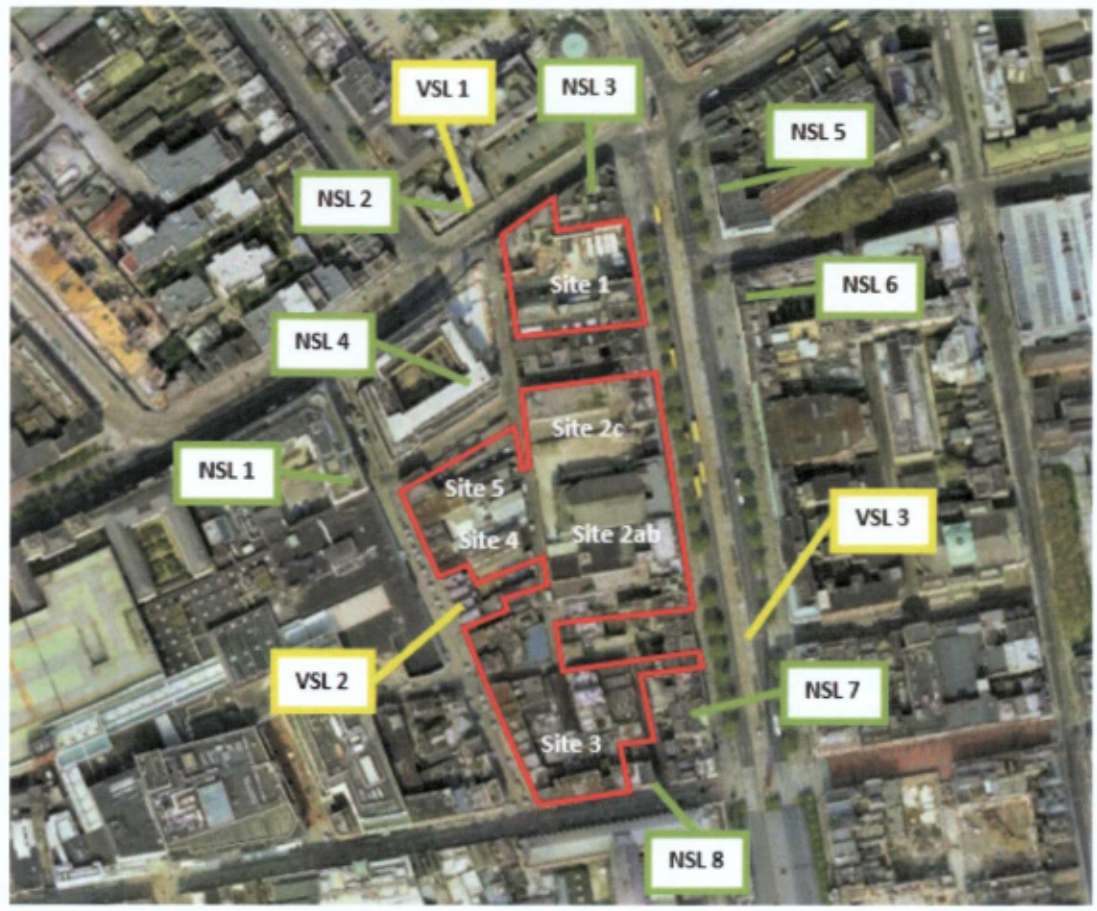


Figure 11.11: Dublin Central Masterplan Boundary with Noise (Green) and Vibration (Yellow) Sensitive Locations (Image Source: Google Earth).

During the construction of the Dublin Central Masterplan, as a worst-case assessment the closest NSLs within the development site at any stage of construction are: -

- Hotel rooms in Site 1 building, located adjacent to Site 2C northern boundary.
- Hotel rooms in Site 3 Block A, located approximately 10m from Site 2AB southern boundary.
- Residential apartments in Site 3 Block B, located approximately 15m from Site 2AB southern boundary.
- Residential dwellings in Site 4, located adjacent to Site 5 southern boundary.
- Office spaces in Site 2AB, located approximately 10m from Site 2C southern boundary.
- Office spaces in Site 2C, located approximately 10m from Site 5 eastern boundary.

Construction Noise Impacts

The construction programme will create typical construction activity related noise onsite. During the construction stage of the Dublin Central Masterplan, a variety of items of plant will be in use, such as breakers, excavators, lifting equipment, dumper trucks, compressors and generators.

Due to the nature of daytime activities undertaken on a construction site of this nature, there is potential for generation of significant levels of noise. The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels.

Due to the fact that the construction programme has been established in outline form only, it is difficult to calculate the actual magnitude of noise emissions to the local environment. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in BS 5228-1:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise*. This standard sets out sound power / sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels. However, it is not possible to conduct detailed accurate prediction calculations for the construction phase of a project in support of the EIAR due to the level of variability during different construction stages over short periods of time.

The following section discusses typical noise levels associated with the Proposed Development and comments on potential noise impacts at distances to the nearest NSLs.

Intrusive Works and High Noise Activities Including Façade Demolition and Basement Excavation

Reference to BS 5288:2009+A1: Part 1 indicates that highest noise levels likely to be required on the site are associated with activities associated with site enabling and ground breaking associated with the initial demolition and ground clearance phase. Noise levels from these activity types are typically in the range of 80 to 90 dB L_{Aeq} at 10m.

For construction activities associated with hard ground breaking, crushing etc, a total construction noise level of 92 dB L_{Aeq}, at 10m has been used for the purposes of indicative calculations. This would involve for example, one item of plant at 90 dB L_{Aeq} and two items of plant at 85 dB L_{Aeq} and one item of plant at 80 dB L_{Aeq} operating simultaneously within one work area which is considered a highly worst-case scenario.

Utilities and Structural Works Including Secant Piled Walls, Retaining Walls, Piling and Basement Foundation Slab Construction

For construction works associated with activities such as site clearance, excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works and piling etc. noise levels are typically in the range of 70 to 80 dB L_{Aeq} at 10m.

For ongoing construction activity associated with the above activities, a total construction noise level of 82 and 85 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations for these activities representing variety over this stage. This would include, for example two items of plant at 80 dB L_{Aeq} and three items of plant at 75 dB L_{Aeq} operating simultaneously within one work area resulting in a total noise level of 85 dB L_{Aeq} and up to six items of plant with a noise level of between 70 and 75 dB L_{Aeq} resulting in a total noise level of 82 dB L_{Aeq} at 10m.

Superstructure and Lower Noise Activities

For construction work areas with lower noise levels such as site compounds (for storage, offices and material handling, generators etc.), smaller items of mobile plant (excavators, cranes, dozers), landscaping and concreting works with lower noise emissions, a total construction noise level of 78 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations. This would include, for example one item of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area.

Given the variations of on-site activities and noise levels over any one day and considering that all activities will not operate simultaneously, the values noted above are considered robust for the purposes of assessing potential construction impacts.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Indicative Construction Noise Calculations at Varying Distances

The closest external NSLs to the Dublin Central Masterplan are directly adjacent to the site boundaries to the north and southeast, with the remaining closest NSLs at distances of approximately 10m to 45m. Remaining properties are located at distances greater than 45 m from different work stages.

The closest internal NSLs within the Dublin Central Masterplan are directly adjacent to the site boundaries to the north and south, with the remaining closest NSLs at distances of approximately 10m to 15m.

Table 11.22 presents the calculated noise levels at distances between 10m and 100m representing the closest NSLs to the construction works. The calculations assume that plant items are operating for 66%[10] of the time. For the purpose of the assessment, a standard site hoarding of 2.4m high has been included in the calculations for noise sensitive boundaries. Screening from existing buildings have not been included in the calculations. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations in and consequently will have lower impact. Our assessment is therefore representative of a "worst-case" scenario representing construction activities at a minimum distance from the NSLs.

Construction Programme Activity	Combined L_{Aeq} at 10 m	Cumulative Predicted Construction Noise Level at a Specific Distance with plant operating at 66% On-Time (dB $L_{Aeq,1hour}$)					
		10 m	15 m	20 m	30 m	50 m	100 m
Initial Works Stage including Intrusive Works e.g. Rock Breaking / Drilling / Rock Crushing	92	86 (89)	82 (85)	75 (78)	71 (74)	67 (70)	61 (64)
Utilities and Structural Works including Secant Piled Walls, Retaining Walls, Piling and Basement Foundation Slab Construction	85	78 (81)	74 (77)	67 (70)	63 (66)	59 (62)	53 (56)
	82	75 (78)	72 (75)	64 (67)	61 (64)	56 (59)	50 (53)
General Site Work including Site Compounds and Landscaping	78	71 (74)	68 (71)	60 (63)	57 (60)	52 (55)	46 (49)

Table 11.22: Indicative Construction Noise Calculations at Varying Distances (with worst case cumulative Dublin Central Masterplan predicted values presented in parenthesis).

In order to assess the cumulative impacts from the Dublin Central Masterplan it has been assumed that there would be an increase in noise level by no more than 3 dB, as shown in parenthesis in Table 11.22 above. While a 3 dB increase is a doubling of sound energy, subjectively any change in noise level below 3 dB would be barely perceptible. This 3 dB increase (maximum doubling of plant items) is based on the practical number of plant and equipment items that could be reasonably assumed at the closest boundaries to the NSLs i.e. there will be a greater separation between plant / equipment and the NSL, which will result in a reduction in the predicted noise level at the closest NSL. In addition, the construction activities in the closest site to the NSL will be the dominant noise source, with very little contribution from sites at greater distances to the NSL i.e. where the contribution from the specific phase is more than 10 dB below noise contribution from the closest phase to the NSL. Our assessment is therefore representative of a "worst-case" scenario representing Dublin Central Masterplan construction activities at a minimum distance from the NSLs. This worst-case scenario would be expected to take place over a very short period of time, if at all.

[10] This estimate assumes that the plant will operate for approximately 6.5 hours over the proposed 10 hour working period which equates to a 66% on time over a daytime period or 40 minutes over a 1 hour period. The dynamic nature of construction sites is such that this is deemed to be a conservative estimate, particularly for breaking and drilling work.

Comment on Dublin Central Masterplan Cumulative Intrusive Works and High Noise Activities

The reference values outlined in Table 11.22 indicate that for construction activities with highest combined noise levels (L_{Aeq} up to 92 dB at 10 m), commercial NSLs at a distance of 20m or less from the north, southeast and west works boundaries are above the recommended construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). All other commercial receivers at a distance of 30m or greater from the works boundary would be at or below the construction noise threshold value in the absence of any noise mitigation.

At distances beyond the immediate site boundary (greater than 50m), with the presence of existing buildings and distance attenuation, the construction threshold value for residential receivers is likely to be achieved during the various stages of works. For the closest residential properties 15m west of the Dublin Central Masterplan, calculated noise levels during this stage are above the recommended construction noise threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). However, works at this minimum distance to the NSLs are during boundary site works at Site 5 only. The second closest boundary is Site 4, is 30m from the NSL and more than 10 dB below the noise contribution from Site 5. Therefore, once works in Site 5 are at a distance of 30m or greater from the western works boundary, the residential NSL would be at or below the construction noise threshold value in the absence of any noise mitigation.

For the closest clinical receptors, the works at Site 1 are at 20m to the north of the Dublin Central Masterplan boundary. The second closest boundary is Site 2C, is 80m from the NSL and more than 10 dB below the noise contribution from Site 1. Therefore, assuming that there is no cumulative increase in noise levels, the clinical receptor is at or below the construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these intrusive works and high noise activities at the north, southeast and west works boundaries.

Comment on Dublin Central Masterplan Cumulative Utilities and Structural Works

During utilities and structural works etc. with combined site works up to 85 dB L_{Aeq} at 10m, the recommended construction threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs) at commercial receivers will be exceeded at distances of up to 15m from the works boundary in the absence of any noise mitigation. At distances beyond 15m of the immediate site boundary, with the presence of existing buildings and distance attenuation, the construction noise threshold value are likely to be achieved at commercial receptors during the various stages of works.

For the closest residential properties 15m west of the Dublin Central Masterplan development, calculated noise levels during this stage are above the recommended construction noise threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). Once works in Site 5 are at any distance greater than 20m from the western works boundary, the residential NSL would be at or below the construction noise threshold value in the absence of any noise mitigation.

For the closest clinical receptors, calculated noise levels during this stage are below the construction noise threshold value and below the measured ambient baseline environment in the area (71 dB L_{Aeq}).

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these intrusive works and high noise activities at the north, southeast and west works boundaries.

Comment on Dublin Central Masterplan Cumulative General Site Works

During general site work with combined site works up to 78 dB L_{Aeq} at 10m, the recommended construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs) at commercial receivers is likely to be complied with at the closest Dublin Central Masterplan site boundaries and beyond.

For the closest residential properties, calculated noise levels during this stage are 1 dB above the construction noise threshold value.

For the closest clinical receptors, calculated noise levels during this stage are significantly below the construction noise threshold value and below the measured ambient baseline environment in the area (71 dB L_{Aeq}).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Comment on Commercial NSLs within the Dublin Central Masterplan

During all activities with the exception of the general construction works, the commercial receivers (in Sites 1, 2AB , 2C and 3) within the Dublin Central Masterplan at the minimum distance to works boundaries would exceed the recommended construction threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

During initial site works, at distances within 25m of the immediate site boundaries to the south of Site 2AB, north of Site 2C and east of Site 5 would exceed the recommended construction threshold value. At distances beyond 25m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Dublin Central Masterplan commercial receptors during the cumulative initial site works.

During utilities and structural works, at distances within 15m of the immediate site boundaries to the south of Site 2AB, north of Site 2C and east of Site 4 and Site 5 would exceed the recommended construction threshold value. At distances beyond 15m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Dublin Central Masterplan commercial receptors during the cumulative utilities and structural works.

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these initial site works, high noise activities, utilities and structural works to the south of Site 2AB, north of Site 2C and east of Site 4 and Site 5

Comment on Residential NSLs within the Dublin Central Masterplan

During all activities the residential receivers (in Sites 3 and 4) within the Dublin Central Masterplan at the minimum distance to works boundaries would exceed the recommended construction threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

During initial site works, at distances within 40m of the immediate site boundaries to the south of Sites 2AB and 5 would exceed the recommended construction threshold value. At distances at or beyond 50m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Dublin Central Masterplan residential receptors during the cumulative initial site works.

During utilities and structural works, at distances within 20m of the immediate site boundaries to the south of Sites 2AB and 5 would exceed the recommended construction threshold value. At distances at 20m and beyond the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Dublin Central Masterplan residential receptors during the cumulative utilities and structural works.

During general site works, at distances within 15m of the immediate site boundaries to the south of Sites 2AB and 5 would exceed the recommended construction threshold value. At distances beyond 15 m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Dublin Central Masterplan residential receptors during the cumulative general site works.

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during all construction activities to the south of Sites 2C and 5.

Comment on Cumulative Assessment of Site 2AB, Site 2C & MetroLink Station

The final nature and extent of the below ground works required to facilitate the development of the MetroLink Station under Site 2AB and Site 2C is subject to on-going discussions with TII. As a result, for all Dublin Central Masterplan construction impact assessments it has been assumed that the MetroLink Station construction and associated construction activities would not give rise to noise levels in excess of those discussed in the section above. The full assessment of Site 2AB and Site 2C and the cumulative impact of the development of the MetroLink Station by TII will be assessed fully as part of a subsequent planning application.

Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

Cumulative Construction Traffic

There will be no car parking on the site for construction employees and as a result no assessment for construction parking facilities has been conducted. Given that traffic along the potential routes at Henry Place and Henry Place are not yet available, it is possible to calculate the noise levels associated with the passing vehicle using the following formula.

$$L_{Aeq,T} = L_{AX} + 10Log_{10}(N) - 10Log_{10}(T) + 20Log_{10}\left(\frac{r_1}{r_2}\right) dB$$

where: -

$L_{Aeq,T}$ is the equivalent continuous sound level over the time period T in seconds).

L_{AX} is the "A-weighted" Sound Exposure Level of the event considered (dB).

N is the number of events over the course of time period T.

r_1 is the distance at which L_{AX} is expressed.

r_2 is the distance to the assessment location.

A calculation distance of 3m from the road has been used to assess noise levels at the closest buildings along the construction routes on Henry Place and Henry Street. The mean value of Sound Exposure Level for truck moving at low to moderate speeds (i.e. 15 to 45 km/hr) is in the order of 82 dB L_{AX} at a distance of 8m from the vehicle. This figure is based on a series of measurements conducted under controlled conditions. Construction vehicle numbers have been provided by Waterman Moylan Consulting Engineers Limited for the worst-case scenario (based on when the station box will be excavated in Phase 2 during 2025 / 2026) i.e. 65 haul trucks in and 65 haul trucks out per day. Assuming that no more than 20 trucks will pass per hour (a haul truck arriving or leaving site every 5 minutes), below summarises the calculated noise level associated with passing haul vehicles.

Cumulative Construction Phase	No. of trucks/peak hour	Calculated Noise level at edge of road (5m), dB $L_{Aeq,1hr}$
Worst case scenario on Henry Place and Henry Street	20	68

Table 11.23: Calculated Construction Traffic Noise Levels at Edge of Road.

The calculated noise levels associated with the worst case cumulative traffic assessment are in the order of 68 dB $L_{Aeq,1hr}$, which is below the construction noise criterion of 70 dB(A) for residential receptors and 75 dB(A) for commercial and clinical receptors. The calculated noise levels are not expected to generate any significant impact along the routes on which construction traffic will travel.

Reference to the baseline noise levels made along the road edge in the vicinity of the site indicates that the calculated noise levels are within 3 dB of the existing baseline, a change in noise level which would be barely perceptible. It should be noted that, in order to assess a worst-case scenario, a large proportion of the daily vehicle numbers have been assumed to arrive/depart over an hour long period. Therefore, it is expected in the absence of specific mitigation measures that there will be a **negative, not significant** and **short-term** impact at the closest receptors.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11.5.1.1.3 Relevant Criteria – Vibration

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For the purpose of this scheme, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

The most significant sources of transient vibration during the construction phase of the Proposed Development are likely to be from the following activities: -

- Piling of secant walls and foundations.
- Rock breaking during excavation works.

Peak Particle Velocity (PPV)

Peak particle velocity (PPV) is commonly used to assess the structural response of buildings to vibration. Reference to the following documents has been made for the purposes of this assessment in order to discuss appropriate PPV limit values: -

- British Standard *BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration* (hereinafter referred to as BS7385).
- British Standard *BS5228-2: 2009 + A1: 2014: Code of practice for noise and vibration control on construction and open sites – Vibration* (hereinafter referred to as BS5228-2:2009+A1:2014).

BS7385 and BS5228-2:2009+A1:2014 advise that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges.

The documents note that minor structural damage can occur at vibration magnitudes which are greater than twice those presented in Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24. Major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in the Table. It should be noted that these values refer to the vibration at base of the building.

Historically important buildings, including the National Monument, that are difficult to repair might require special consideration on a case by case basis, but buildings of historical importance should not be assumed to be more sensitive unless they are structurally unsound. If a building, or a structure is in an unstable state, then it will tend to be more vulnerable to the possibility of damage arising from vibration or any other ground borne disturbance.

The vibration limit range for protected and historical buildings are equal to or up to 50% of those for light framed, depending on their structural integrity. Where no structural defects are noted, the same limit to those for light framed buildings apply. For other structures and buildings that are determined to be potentially vulnerable to vibration due to significant structural defects, a further stringent criteria has been applied for transient vibration. It is assumed that known buildings and structures of this kind, will be subject to condition surveys well in advance of the works, and any defects identified repaired. The results of conditions surveys will determine whether a building or structure is classed as "vulnerable". Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24

Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24 sets out the limits as they apply to vibration frequencies below 4Hz where the most conservative limits are required. At higher frequencies, the limit values for transient vibration within Table B.2 of BS5228-2:2009+A1:2014 will apply, with similar reductions applied for continuous vibration and those for protected structures.

Structure Type	**Allowable Vibration (in terms of PPV) at the Closest Part of Sensitive Property to the Source of Vibration, at a Frequency of 4Hz and less:**	
	Transient Vibration	**Continuous Vibration**
Reinforced or framed structures. Industrial and heavy commercial buildings	50mm/s	25mm/s
Unreinforced or light framed structures. Residential or light commercial-type buildings	15mm/s	7.5mm/s
Protected and Historic Buildings *Note 1	6mm/s – 15mm/s	3 mm/s – 7.5mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3mm/s	

Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24: Recommended Construction Vibration Thresholds for Buildings.

As per BS5228-2:2009+A1:2014, below a frequency of 4Hz where a high displacement is associated with a relatively low component PPV, a maximum displacement of 0.6mm (zero to peak) should be used.

Human Perception

People are sensitive to vibration stimuli at levels orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards which provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

BS5228-2:2009+A1:2014, provides a useful guide relating to the assessment of human response to vibration in terms of the PPV. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources. Table 11.25 below summarises the range of vibration values and the associated potential effects on humans.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Vibration Level, PPV	Effect
0.140mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.
1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Table 11.25: Guidance on effects of human response to PPV magnitudes.

Vibration typically becomes perceptible at around 0.15 to 0.3mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, piling can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place or up to 12 mm/s during blasting when advance warning is given and timeframes are known. These values refer to the day-time periods only.

During surface construction works (piling and ground breaking etc.) the vibration limits set within Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24 would be perceptible to building occupants and have the potential to cause subjective effects. The level of effect is, however, greatly reduced when the origin and time frame of the works are known and limit values relating to structural integrity are adequately communicated. In this regard, the use of clear communication and information circulars relating to planned works, their duration and vibration monitoring can significantly reduce vibration effects to the neighbouring properties.

Clinical Buildings

Due to the MetroLink Station works there may be additional limits set for clinical receptors. The full assessment of Site 2C and the cumulative impact of the development of the MetroLink Station by TII will be assessed fully as part of a subsequent planning application.

Interpretation of the Human Response to Vibration

In order to assist with interpretation of vibration thresholds, Table 11.26 presents the significance table relating to potential impacts to building occupants during construction based on guidance from BS5228-2:2009+A1:2014.

Criteria	Impact Magnitude	Significance Rating
≥10 mm/s PPV	Very High	Very Significant
≥1 mm/s PPV	High	Moderate to Significant

≥0.3 mm/s PPV	Medium	Slight to Moderate
≥0.14 mm/s PPV	Low	Not significant to Slight
Less than 0.14 mm/s PPV	Very Low	Imperceptible to Not significant

Table 11.26: Human Response Vibration Significance Ratings.

Luas Line Vibration

For the Luas line, TII provides the Code of engineering practice for works on, near, or adjacent to the Luas light rail system, which details maximum allowable vibration values on the line in order to prevent damage: -

Frequency	Allowable vibration (in terms of peak particle velocity) at the Luas Line:-		
	Level 1	Level 2	Level 3
> 50 Hz	10mm/s	12mm/s	15mm/s
≤ 50 Hz	10mm/s	10mm/s	10mm/s

Table 11.27: Vibration guidance values for avoidance of damage to the Luas line.

The document describes the following actions to be taken at each level: -

"(i) Vibration readings below trigger level 1

As long as measured vibrations are below level 1, works can continue as applied.

(ii) Vibration readings between trigger levels 1 and 2

In the case when measured vibration results exceed level 1, the relevant party shall initiate a review of his techniques and propose alterations to his methods including measures for reduction of vibration. These measures shall consider the works techniques, the geological conditions and other relevant factors. Any such measures shall be tested, applied and carefully monitored by the relevant party.

(iii) Vibration readings between trigger levels 2 and 3

In the event of vibration readings exceeding trigger level 2 or when damage to the light railway has been suspected, the associated works shall cease and the relevant party shall initiate a review of his techniques. The relevant party shall submit details of his proposed modifications to the works to ensure that vibrations do not exceed trigger level 1. The modifications shall be identified in a document submitted to TII. Works shall not recommence without the consent of TII.

(iv) Vibration readings above trigger level 3

In the event of vibration readings exceeding level 3 in a discrete event, the procedure as described in (iii) shall apply."

Construction Vibration Impacts

The main potential source of vibration during the construction programme is associated with piling and ground breaking activities. In terms of piling, low vibration methods involving bored or augured piles are proposed. This piling method minimises the vibration levels generated as it is a non-percussive piling technique.

For the purposes of this assessment the expected vibration levels during piling have been determined through reference to published empirical data. BS 5228-2 publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106): -

- 0.54mm/s at a distance of 5m, for auguring.
- 0.22mm/s at a distance of 5m, for twisting in casing.

DCC PLAN NO 3861/21
RECEIVED: 01/06/2021

- 0.42mm/s at a distance of 5m, for spinning off.
- 0.43mm/s at a distance of 5m, for boring with rock auger.

Considering the use of low vibration levels at very close distances to the piling rigs, vibration levels at the surrounding buildings are not expected to pose any significance in terms of cosmetic or structural damage to any of the protected structures in proximity to the development works or any of the other nearby buildings. Vibration levels at Clinical Buildings in the Rotunda Hospital and along the Luas Line tracks are expected to be below the relevant criteria considering the large distances between areas of works and sensitive buildings / rail line identified. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of adjacent buildings.

If any rock breaking is proposed on the site, there is also potential for vibration to be generated through the ground. Empirical data for this activity is not provided in BS 5228-2, however the likely levels of vibration from this activity is expected to be significantly below the lower adopted criteria for building damage based on experience from other sites. Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Note 1: The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 11.24 and Table 11.27.

With respect to the potential vibration impact, the only significant source of vibration is expected to be due to excavations, piling and foundation activities. However, the distance between the areas where these activities are to occur and the nearest noise sensitive locations are such that all vibration transmission would be below recommended guideline criteria. It is not anticipated in a worst-case cumulative vibration assessment that the limit values presented in Section 11.5.1.1.3 would be exceeded i.e. the impact from vibration would be relative to the closest phase of construction, and the distance to the next phase would be negligible. Therefore, it is expected in the absence of specific mitigation measures that there will be a **neutral**, **not significant** and **temporary** impact at the closest receptors.

Notwithstanding the above, any cumulative construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Table 11.6, Table 11.8 and Table 11.9. Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

11.5.1.2 Operational Stage

11.5.1.2.1 Relevant Criteria – Noise

Mechanical Plant Noise

Once the Dublin central Masterplan becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day, and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to NSLs would potentially have the greatest effect. Plant contained within plantrooms has the least potential for effect once consideration is given to appropriate design of the space.

The following wording would be considered typically suitable for a planning condition related to operational noise (plant) associated with a development of this nature: -

> *"Noise levels from the Proposed Development should not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public space. In particular the rated noise levels from the Proposed Development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial area.*
>
> *Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity."*

The typical planning condition outlined above related to noise emissions from mechanical plant items makes reference to the British Standard *BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound.* This document is the industry standard method for analysing building services plant noise emissions to residential NSLs and is the document used by Dublin City Council in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2dB penalty for a tone which is just perceptible at the NSL, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible.

The following definitions as discussed in BS 4142 as summarised below: -

"ambient noise level, $L_{Aeq,T}$"	is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"residual noise level, $L_{Aeq,T}$"	is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"specific noise level, $L_{Aeq,T}$"	is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"rating level, $L_{Ar,T}$"	is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);
"background noise level, $L_{A90,T}$"	is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse effect. A difference of around +5dB is likely to be an indication of an adverse effect, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse effect or a significant adverse effect. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low effect.

It is important to note that cumulative plant noise levels form the Dublin Central Masterplan site must be designed so as to meet the relevant noise criteria set at a given sensitive receptor location.

Receivers within the Development

To ensure there is no adverse impact on the future inhabitants of the Proposed Development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

out in Table 11.26 and are based on annual average data, that is to say, they omit occasional events where higher intermittent noisy events may occur.

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/ area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,18r}$ 45 dB $L_{Amax,T}$*

*Note The document comments that the internal $L_{AFmax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

Table 11.28: ProPG Internal Noise Levels (BS 8233:2014).

Entertainment Noise Breakout

There is no Irish Standard or legislative guidance regarding the assessment of noise nuisance from entertainment source, e.g. music. However, it is typical for the local authority to apply a planning condition which would specify a noise criterion relative to the existing noise levels and ensure that the Proposed Development had no significant impact on the nearest sensitive locations.

In the case of the Proposed Development potential sources of entertainment noise include restaurant/bar areas, communal amenity spaces (residential), presentation/convention spaces, retail units and food & beverage units.

The UK Institute of Acoustics (IOA) document Good Practice Guide on the Control of Noise from Pubs and Clubs (March 2003) contains recommendations for acoustic design criteria. This document however does not contain any objective assessment methods for music noise but defines what is considered to be inaudible music breakout as follows: -

> *"Noise is considered to be inaudible when it is at low enough level such that it is not recognisable as emanating from the source in question and it does not alter the perception of the ambient noise environment that would prevail in the absence of the source in question."*

Whilst a subjective assessment of audibility will identify the likelihood of a noise nuisance, it is considered prudent to assess any noise complaint on an objective basis with respect to noise.

In order to apply an objective criterion to allow for a structured analysis, we propose that the following criterion is adopted for the assessment of the entertainment noise from the Proposed Development: -

> *"The $L_{Aeq,5min}$ level measured at the nearest noise sensitive location, with entertainment taking place, shall show no increase when compared with the representative $L_{Aeq,5min}$ level measured from the same position, under the same conditions and during a comparable period with no entertainment taking place; and*
> *The $L_{eq,5min}$ level in the 63 Hz and 125 Hz octave bands at the nearest noise sensitive location, with entertainment taking place, should show no increase when compared with the representative $L_{eq,5min}$ level in the 63 Hz and 125 Hz octave bands measured from the same position, under the same conditions and during a comparable period with no entertainment taking place."*

This criterion is based on the guidance contained within the Draft IOA Code of Practice Guide on the Control of Noise from Pubs and Clubs (November 1999). This is considered to be an appropriate guidance document for the control of music noise breakout.

Change in Traffic Noise Levels During Operational Phase

A potential source of outward noise impact associated with a Proposed Development relates to additional traffic associated with journeys to and from the development on the surrounding road network. The Dublin Central Masterplan site includes for some 33no. parking spaces in Site 2.

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 11.26 offers guidance as to the likely impact associated with any particular change in traffic noise level (Source DMRB, 2019). It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10dB would be described as a doubling of loudness. In summary the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Change in Sound Level (dB L_{A10})	Subjective Reaction	DMRB magnitude of Impact	EPA Classification Magnitude of Impact
0	Inaudible	No Change	Neutral
0.1 – 2.9	Barely Perceptible	Negligible	Imperceptible
3 – 4.9	Perceptible	Minor	Slight
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate

Table 11.29: Significance in Change in Noise Level.

Inward Impact Assessment - Dublin City Council Noise Action Plan (NAP)

The Dublin Agglomeration Environmental Noise Action Plan (NAP) December 2018 – July 2023 was published in December 2018. The NAP indicates that guidance within the ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise document should be referred to: -

> *"In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that Action Planning Authorities should examine the planning policy guidance notes issued in England titled, 'ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise'. This has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England."*

In accordance with this NAP policy, this EIAR chapter will include an Acoustic Design Statement (ADS) to comply with the requirements of this policy.

Inward Impact Assessment - Residential Inward Noise Impact

The *Professional Practice Guidance on Planning & Noise (ProPG)* document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since adopted it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows: -

- Stage 1 – Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.
- Stage 2 – Involves a full detailed appraisal of the Proposed Development covering four "key elements" that include: -
    - Element 1 – Good Acoustic Design Process.
    - Element 2 – Noise Level Guidelines.
    - Element 3 – External Amenity Area Noise Assessment.
    - Element 4 – Other Relevant Issues.

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk

based on the pre-existing noise environment. Figure 11.2 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and / or predicted on site.

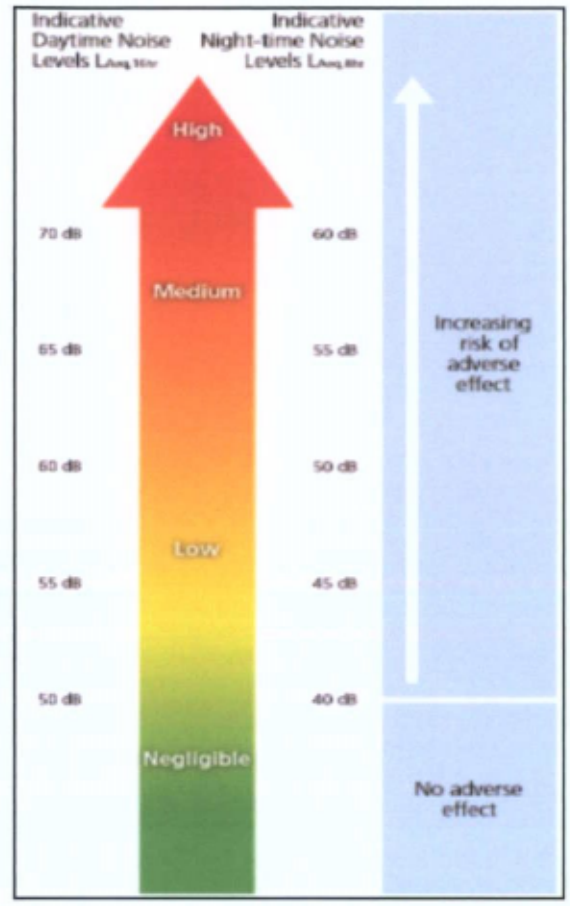


Figure 11.12: ProPG Stage 1 - Initial Noise Risk Assessment.

It should be noted that a site should not be considered a negligible risk if more than 10 no. L_{AFMax} events exceed 60 dB during the night period and the site should be considered a high risk if the L_{AFMax} events exceed 80 dB more than 20 times a night.

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in Table 11.28 above and are based on annual average data, that is to say, they omit occasional events where higher intermittent noisy events may occur.

In addition to these absolute internal noise levels ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

ProPG provides the following advice with regards to external noise levels for amenity areas in the development: -

> *"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$."*

Inward Impact Assessment – Office Inward Noise Impact

Guidance has been drawn from the *British Council for Offices Guidance to specification*. The guidance suggests three noise curve values for internal noise due to external sources. The values are dependent on the circumstances of the project and are reproduced in Table 11.30.

Location	Maximum Permissible Ambient Noise Level
Open Plan Offices	NR40 $L_{eq,T}$
Speculative Offices	NR38 $L_{eq,T}$
Cellular offices / meeting rooms	NR35 $L_{eq,T}$

Table 11.30: Internal Noise Specification (Office).

In addition to the above the guidance suggests that $L_{AFmax,}$ noise intrusion levels should not normally exceed 55 dB in open office space / speculative offices or 50 dB in cellular offices.

In order to ensure a high-quality internal noise environment commensurate with other similar developments in Dublin, it is proposed to adopt the NR35 and 50dB L_{AFmax} criteria in this instance.

11.5.1.2.2 Relevant Criteria – Vibration

There are no expected sources of vibration associated with the operational stage, therefore vibration criteria have not been specified.

11.5.1.3 Do-Nothing Impact

In the absence of the Proposed Dublin Central Masterplan site being developed, noise and vibration levels across the study area would be expected to remain in line with the prevailing baseline environment. Therefore the impact of the Do-Nothing scenario would be regarded as **neutral**.

11.5.2 Proposed Development – Site 3, 4 & 5

11.5.2.1 Construction Stage

The construction stages of the Proposed Development will occur on a staged basis. This section of the EIAR chapter will assess the construction noise and vibration impacts of Sites 3, 4 and 5 cumulatively.

The noise and vibration criteria detailed in Sections 11.5.1.1.1 and 11.5.1.1.3 also apply to the Proposed Development. As per the Dublin Central Masterplan, the construction phase will be controlled through the use of construction noise and vibration threshold values which the contractor will be required to work within. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed in order to ensure noise and vibration threshold values are not exceeded.

11.5.2.2 Noise Impact at Proposed Development – Site 3, 4 & 5

The potential construction activities detailed in Section 11.5.1.1.2 are also applicable to the proposed Sites 3, 4 and 5. The indicative noise calculations presented in Table 11.22 are considered valid for works occurring on Site 3, 4 and 5 at the nearest sensitive locations external to the site, which are common to the Dublin Central Masterplan development sensitive locations, the only variable are the distances to specific site boundaries, discussed in the following section.

11.5.2.2.1 Sensitive Receptors

Noise and vibration impacts will be assessed to the nearest sensitive locations to the Proposed Development Site 3, 4 and 5 boundaries. These closest locations are identified in Figure 11.13.

NO. 2861/21
RECEIVED: 01/06/2021

NSL1 Residential apartments on Moore Lane located approximately 15m to the west of the Site 5 boundary.

NSL 2 The Rotunda Hospital on Parnell Street located approximately 100m to the north of the Site 5 boundary.

NSL 3 AIB Bank offices on O'Connell Street / Parnell Street located approximately 90m to the northeast of the Site 5 boundary.

NSL 4 Hotel rooms located in Jurys Inn Hotel Parnell Street, located approximately 10m to the north of the Site 5 boundary.

NSL 5 Hotel rooms located in Holiday Inn Express on O'Connell Street Upper, located approximately 140m to northeast of the Site 5 boundary.

NSL 6 Hotel rooms located in Gresham Hotel on O'Connell Street Upper, located approximately 115m to east of the Site 5 boundary.

NSL 7 Hotel rooms located in Lynams Hotel on Henry Place, located approximately 10m to the east of the Site 3 boundary.

NSL 8 Commercial properties located on Henry Street, located directly adjacent to the southeast of Site 3 boundary.

VSL 1 The Rotunda Hospital on Parnell Street located approximately 100m to the north of the Site 5 boundary.

VSL 2 Protected buildings at 14 to 17 Moore Street, located directly adjacent to the Site 4 boundary.

VSL 3 The Luas Line rail tracks located on O'Connell Street, located approximately 50m to the east of the Site 3 boundary.

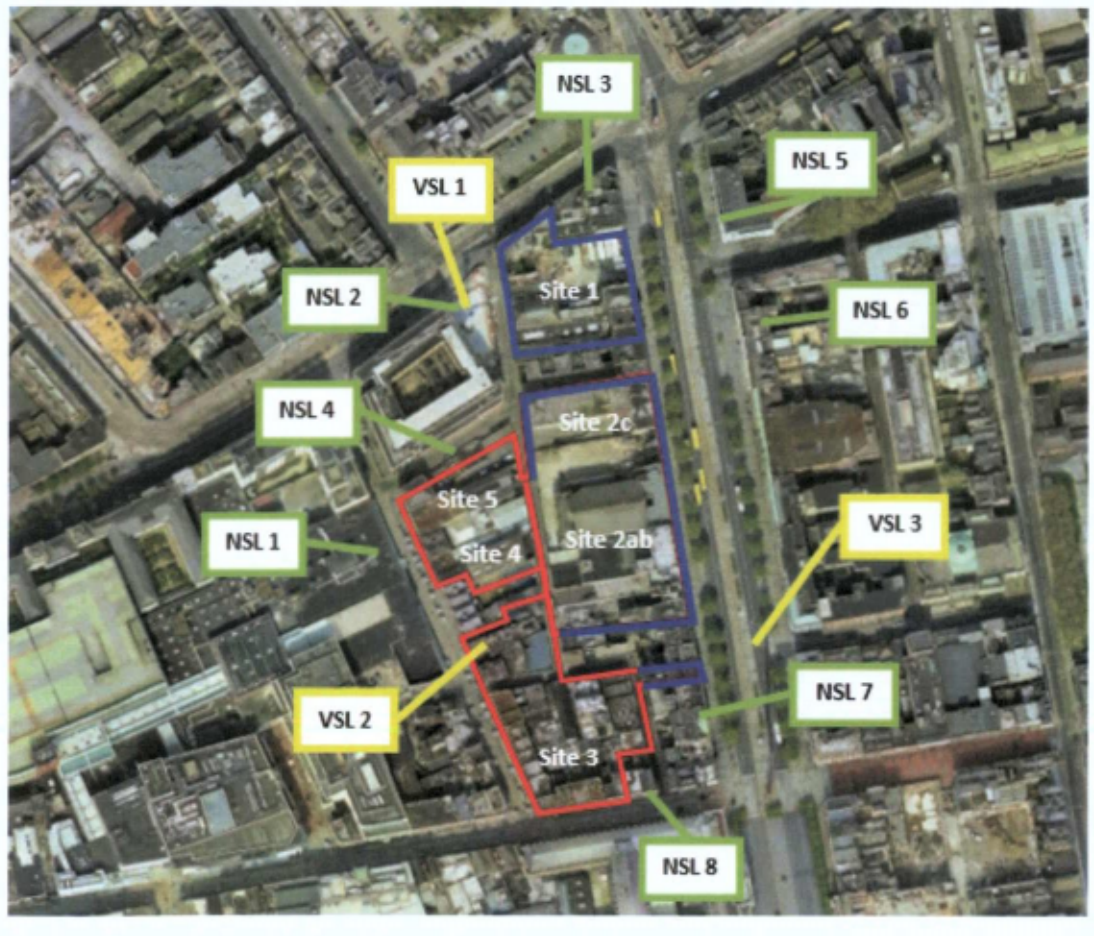


Figure 11.13: Proposed Development Sites 3, 4 & 5 Redline Boundary, Dublin Central Masterplan Blueline Boundary, with Noise (Green) and Vibration (Yellow) Sensitive Locations (Image Source: Google Earth).

During the Proposed Development construction, the closest NSLs within the development site are: -

- Hotel rooms in Site 3 Block A, located approximately 15m from Site 4 southern boundary.
- Residential apartments in Site 3 Block B, located approximately 10m from Site 4 southern boundary.

11.5.2.2.2 Construction Noise Activities of Proposed Development Site 3, 4 & 5

Comment on Proposed Development Intrusive Works and High Noise Activities

The reference values outlined in Table 11.22 indicate that for construction activities with highest combined noise levels (L_{Aeq} up to 92 dB at 10 m), commercial NSLs at a distance within 20m from the east and southeast of Site 3 boundary and north of the Site 5 boundary are above the recommended construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). All other commercial receivers at a distance greater than 20m from the works boundary would be at or below the construction noise threshold value in the absence of any noise mitigation.

At distances beyond the immediate site boundary (greater than 30m), with the presence of existing buildings and distance attenuation, the construction threshold value for residential receivers are likely to be achieved during the various stages of works. For the closest residential properties 15m west of the Site 5 boundary, calculated noise levels during this stage are above the recommended construction noise threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). However, works at this minimum distance to the NSLs are during boundary site works at Site 5 only.

The second closest boundary is Site 4, is 30m from the NSL and more than 10 dB below the noise contribution from Site 5. Therefore, once works in Site 5 are at a distance of 30m or greater from the western works boundary, the residential NSL would be at or below the construction noise threshold value in the absence of any noise mitigation.

For the closest clinical receptors, the works at Site 5 are at 100m distance to the north of the Proposed Development boundary and therefore the clinical receptor is significantly below the construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these intrusive works and high noise activities at the north, southeast and west works boundaries.

Comment on Proposed Development Utilities and Structural Works

During utilities and structural works etc. with combined site works up to 85 dB L_{Aeq} at 10 m, the recommended construction threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs) at commercial receivers will be exceeded at distances within 15m from the works boundary in the absence of any noise mitigation. At distances beyond 15m of the immediate site boundary, with the presence of existing buildings and distance attenuation, the construction noise threshold value are likely to be achieved at commercial receptors during the various stages of works.

For the closest residential properties 15m west of the Site 5 Proposed Development, calculated noise levels during this stage are above the recommended construction noise threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). Once works in Site 5 are at any distance greater than 15m from the western works boundary, the residential NSL would be at or below the construction noise threshold value in the absence of any noise mitigation.

For the closest clinical receptors, calculated noise levels during this stage are significantly below the construction noise threshold value and below the measured ambient baseline environment in the area (71 dB L_{Aeq}).

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these utilities and structural works at the east and southeast of Site 3 boundary and north of the Site 5 boundary.

Comment on Proposed Development General Site Works

During general site work with combined site works up to 78 dB L_{Aeq} at 10m, the recommended construction noise threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs) at commercial receivers is likely to be complied with at the closest Proposed Development site boundaries and beyond.

For the closest residential properties, calculated noise levels during this stage are below the construction noise threshold value and within 3 dB of the measured ambient baseline environment in the area (65 dB L_{Aeq}).

For the closest clinical receptors, calculated noise levels during this stage are significantly below the construction noise threshold value and below the measured ambient baseline environment in the area (71 dB L_{Aeq}).

Comment on Commercial NSLs within the Proposed Development

During all activities with the exception of the general construction works, the commercial receivers (in Site 3) within the Proposed Development at the minimum distance to works boundaries would exceed the recommended construction threshold value of 75 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

During initial site works, at distances within 20m of the immediate site boundaries to the south of Site 4, would exceed the recommended construction threshold value. At distances beyond 20m of the immediate site boundary noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Site 3 commercial receptors during the initial site works at Site 4 southern boundary.

During utilities and structural works, at distances within 15m of the immediate site boundaries to the south of Site 4 would exceed the recommended construction threshold value. At distances beyond 15m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Site 3 commercial receptors during the utilities and structural works Site 4 southern boundary.

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during these initial site works, high noise activities, utilities and structural works at Site 4 southern boundary.

Comment on Residential NSLs within the Proposed Development

During all activities the residential receivers (in Sites 3) within the Proposed Development at the minimum distance to works boundaries would exceed the recommended construction threshold value of 70 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs).

During initial site works, at distances up to 30 m of the immediate site boundaries to the south of Site 4 would exceed the recommended construction threshold value. At distances beyond 30m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Site 3 commercial receptors during the initial site works at Site 4 southern boundary.

During utilities and structural works, at distances up to 15m of the immediate site boundaries to the south of Site 4 would exceed the recommended construction threshold value. At distances greater

than 15m and beyond the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value is likely to be achieved at the Site 3 commercial receptors during the utilities and structural works at Site 4 southern boundary.

During general site works, at distances within 10m of the immediate site boundaries to the south of Site 4 would exceed the recommended construction threshold value. At distances beyond 10m of the immediate site boundaries noted above, with distance attenuation, the construction noise threshold value will be achieved at the Site 3 commercial receptors during the general construction works at Site 4 southern boundary.

Whilst this construction stage will be intermittent and transient specific noise mitigation measures in line with the DCC GPG for high risk sites will be required to control construction noise levels during all construction activities to the south of Site 4.

Comment on Cumulative Assessment of Site 2AB and Site 2C Metro Box

The final nature and extent of the below ground works required to facilitate the development of the MetroLink Station in Site 2AB and Site 2C is subject to on-going discussions with TII. As a result, for all Dublin Central Masterplan construction impact assessments it has been assumed that the MetroLink Box Station construction and associated construction activities would not give rise to noise levels in excess of those discussed in the section above.

Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

11.5.2.2.3 Construction Traffic

The noise levels associated with mobile plant items such as concrete mixer trucks, loaders etc. operational on site have been included as part of the construction calculation noise levels in Table 11.22. Consideration should also be given to the addition of construction traffic along the site access routes. Based on provisional information provided by Waterman Moylan Consulting Engineers Limited (WM), access to the development site for construction traffic will potentially be via Parnell Street, O Rahilly Parade, Moore Lane, Moore Street, Henry Place, Henry Street and O'Connell Street. Construction traffic will be required to travel on designated routes only agreed by DCC.

An initial high level review of the baseline and construction AADT PCU traffic data provided by WM indicates that the links (Links 1-11) i.e. along Parnell Street, Dominick Street, O'Connell Street Upper, Moore Street, O' Rahilly Parade and Moore Lane, have small increases in traffic volumes (up to 21%). An increase of 25% in traffic is required to increase overall traffic noise levels by 1 dB, which is insignificant in the overall context of the noise environment along the vicinity of the site. Therefore, the short-term noise environment assumed for this project is expected to be within at least 1 dB of the baseline scenario, which would give a magnitude of increase in traffic noise that is **negligible, not significant** and **short-term.**

11.5.2.3 Vibration Impact at Proposed Development Site 3, 4 & 5

It is not anticipated in a worst-case Proposed Development vibration assessment that the limit values presented in 11.5.1.1.3, would be exceeded i.e. the impact from vibration would be relative to the closest phase of construction, and the distance to the next phase would be negligible. Therefore, it is expected that there will be a **neutral**, **not significant** and **temporary** impact at the closest receptors during the Proposed Development.

Notwithstanding the above, any cumulative construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Table 11.6, Table 11.8 and Table 11.9. Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11.5.2.4 Operational Stage

The various sites within the Dublin Central Masterplan will be completed and become operational on a staged basis. This section of the EIAR chapter will assess the operational noise and vibration impacts of Sites 3, 4 and 5 cumulatively.

The noise criteria detailed in Sections 11.5.1.1.1 and 11.5.1.1.3 also apply to the Proposed Development. As per the Dublin Central Masterplan, noise levels during the operational phase will be controlled through the use of appropriate noise criteria for mechanical plant noise and entertainment noise, e.g. music / hospitality noise. There are no car parking spaces provided within the Proposed Development therefore there is not predicted to be an increase in private vehicles on public roads travelling to and from the development.

In this regard, the design and selection of mechanical plant items will be done so as to ensure noise criteria values are not exceeded. Similarly, for entertainment noise, music levels will be managed and building envelopes designed to ensure no negative impact as a result of breakout noise.

With respect to inward noise on the development during this operational stage, mitigation is specified to ensure that internal noise levels are achieved.

11.5.2.5 Noise Impact at Proposed Development Site 3, 4 & 5

The anticipated operational activities set out in Section 11.5.1.1.2 are also applicable to the proposed Sites 3, 4 and 5. The methodology presented for the Dublin Central Masterplan site are also applicable to Site 3, 4 and 5 with respect to noise levels experienced at the nearest sensitive locations external to the site, which are common to the Dublin Central Masterplan sensitive locations, the variables to consider are the distances to specific site boundaries, the prevailing noise environment at various locations surround the site and the number of noise sources.

11.5.2.5.1 Sensitive Receivers

The nearest noise sensitive receivers (NSLs) to the Proposed Development site, i.e. Site 3, 4 and 5 are described above and illustrated in Figure 11.13. It is noted that commercial, non-hotel NSLs are not designated as noise sensitive at night-time (23:00 – 07:00hrs).

Once all Dublin Central Masterplan sites are operational, the closest NSLs to the Proposed Development will be: -

- Residential apartments on Moore Lane located approximately 15m to the west of the Site 5 boundary.
- Hotel rooms located in Jurys Inn Hotel Parnell Street, located approximately 10m to the north of the Site 5 boundary.
- Hotel rooms located in Lynams Hotel on Henry Place, located approximately 10m to the east of the Site 3 boundary.
- Commercial properties located on Henry Street, located directly adjacent to the southeast of Site 3 boundary.

11.5.2.5.2 Operational Noise Associated with Proposed Development – Site 3, 4 & 5

Mechanical Plant Noise

Once operational, building services plant items will be required to serve the commercial and residential aspect of the development. The cumulative operational noise level, from the Proposed Development, at the nearest external noise sensitive locations will be designed and attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods.

Given the baseline noise levels measured and presented in Section 11.3.1.2and on review of published noise maps, appropriate criteria for plant noise levels at the nearest NSLs have been derived. Based on the varying baseline noise levels across the site, the following criteria are appropriate.

Receptor Group	Day, dB $L_{Aeq,1hr}$	Night, dB $L_{Aeq,15min}$
Group A	55	47 – 49
Group B	55	42

Table 11.31: Proposed Noise Criteria for Plant Noise

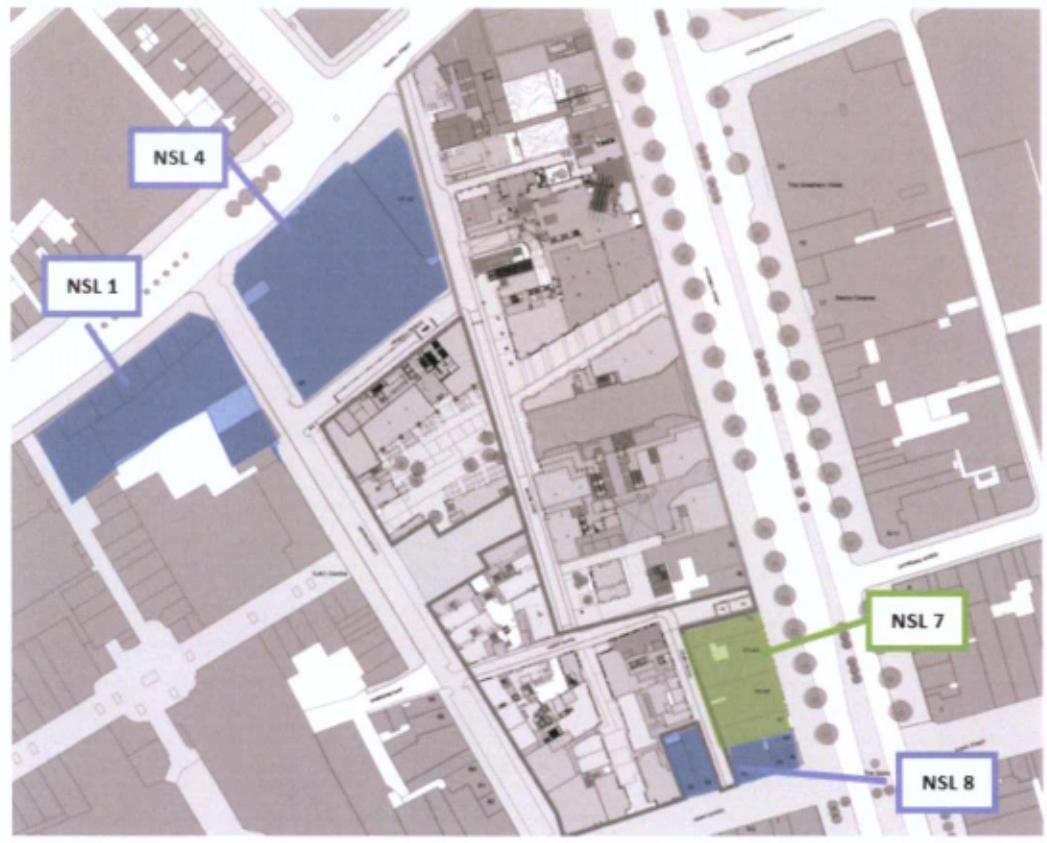


Figure 11.14: Plant Noise Criteria.

The majority of plant items are expected to be housed internally in plant rooms or at basement level, whereby noise breakout is expected to be minimal. Items of plant with the potential for outward noise impact include chillers and AHUs located at roof level.

It is acknowledged that the selection of the specific plant items is subject to change during the detailed design stage and this is normal industry practice. However, noise from any new plant items will be designed and / or controlled so as not to give rise to any adverse effects at the nearest noise sensitive locations.

Furthermore, it is confirmed that no plant item will emit significant tonal or impulsive characteristics which may increase the potential for annoyance at the nearby noise sensitive locations.

These plant items will be designed and attenuated so as not to impact on sensitive receptors within the development itself, therefore there is not expected to be an impact on receivers outside the development, which are further away.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Entertainment Noise Breakout

In any development there is potential for noise breakout from internal areas of the restaurant / bar areas which will have background music playing. As a result, it is considered appropriate to assess the potential entertainment noise impact against typical assessment methods for music noise nuisance.

Potential sources for entertainment noise include the hotel bar and restaurant, residential communal amenity spaces, retail units and convention / display spaces.

The best practice approach in terms of limiting music noise emissions typically involves the concept of inaudibility of noise from music at nearby noise sensitive locations. This is in-line with the previously discussed Draft IOA Code of Practice Guide on the Control of Noise from Pubs and Clubs (November 1999): -

> *"When the L_{Aeq} level measured over 5 minutes, when measured in a habitable room, garden or open space at a time when an outside area would be expected to be used, when entertainment is taking place at the Proposed Development, shall show no increase when compared with the representative $L_{Aeq,5min}$ level measured from the same position, under the same conditions during a comparable period with no entertainment taking place."*

Where necessary, consideration should be given to controlling noise emissions emanating from bars, conference spaces and restaurant within the Proposed Development. The entertainment sound shall be so controlled that its level at any adjacent noise sensitive location shall not cause the ambient (measured in the absence of said entertainment sound) to increase, when assessed over 5 minute back to back periods. Similar criteria shall apply to the 63Hz and 125Hz octave band levels.

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site.

Delivery and Servicing Traffic

It is understood that deliveries to the Proposed Development will take place each day. Existing servicing times for the area surrounding the Proposed Development site are 06:00 to 11:00hrs. Certain areas to the north at O'Rahilly Parade operate 24 hours a day.

Information contained in the assessments prepared by Sweco[11] relates to the predicted number of delivery movements associated with the Proposed Development: -

Site	Daily Trip Generation (two-way)		
	LGV	OGV	Total per Day
Site 3A	5	2	7
Site 3B	9	3	12
Site 4 (N)	1	1	2
Site 4 (S)	5	2	7
Site 5	8	3	11

Table 11.32: Proposed Development Delivery Flows.

Deliveries will be conducted during the daytime period for the most part however some deliveries may occur between 06:00 – 07:00hrs (night-time period ends 07:00hrs). Deliveries will be unloaded

[11] Dublin Central – Site 3 Servicing Management Plan – Revision 3.0
Dublin Central – Site 4 Servicing Management Plan – Revision 2.0
Dublin Central – Site 5 Servicing Management Plan – Revision 2.0

at several locations across the development depending on the destination. Designated loading areas include: -

- Existing loading areas on Henry Street.
- Proposed Passageway loading area.
- Proposed Phase 3B Courtyard.
- Existing shared loading area on Moore Street.

Considering the large numbers of vehicles currently using the public roads surrounding the Proposed Development, the addition of and average of 8no. deliveries per hour does not represent a significant increase in vehicle movements or change in noise levels. These deliveries will be spread among the loading areas listed above. Deliveries will take place one at a time in a given loading area. Therefore, considering the additional traffic no significant noise impact is predicted as a result of delivery traffic serving the development.

Inward Noise Impact

The subject phase of the development is located in the city centre in a busy commercial area. There are main roads and infrastructure located nearby to the east. Baseline noise levels across the development site have been measured to be used in the assessment of inward noise impact on the Proposed Development.

With reference to the Noise Risk Assessment outlined in ProPG the noise levels for relevant periods have been derived in order to classify the Proposed Development site. The table below summarises the predicted noise levels at the various proposed building facades as per the site layout provided.

Location	Façade	Period	Predicted Noise Level (dB, $L_{Aeq,T}$)	"Noise Risk" Category
Site 3	Southern Façade – Henry Street	Daytime	65 – 67	Medium
		Night-time	52 – 54	Low – Medium
	Western Façade – Moore Street	Daytime	62 – 64	Low – Medium
		Night-time	49 – 53	Low – Medium
	Northern / Eastern Facades – Henry Place	Daytime	60 – 62	Low – Medium
		Night-time	49 – 51	Low – Medium
Site 4	Western Façade – Moore Street	Daytime	64 – 69	Medium
		Night-time	51 – 54	Low – Medium
	Southern Facades – Henry Place	Daytime	60 – 62	Low – Medium
		Night-time	49 – 51	Low – Medium
	Eastern Façade – Moore Lane	Daytime	59 – 61	Low – Medium
		Night-time	53 – 56	Low – Medium
Site 5	O'Rahilly Parade – Northern Façade	Daytime	59 – 61	Low – Medium
		Night-time	53 – 56	Low – Medium
	Western Façade – Moore Street	Daytime	64 – 69	Medium – High
		Night-time	51 – 54	Low – Medium
	Eastern Façade – Moore Lane	Daytime	59 – 61	Low – Medium
		Night-time	N/A	N/A
	Southern Façade – Proposed Courtyard	Daytime	58 – 59	Low
		Night-time	N/A	N/A

Note Commercial units in Site 5 not designated noise sensitive outside of office hours.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Table 11.33: Categorising Proposed Site.

Additionally, the Stage 1 Noise Risk Assessment requires analyses of the L_{AFmax} noise levels. Review of the numbers of L_{AFmax} levels show the number of instances is below the 80dB threshold, therefore the High Risk classification is not triggered. L_{AFmax} levels typically do not exceed 70 dB L_{Amax} over a given night time period. Individual events above this level were also measured but did only occur once or twice per night.

ProPG states the following with respect to *Low*, *Medium* and *High Risk* categories: -

Low Risk	*At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.*
Medium Risk	*As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.*
High Risk	*High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.*

Given the above it can be concluded that the development site may be categorised as *Low to High* Risk and as such an Acoustic Design Statement will be required to demonstrate that suitable care and attention has been applied in mitigating and minimising noise impact to such an extent that an adverse noise impact will be avoided in the final development.

It should be noted that ProPG states the following with regard to how the initial site noise risk is to be used:

> *"2.12 It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."*

The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

Acoustic Design Statement – Part 1

Façade Noise Levels

Noise levels have been predicted across the Proposed Development site during day and night-time periods.

Where façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night it is possible to achieve reasonable internal noise levels while also allowing for supplementary ventilation of dwellings by opening windows. Therefore, for those units where the façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night no further mitigation is required, e.g.

Façade levels are above the levels whereby it is possible to achieve reasonable internal noise levels while also allowing for supplementary ventilation of dwellings by opening windows, therefore the

sound insulation performance of the building façade becomes important and a minimum sound insulation performance specification is required for windows to ensure that when windows are closed the internal noise criteria are achieved.

Predicted noise levels on several facades are above a level whereby internal noise levels are achieved with standard double glazing and therefore mitigation in the form of enhanced glazing and ventilators will be required. These facades are located along the western and southern boundaries. The specification of this enhanced façade is discussed in Section 11.7.2.

External Noise Levels

External noise levels within communal open space across the development site are predicted to be within the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$. The position of existing buildings allows for screening of noise from transport noise sources in areas close to the main road and rail line. The location of the amenity space at 6th Floor Level creates distance separation from noise sources at ground level. It is considered that the objectives of achieving suitable external noise levels is achieved within the overall site, therefore no further mitigation is required to control external noise levels across amenity areas.

11.5.3 Cumulative

11.5.3.1 Construction Stage

The construction stages of the Dublin Central Masterplan will occur on a phased basis. There are no expected cumulative impacts associated with external construction works to the Dublin Central Masterplan. The closest construction work relative to the site is more than 40m from the closest site boundary. As illustrated in Table 11.22, the contribution from any secondary site external to the Dublin Central Masterplan is likely to be more than 10 dB below noise contribution from the closest site within the Dublin Central Masterplan and will not add to the noise impact at the nearest sensitive receptor.

Notwithstanding the above, any cumulative construction activities undertaken will be required to operate below the recommended noise and vibration criteria set out in Section 11.5.1.1.1 and Section 11.5.1.1.3. Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

11.5.3.2 Operational Stage

The different sites within the Dublin Central Masterplan will be designed so that the cumulative noise emissions from processes and activities are within the relevant noise criteria set out. In the same way, Proposed Developments external to the Dublin Central Masterplan site will in turn be designed in order to comply with appropriate noise criteria.

Any major Proposed Development in close proximity to the Dublin Central Masterplan site will be required to prepare an EIAR wherein cumulative impacts will also be considered.

11.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

11.6.1 Dublin Central Masterplan

11.6.1.1 Construction Stage

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted design goals for noise and vibration. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

11.6.1.1.1 Noise Mitigation Measures

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that: -

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 *-1:2009+A1 2014* includes guidance on several aspects of construction site practices, which include, but are not limited to: -

- Selection of quiet plant.
- Control of noise sources.
- Screening.
- Hours of work.
- Liaison with the public.

Further comment is offered on these items in the following paragraphs.

Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring. The contractor will be required to conduct construction noise predictions prior to works taking place and put in place the most appropriate noise control measures depending on the level of noise reduction required at any one location.

Selection of Quiet Plant

The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

For static plant such as compressors and generators used at work areas such as construction compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where possible.

General Comments on Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant, or the application of improved sound reduction methods in consultation with the supplier or the best practice use of equipment and materials handling to reduce noise.

In practice, a balance may need to be struck between the use of all available techniques and the resulting costs of doing so. It is therefore proposed to adopt the concept of *"Best Available Techniques"* as defined in EC Directive 96/61. In this context *"best"* means *"the most effective in achieving a high general level of protection of the environment as a whole"*.

Proposed techniques will also be evaluated in light of their potential effect on occupational health and safety. The following outline guidance relates to practical noise control at source techniques which relate to specific site considerations: -

- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
- For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights and drop chutes/dump trucks are lined with resilient materials, where relevant.
- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact.
- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

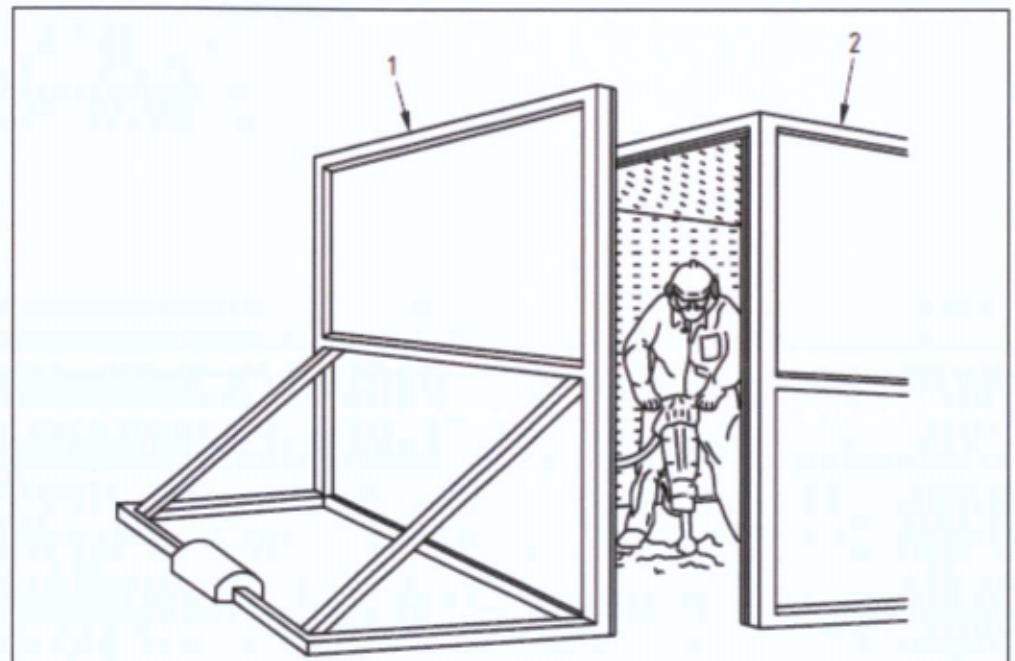
Typically screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source. BS 5228 - *1:2009+A1* states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice, screens constructed of materials with a mass per unit of surface area greater than 10kg/m^2 will give adequate sound insulation performance.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Construction noise calculations have assumed a partial line of sight (-5dB) is achieved using a solid 2.4m high standard construction site hoarding. It will be a requirement for works occurring immediately in proximity to the closest noise sensitive locations along the site boundary, that the line of sight is further blocked such that a reduction of at least 10dB is achieved between the noise sensitive façade and construction activities. A reduction of this order can be achieved using a higher perimeter screen or using localised screening around specific items of plant.

Annex B of *BS 5228-1:2009+A1:2014* (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on site from standard materials.



Key
1 Acoustic screen 2 m wide and 2.7 m high
2 Acoustic shed 2 m square and 2.7 m high

Table B.4 **Measured sound reduction given by types of partial enclosure**

Type of enclosure (see Figure B.3)	Reduction dB(A)		
	Facing the opening(s)	Sideways	Facing rear of shed
Open-sided shed lined with absorbent material: no screen	1	9	14
Open-sided shed lined with absorbent material: with reflecting screen in front	10	6	8
Open-sided shed lined with absorbent material: with absorbent screen in front	10	10	10

Figure 11.15: Typical Acoustic Screen / Shed Detail.

In addition, careful planning of the site layout will also be considered. The placement of temporary site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening during the phasing of works.

Hours of Work

Construction activity will mostly take place during daytime hours Monday to Friday and a half day on Saturdays. In the event of it being deemed necessary to undertake works outside these, it will be necessary to obtain prior written approval from Dublin City Council. Such approval would typically only be granted on submission of details of the activity accompanied by an assessment of potential noise impact.

Consideration should be given to the scheduling of activities in a manner that reflects the location of the site and the nature of neighbouring properties. Each potentially noisy event/activity should be considered on its individual merits and scheduled according to its noise level, proximity to sensitive locations and possible options for noise control.

Depending on the noise emission levels experienced and associated noise impact, the contractor should be flexible and able to conduct certain works at hours which reflect periods when the neighbouring properties have lower sensitivities to noise.

Liaison with the Public

Clear forms of communication will be established between the contractor and noise sensitive areas in proximity so that residents or building occupants are aware of the likely duration of activities likely to generate higher noise or vibration.

The duration of piling, excavation and other high noise or vibration activities works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to sensitive areas can represent only a part of the overall period. Subjective impacts during these phases can be significantly reduced if timelines and potential impacts are known in advance.

Noise Control Audits

It is recommended that noise control audits be conducted at regular intervals throughout the demolition/construction programme. In the first instance, it is recommended that such audits take place on a monthly basis. This is subject to review, however, and the frequency of audits may be increased if deemed necessary.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration should be given to issues such as the following (note that this list is not intended to be exhaustive): -

- Hours of operation being correctly observed.
- Opportunities for noise control "at source".
- Optimum siting of plant items.
- Plant items being left to run unnecessarily.
- Correct use of proprietary noise control measures.
- Materials handling.
- Poor maintenance.
- Correct use of screening provided and opportunities for provision of additional screening.

Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Piling programmes should be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme should be phased so as to prevent unacceptable disturbance at any time.

During consultation the planner, developer, architect and engineer, as well as the local authority, should be made aware of the proposed method of working of the piling contractor. The piling contractor should in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

It should be remembered that a decision regarding the type of pile to be used on a site will normally be governed by such criteria as loads to be carried, strata to be penetrated and the economics of the system, for example the time it will take to complete the installation and other associated operations such as soil removal. It may not be possible for technical reasons to replace a noisy process by one of the 'quieter piling' alternatives. Even if it is possible, the adoption of a quieter method may prolong the piling operation; the net result being that the overall disturbance to the community will not necessarily be reduced.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

Contributions to the total site noise can also be anticipated from mobile ancillary equipment, such as handling cranes, dumpers, front end loaders etc. These machines may only have to work intermittently, and when safety permits, their engines should be switched off (or during short breaks from duty reduced to idling speed) when not in use.

All mechanical plant should be well maintained throughout the duration of the piling works. When a site is in a residential environment, lorries should not arrive at or depart from the site at times incontinent to residents.

11.6.1.1.2 Vibration

On review of the likely vibration levels associated with construction activities, it may be concluded that the construction of the Proposed Development is not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to adjacent buildings.

In the case of vibration levels giving rise to human discomfort, in order to minimise such impacts, the following measures shall be implemented during the construction period: -

- A clear communication programme will be established to inform adjacent building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.

- Appropriate vibration isolation shall be applied to plant, where feasible.
- Monitoring will be undertaken at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

11.6.1.2 Operational Stage

Mitigation measures for the operational phase are set out to ensure that operational noise sources associated with the Dublin Central Masterplan will operate within the relevant noise criteria so that there is no resultant negative impact on nearby noise sensitive receivers.

11.6.1.2.1 Noise Mitigation Measures

Mechanical Plant Noise

During the detailed design of the development, the selection and location of mechanical and electrical plant will be undertaken in order to ensure the noise emission limits set out above are not exceeded. In addition to selecting plant with suitable noise levels, the following best practice measures are recommended for all plant items in order to minimise potential noise disturbance for adjacent buildings: -

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required to reduce noise breakout.
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment.
- The use of perimeter plant screens will be used, where required, for roof top plant areas to screen noise sources.
- The use of attenuators or silencers will be installed on external air handling plant.
- All mechanical plant items e.g. fans, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised.
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document.
- Installed plant will have no tonal or impulsive characteristics when in operation.

Inward Noise Impact

Inward noise impacts across the development are assessed and appropriate mitigation specified across the Dublin Central Masterplan to ensure that, when window are closed that the internal noise level targets are achieved.

Assessment of Site 1 and Site 2AB and Site 2C will follow the methodology set out in this document once the design is finalised. Measured noise levels across the development will be used to assess the levels of noise intrusion and to ascertain the need for appropriate mitigation.

11.6.2 Proposed Development – Site 3, 4 & 5

11.6.2.1 Construction Stage

The mitigation measures outlined in Section 11.6.1.1 for the construction stage are also applicable for the Proposed Development. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11.6.2.2 Operational Stage

Mechanical Plant Noise

The mitigation measures outlined in Section 12.6.1.2 are also applicable to the Proposed Development.

Inward Noise Impact

In the context of the Proposed Development, the facades highlighted in Figure 11.16 will be provided with glazing and ventilators that achieves the minimum sound insulation performance as set out in Table 11.34.

The specification applies only to residential units, hotel rooms and office space on the facades indicated. Retail and food & beverage units along these facades do not have a sound insulation requirement. Other facades in the development have no minimum requirement for sound insulation.

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 11.34.

Site	Façade	Glazing Octave Band Centre Frequency (Hz)							Ventilator
		125	250	500	1000	2000	4000	R_w	$D_{n,e,w}$
Site 3	Henry St (RED)	26	27	34	40	38	46	37	39
	Moore St. / Henry Pl (ORANGE)	19	27	34	39	35	40	35	36
Site 4	Moore St (RED)	26	27	34	40	38	46	37	39
	Moore Lane / Henry Place (ORANGE)	19	27	34	39	35	40	35	36
Site 5	Moore St. (RED) **Residential**	26	27	34	40	38	46	37	39
	All Facades (ORANGE) **Office**	20	22	27	32	32	37	30	N/A

Table 11.34: Calculated Construction Traffic Noise Levels at Edge of Road.

Façade specification are marked up in Figure 11.16 below. Ventilator requirements are 39 dB $D_{n,e,w}$ and 36 dB $D_{n,e,w}$ for facades marked up in red and orange respectively.

With respect to the hotel, façade recommendations have been presented here so that the internal noise level requirements set out in BS 8233 are met. It may be the case that the future operator of the hotel will have their own brand standard with associated acoustic considerations that must be achieved. This will be assessed at detailed design stage.

Error! Reference source not found.: Glazing and Ventilator Requirement.

11.7 RESIDUAL IMPACT

11.7.1 Dublin Central Masterplan

11.7.1.1 Construction Stage

11.7.1.1.1 Noise

All cumulative Dublin Central Masterplan construction activities are predicted to exceed the noise threshold value when they occur at the closest proximity to the residential, commercial and clinical receptors closest to the proposed site boundary. However, it should be noted that the assessment can be considered highly worst case and it is unlikely that all items of plant assessed will be in operational simultaneously, or that two adjoining sites of the development will be under construction simultaneously. Additionally, the predictions only indicate a potential significant effect (based on a worst-case scenario) when working at the closest location to the dwellings, with lesser impacts predicted at all other locations across site.

The implementation of the mitigation measures outlined in Section 11.6.1.1.1, and detailed in Appendix 11.2, will aim to minimise impact of construction noise experienced at nearby residential, commercial and clinical receivers.

Due to the nature of construction noise and the proximity of noise sensitive receivers, it is predicted the residual construction noise levels will be at or above the relevant noise criteria while works are within 15m of commercial receptors and less than 20m of residential receptors during initial site works. There will be a **negative, moderate to significant** and **short-term** residual noise impact during the initial site works activities at commercial and residential receptors within 10m and 15m respectively.

As the initial construction works move greater than 15m and 20m from commercial and residential receptors respectively, the predicted residual noise levels are at or below the relevant noise criteria but above the existing baseline noise levels, there will be a **negative, slight to moderate** and **short-term** noise impact. As the works move further away than 30m, the predicted noise levels are below the relevant noise criteria and existing baseline noise levels there will be a **neutral, not significant** and **short-term** noise impact.

All commercial receptors are predicted to have residual construction noise levels below the relevant noise criteria during utilities and structural construction works. The closest residential receptors are at 15m distance, which have residual noise levels below the relevant noise criteria during works but above the existing baseline noise level. There will be a **negative, slight to moderate** and **short-term** residual noise impact during the utilities and structural construction works at the commercial and residential receptors within 15m. As the works move further away than 20m from commercial and residential receptors, the predicted residual noise levels are below the relevant noise criteria and existing baseline noise levels there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during general construction work activities and below the existing baseline noise levels. At all commercial and residential receptors there will be a **neutral, not significant** and **short-term** impact during general construction work activities.

The closest clinical receptor is at 20m distance with an existing baseline noise level above 70 dB $L_{Aeq,T}$, therefore there will be a **neutral, not significant** and **short-term** residual noise impact during all works activities at closest boundaries to the clinical receptors.

11.7.1.1.2 Vibration

No predicted significant adverse impact arising from vibration during construction provided works are carried out so as to fall under the relevant vibration criteria.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11.7.1.2 Worst Case Impact

In terms of potential noise and vibration impacts, the assessment has considered a range of worst case scenarios to determine the potential impacts of the Proposed Development.

During the construction phase, a range of worst case scenarios have been assessed assuming all plant items are operating along the closest noise sensitive boundaries. The assessment has determined impacts associated with these scenarios can be controlled through the best practice measures outlined in Section 11.6.

11.7.1.3 Operational Stage

11.7.1.3.1 Noise

Mechanical Plant Noise

Once cumulative plant noise emissions from the various sites of the Dublin Central Masterplan are designed to achieve the appropriate noise criteria the cumulative noise impact will be **neutral**, **imperceptible** and **permanent**.

Entertainment Noise

Once entertainment noise is designed and managed to achieve the criteria set out, i.e. inaudibility, the residual noise impact will be **neutral**, **imperceptible** and **permanent.**

Delivery and Servicing Traffic

Delivery activity has been considered in the context of the existing environment of a serviced, city centre location. The cumulative noise impact will be **neutral**, **not significant** and **permanent.**

Inward Noise Impact

With respect to inward noise impacts, the specification of noise mitigation has been recommended so that the internal noise criterion will be met. The residual noise impact will be **neutral**, **not significant** and **permanent.**

11.7.1.3.2 Vibration

There are no significant sources of vibration associated with the operational phases of the Dublin Central Masterplan. There is therefore a **neutral**, **imperceptible** and **permanent** cumulative impact associated.

11.7.2 Proposed Development – Site 3, 4 & 5

11.7.2.1 Construction Stage

11.7.2.1.1 Noise

The implementation of the mitigation measures outlined in Section 11.6.1.1.1, and detailed in Appendix 11.2, will aim to minimise impact of construction noise experienced at nearby residential, commercial and clinical receivers.

Due to the nature of construction noise and the proximity of noise sensitive receivers, it is predicted the residual construction noise levels will be at or above the relevant noise criteria while works are within 10m of commercial receptors and 15m of residential receptors during initial site works. There will be a **negative, moderate to significant** and **short-term** residual noise impact during the initial site

works activities at commercial and residential receptors within 10m and 15m respectively. When the initial construction works are between 10m to 15m of the commercial receptors the residual noise levels are below the relevant noise criteria but above the existing baseline noise levels, there will be a **negative, slight to moderate** and **short-term** noise impact. As the works move more than 20m from commercial and residential receptors the predicted residual noise levels are below the relevant noise criteria and below the existing baseline noise levels, there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during utilities and structural construction works. At commercial receptors within 10m of the works, the residual construction noise level is predicted above the existing baseline noise level. There will be a **negative, slight to moderate** and **short-term** residual noise impact during works at the commercial receptors within 10m. As the works move further away than 10m from commercial receptors and 15m from the closest residential receptors, the predicted residual noise levels are below the relevant noise criteria and existing baseline noise levels, therefore there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during general construction work activities and below the existing baseline noise levels. At all commercial and residential receptors there will be a **neutral, not significant** and **short-term** impact during general construction work activities.

The closest clinical receptor is at 20m distance with an existing baseline noise level above 70 dB $L_{Aeq,T}$, therefore there will be a **neutral, not significant** and **short-term** residual noise impact during all works activities at closest boundaries to the clinical receptors.

11.7.2.1.2 Vibration

No predicted significant adverse impact arising from vibration during construction provided works are carried out so as to fall under the relevant vibration criteria.

11.7.2.2 Operational Stage

11.7.2.2.1 Noise

Mechanical Plant Noise

Once cumulative plant noise emissions from the various sites of the Dublin Central Masterplan are designed to achieve the appropriate noise criteria the cumulative noise impact will be **neutral**, **imperceptible** and **permanent**.

Entertainment Noise

Once entertainment noise is designed and managed to achieve the criteria set out, i.e. inaudibility, the residual noise impact will be **neutral**, **imperceptible** and **permanent.**

Delivery and Servicing Traffic

Delivery activity has been considered in the context of the existing environment of a serviced, city centre location. The cumulative noise impact will be **neutral**, **not significant** and **permanent.**

Inward Noise Impact

With respect to inward noise impacts, the specification of noise mitigation has been recommended so that the internal noise criterion will be met. The residual noise impact will be **neutral**, **not significant** and **permanent.**

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

11.7.2.2.2 Vibration

Vibration

There are no significant sources of vibration associated with the operational phases of the Dublin Central Masterplan. There is therefore a **neutral**, **imperceptible** and **permanent** cumulative impact associated.

11.7.3 Cumulative

11.7.3.1 Construction Stage

The similar magnitude of residual noise and vibration impacts discussed in Section 11.7.1 for the Dublin Central Masterplan are relevant to the cumulative assessment of construction works external to the proposed site given it is anticipated that the same construction noise and vibration criteria would apply to these external construction sites.

11.7.3.2 Operational Stage

The different sites within the Proposed Development will be designed so that the cumulative noise emissions from processes and activities are within the relevant noise criteria set out. In the same way, Proposed Developments external to the Proposed Development will in turn be designed in order to comply with appropriate noise criteria.

Any major proposed development in close proximity to the Proposed Development will be required to prepare an EIAR wherein cumulative impacts will also be considered.

11.8 MONITORING

11.8.1 Dublin Central Masterplan

11.8.1.1 Construction Stage

Should the construction noise and vibration risk assessment identify the need for monitoring the following actions are recommended during demolition and construction.

Noise Monitoring Terminals (NMT), number and locations to be agreed, to be installed with the following specifications (or similar approved): -

- Logging of two concurrent periods, e.g. 15-minute & hourly.
- Daily CIC automated calibrations.
- E-mail alert on threshold exceedance.
- E-mail alert on low battery and low memory.;
- Remote access to measured data.
- Live display of noise levels.

Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with *BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.*

The mounting of the transducer to the vibrating structure will need to comply with *BS ISO 5348: 1998: Mechanical vibration and shock – Mechanical mounting of accelerometers.* In summary, the following ideal mounting conditions apply: -

- The transducer and its mountings should be as rigid as possible.

- The mounting surfaces should be as clean and flat as possible.
- Simple symmetric mountings are best.
- The mass of the mounting should be small in comparison to that of the structure under test.

In addition, it is recommended that spot check noise and vibration measurements are conducted on a monthly basis. These spot checks can be organised to coincide with works that have potential to generate high levels of noise or vibration on site in order to confirm the potential extent of impact.

A monthly noise and vibration monitoring report should be prepared by the contractor. Reports should identify any exceedances above nominal limit values and attempts to clarify the causes etc. Where remedial measures are required and identifiable these should also be clearly stated.

11.8.1.2 Operational Stage

Noise monitoring is not required as part of the operational phase of the Proposed Dublin Central Masterplan.

11.8.2 Proposed Development – Site 3, 4 & 5

11.8.2.1 Construction Stage

Should the construction noise and vibration risk assessment undertaken by the contractor identify the need for monitoring the actions listed for the Dublin Central Masterplan site are also applicable to the Proposed Development.

11.8.2.2 Operational Stage

Noise monitoring is not required as part of the operational phase of the Proposed Development.

11.9 REINSTATEMENT

11.9.1 Dublin Central Masterplan

Reinstatement is not applicable to this chapter.

11.9.2 Proposed Development – Site 3, 4 & 5

Reinstatement is not applicable to this chapter.

11.10 DIFFICULTIES ENCOUNTERED

No difficulties were encountered in the preparation of this chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

12 LANDSCAPE & VISUAL IMPACT ASSESSMENT

12.1 INTRODUCTION

This chapter examines the landscape and visual impact of the development proposed on Sites 3, 4, and 5 of the Dublin Central Project on the surrounding urban area and was prepared by ARC Architectural Consultants Limited.

This Chapter was completed by W. H. Hastings B. Arch FRIAI, RIAI Grade 1 accredited Conservation Architect.

12.2 ASSESSMENT METHODOLOGY • ASSESSMENT OF VISUAL EFFECTS

The European Landscape Convention defines landscape as follows: -

> *"Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;*

Landscape and Visual Impact Assessment (LVIA) discusses how the existence of a proposed development might change how a surrounding area might be *'perceived by people'* visually.

The preparation of this landscape and visual impact assessment has had regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft of August 2017)* prepared by the Environmental Protection Agency. It is noted that the EPA Guidelines, in categorising the extent of environmental impact, uses the term 'effects' in place of 'impacts'. This LVIA follows the Guidelines and uses the term 'effects'. Though the terms are interchangeable, the word 'effect' has a less negative connotation than the word 'impact'.

The EPA Guidelines are statutory guidelines prepared under the provisions of the EPA Act 1992 (as amended). The purpose of a visual impact assessment is, taken together with the full range of other documents lodged as part of a planning application, to assist in informing the decision making process.

Assessment of visual effects, has three main parts: -

1. Analysis the likely extent of visibility of a proposed development.
2. Description of the visual sensitivity of the receiving environment and its consequent capacity to absorb development.
3. Assessment of the objective extent of change in the visual character of the receiving environment likely to arise from the existence of the proposed development, and of the likely response of observers to that change.

The EPA Guidelines require that visual impact assessment be carried out in a manner that is systematic, impartial, and objective and independent. It is not the purpose of assessment to promote or advocate for the development. It is an important principle of impact analysis that the analysis should be capable of being repeated independently, and that repeated analysis should lead to the same conclusion. To facilitate this, the steps taken in the analysis of impacts should be clearly set out in an assessment report.

12.2.1 Visibility

The first task of a visual impact assessment is to assess the likely extent and nature of visibility of the proposed development. This includes determining from what locations the Proposed Development is likely to be visible and from what locations it will not be. It includes determining, where visible, how major or minor an element the Proposed Development will be in any view. The primary determining factors when assessing extent of visual impact are: -

i. Whether a development will be visible or not.

ii. where visible how much of any view a development will occupy.

iii. whether or not a proposed development is the focus of a view.

Each of these factors affect the visual prominence of a proposed development.

The extent of visibility of a proposed development in any view tends to be directly related to the distance of the viewpoint from the development. However, intervening obstacles such as buildings or structures, trees and planting, and topography, can modify the extent of visibility of the proposed development. Where streets or urban spaces are aligned towards the site of a proposed development, and where the buildings or trees at the end of these alignments are relatively modest in height, there is a potential for taller developments to be visible above any lower intervening buildings or other obstacles. This potential increases with the length of the open foreground but reduces when the viewpoint is closer to any intervening obstacles. It follows, that for taller structures (e.g. taller than the prevailing height of the surrounding built environment or landscape elements) to be openly visible, they must be seen across an open foreground or at the end of a long vista or alignment. From viewpoints within dense urban, or even suburban, environments, very modest buildings in the foreground can conceal even very large or tall structures from view. The Spire in O'Connell Street, which is 120 metres high, is imposing when viewed from O'Connell Street or O'Connell Bridge, or from Talbot Street or Henry Street. Outside these axes, the visibility of the Spire is dramatically reduced, and, despite its great height it is not visible at all from the great majority of the city.

A survey of the potential visibility of Proposed Development on the subject site was initially carried out by ARC Consultants on various dates in 2006 and 2007. In the first instance, mapping analysis was carried out to identify locations from which views of the Proposed Development were likely. In the summer and autumn of 2020, a new survey was carried out of the potential visibility of proposed buildings in the Dublin Central Project, having regard to the location and proposed height of proposed buildings within the Dublin Central site. This survey identified 28 view locations for assessment, locations from which there may be a potential for proposed buildings that form part of the Dublin Central Project to be visible. Photographs looking in the direction of the Dublin Central site were taken from each of these 28 locations. These photographs were taken on several different dates in the summer, autumn and early winter of 2020. There photographs were taken on high resolution digital cameras using lenses equivalent to a 24mm lens on a 35 mm camera.

Wide-angle lenses were used to provide sufficient context in the view. Photographs with a narrow field of view may exclude relevant context. Wide-angle views, capable of providing sufficient context are particularly important when the viewpoint is close to proposed development. Photographs and photomontages based on wide angle photography are printed at A3 size, so that the angle of vision covered by the print, when held at reading distance, is approximately the same as would be covered by the same extent of the real scene, when viewed from the camera location. This is an accepted convention where photomontages are used to illustrate assessment of landscape and visual effects.

It should be noted that digital images are now commonly viewed on digital devices, and that these devices have a wide range of screen sizes. The size of screen on which an image is viewed and the extent to which the viewer zooms into or out of the image can affect how the content of the image is perceived. Photomontages used to illustrate assessment of landscape and visual effects are helpful in indicating the extent to which a proposed development may be visible from a particular location, and where visible the form and materials of the Proposed Development (See Appendix 12.1). It should be noted that in the context of assessment of landscape and visual effects photomontages are intended to be representative of what might be seen from different directions and are not intended to be exhaustive.

12.2.2 Characteristics of the Receiving Environment • Sensitivity and Visual Capacity

A has been discussed above, the visibility of proposed development is mediated by the physical geometry of the receiving environment, including the pattern and form of the existing built environment. These are among the factors that determine the visual capacity of a receiving environment to absorb development. Among other characteristics are the visual character and uniformity of the receiving environment and its historical or cultural value.

An intact and uniform Georgian square, which is a coherent and integrated visual setting, would usually be regarded as visually sensitive with a consequent low capacity to absorb new development that might dilute the existing visual character. The same might be true of certain suburban

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

environments. On the other hand, a centre city environment or dockland settings where there are structures of a diverse character and a wide range of scales are settings that are usually less sensitive and are likely to have a high visual capacity to absorb development. Locations that have a statutory designation as an architectural conservation area or locations where there are protected structures, usually have an increased visual sensitivity leading to a reduced visual capacity to absorb development. Other designations, such as special amenity area orders, designated views and prospects and designated high amenity zones, may also limit this absorption capacity. Capacity to absorb development, therefore, has a direct bearing on the extent of likely visual effects.

In areas that are very uniform in character the introduction of larger structures may change the visual character of the area. In established urban areas the introduction of new large structures as part of a process of densification has the potential to give rise to substantial visual effects. The extent of this change will depend on the extent of difference in visual character between the new development and the existing surrounding visual environment. The extent of change is likely to be the main factor in determining the extent of visual effects.

12.2.3 Extent and Nature of Visual Effects

The categorising of the extent potential of visual effects in this LVIA utilises the terminology set out in the Table 3.3: Descriptions of Effects contained in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports prepared by the Environmental Protection Agency.

The extent of visual effects will depend on the extent to which the existence of a proposed development changes the visual character of a receiving environment. The extent of change likely to result from the existence of a proposed development is usually a matter of objective fact, related to characteristics such as bulk, height, form, colour materials proportion, etc.

The extent of visual effects also depends on the interplay between the visual sensitivity and uniformity of the receiving environment and the extent to which the design of the Proposed Development responds to the form and pattern of the receiving environment. Responding well to the receiving environment should not imply deference or mimicry. Often a degree of contrast is a more visually appropriate response than adopting the style, form, materials or architectural detail of the receiving built environment, which can sometimes result in pastiche. These matters may be described in objective terms, but they are also susceptible to subjective judgement on the part of observers.

The perceived character of the visual effects: positive, negative or neutral, may depend on how well a development is received by the public, and on the perceived contribution of the development to the built environment. The character of visual effects, and even the duration of visual effects, is very dependent on the attitude of the viewer. If a viewer is opposed to a new building for reasons other than visual, that viewer is likely to see the building in a negative light, no matter how beautiful the building might be.

12.2.4 Definition of Effects on the Visual Environment

The assessment of visual effects on landscape and on the built environment had regard to the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft of August 2017) prepared by the Environmental Protection Agency. The terminology for categorising the significance of visual effects referred to below is taken from Table 3.3: Descriptions of Effects contained in the Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Some commentary is also given below on what these definitions might imply in the case of landscape and visual effects. The definitions from the EPA document are in italics.

- ***Imperceptible:*** *An effect capable of measurement but without significant consequences.* The definition implies that the development would be visible, capable of detection by the eye, but not noticeable to the casual observer. If the development were not visible, there could be no impact.

- ***Not Significant:*** *An effect which causes noticeable[2] changes in the character of the environment but without significant consequences (the footnote '2' to the word 'noticeable' is: 'for the purposes of planning consent procedures').* The definition implies that the development would be visible, capable of detection and of being noticed by an observer who is actively looking for the development with the purpose of assessing the extent of its visibility and visual effects.
- ***Slight:*** *An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.* For this definition to apply, a development would be both visible and noticeable, and would also bring about a change in the visual character of the environment. However, apart from the development itself, the visual sensitivity of the surrounding environment would remain unchanged.
- ***Moderate:*** *An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.* In this case, a development must bring about a change in the visual character of the environment; and this change must be consistent with a pattern of change that is already occurring, is likely to occur, or is envisaged by policy.
- ***Significant:*** *An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.* The definition implies that the existence of the development would change an important characteristic of the visual environment in a manner that is not 'consistent with existing and emerging baseline trends'. Whether an effect might or might not be significant can depend on the response of individual observers, since what one person might regard as a sensitive aspect of the visual environment, another might not.
- ***Very Significant:*** *An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.* The definition implies that the existence of the development would substantially change most of the visual characteristics of the environment in a manner that is not 'consistent with existing and emerging baseline trends'.
- ***Profound:*** *An effect which obliterates sensitive characteristics*. In visual terms, profound effects are only likely to occur on a development site, in that it is only on the site that all previous visually sensitive characteristics could be obliterated. Outside the site, some visual characteristic of the original environment is likely to remain.

The definitions of effects listed above deal largely with the extent of effects; which is usually proportional to the extent to which that development is visible. The extent of effects will also, in part, depend on the sensitivity of the spaces from which the development is seen. This proportionality may be modified by the extent to which a development is regarded as culturally or socially acceptable. Though buildings are intended to be permanent, and will be permanently visible, the extent of visual effects associated with a building often diminishes with time as further development in the area takes place.

12.2.5 Digital Modelling and Rendering

Models of the Proposed Development were constructed using 3D Studio Max. Models were made both by ARC Consultants and by members of the design team. The models made by ARC Consultants were based on survey information and on design drawings provided by the design team. Surveyed reference points on existing buildings in the city were attached to the 3D models. The model used for photomontages included appropriate detail of the proposed buildings as shown on design drawings. Renderings were made on computer from each camera position using the field of view of each photograph, and with the sun position correct for the date and time that each photograph was taken. The renders were inserted into the relevant view and were scaled and positioned using the field of vision of each photograph and the surveyed reference points in each view. ARC would expect the dimensional accuracy of the scaling and positioning of the image of the Proposed Development within each view to be better than ± 1%.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

12.2.6 Statutory Provisions

Part of the site of the proposed Dublin Central Project falls within the O'Connell Street Architectural Conservation Area (ACA), which was adopted in July 2001. In the Dublin City Development Plan 2016 – 2022, Section *11.1.5.4 Architectural Conservation Areas and Conservation Areas states*: -

"The Planning and Development Act, 2000 (as amended), section 81(1), requires that a development plan shall include an objective to: -

Preserve the character of a place, area, group of structures or townscape, taking account of building lines and heights, that –

a) is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or

b) contributes to the appreciation of protected structures, if the planning authority is of the opinion that its inclusion is necessary for the preservation of the character of the place, area, group of structures or townscape concerned and any such place, area, group of structures or townscape shall be known as and is in this Act referred to as an "architectural conservation area.

Architectural Conservation Areas and Conservation Areas have been designated in recognition of their special interest or unique historic and architectural character and important contribution to the heritage of the city. Designated Conservation Areas include extensive groupings of buildings or streetscapes and associated open spaces and include (parts of) the medieval/walled city, the Georgian Core (in recognition of Dublin's international importance as a Georgian city), the 19th and 20th century city and the city quays, rivers and canals. The special interest/value of Conservation Areas lies in the historic and architectural interest and the design and scale of these areas. Therefore, all of these areas require special care in terms of development proposals and works by the private and public sector alike, which affect structures both protected and non-protected in these areas.

Dublin City Council will thus seek to ensure that development proposals within all Architectural Conservation Areas and Conservation Areas complement the character of the area, including the setting of protected structures, and comply with development standards."

The policy to ensure the conservation and protection of the areas of special historic and architectural interest is as follows: -

CHC4: It is the Policy of Dublin City Council: -

"To protect the special interest and character of all Dublin's Conservation Areas. Development within or affecting a conservation area must contribute positively to its character and distinctiveness, and take opportunities to protect and enhance the character and appearance of the area and its setting, wherever possible. Enhancement opportunities may include: -

1. *Replacement or improvement of any building, feature or element which detracts from the character of the area or its setting.*
2. *Re-instatement of missing architectural detail or other important features*
3. *Improvement of open spaces and the wider public realm, and re-instatement of historic routes and characteristic plot patterns.*
4. *Contemporary architecture of exceptional design quality, which is in harmony with the Conservation Area.*

The repair and retention of shop- and pub-fronts of architectural interest. Development will not: -

1. *Harm buildings, spaces, original street patterns or other features which contribute positively to the special interest of the Conservation Area*
2. *Involve the loss of traditional, historic or important building forms, features, and detailing including roof-scapes, shop-fronts, doors, windows and other decorative detail*
3. *Introduce design details and materials, such as uPVC, aluminium and inappropriately designed or dimensioned timber windows and doors*
4. *Harm the setting of a Conservation Area*
5. *Constitute a visually obtrusive or dominant form."*

12.2.6.1 O'Connell Street Architectural Conservation Area

The extent of the O'Connell Street Architectural Conservation Area in the written statement is defined as follows: -

> *"to the north of the river the area is centred on O'Connell Street, extending to Marlborough Street to the east, Moore Street to the west, Parnell Street to the north and the River Liffey to the south. To the south of the river, the area is centred on Westmoreland Street and D'Olier Street, extending to College Street to the south, Hawkins Street to the east and to rear of buildings fronting onto Westmoreland Street to the west."*

In relation to proposed new development the ACA written statement states: -

> *"Where new development is proposed, it will be necessary to find and establish a pattern of development that responds in a sensitive manner to the streetscape – a fine grain solution – that contributes to a harmonious whole and maintains the rhythm of the streets. To secure an appropriate solution, new development should comply with the following general guidelines: -*
>
> - *New developments should respect the established scale of the existing built fabric - including height, massing, proportions and plot width. Proposals for large scale or 'mega-structural' developments will not be favourably considered and any such proposals should be broken down into smaller, more comprehensible and human scale developments. This can be achieved in part through the provision of multiple uses and access points at ground floor level.*
> - *All new buildings should be designed to the highest standard in a modern architectural idiom. Pastiche will be discouraged and will only be allowed or required in exceptional circumstances.*
> - *Materials used should be of a high quality and be durable to avoid long term maintenance problems. They should include stone, brick, render, steel, glass and timber.*
> - *An appropriate and balanced mix of uses will be required in all new developments and large scale single use developments will not be permitted. Public oriented uses including shops, cafes, restaurants and bars will be required at ground floor level to create more lively, dynamic and successful places.*
> - *The ground floor of all buildings should be clearly articulated to establish a clear identity for each building and use. In general, a higher floor to ceiling dimension should be provided at ground floor level.*
> - *The incorporation of new pedestrian routes and public spaces into new developments will be required where appropriate to enhance and reinforce the existing urban framework. A number of sites have been identified where opportunities for such interventions may be explored including site clusters nos. 4 and 7.*
> - *Access requirements for people with disabilities, the elderly and the very young should be incorporated into the design of shops, public and other buildings.*
> - *Plant and tank rooms should be provided within the roof space or within the envelope of the building and should not break the plane of the roof."*

12.2.6.2 The Height Guidelines

It is the stated purpose of the *Urban Development and Building Height Guidelines for Planning Authorities*, December 2018 (The Height Guidelines) to seek increased building heights, over and above the norm, in urban areas throughout Ireland. In this regard, the following quotation from Part 1 of the Height Guidelines is relevant to consideration of visual effects: -

> *"1.4. However, in recent years, local authorities, through their statutory development and local area plan processes, have begun to set generic maximum height limits across their functional areas. Frequently, such limits have resulted* ***from local-level concerns, like maintaining the character of an existing built-up area****, for example. However, such limits, if inflexibly or unreasonably applied, can undermine wider national policy objectives to provide more compact forms of urban development as outlined in the National Planning Framework and instead continue an unsustainable pattern of development whereby many of our cities and towns continue to grow outwards rather than consolidating and strengthening the existing built-up area. Such blanket limitations can also hinder innovation in urban design and architecture leading to poor planning outcomes. (emphasis added)"*

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

In this quotation the Guidelines indicate that **'maintaining the character of an existing built-up area'** by the inflexible imposition of maximum height limits is an unreasonable constraint and argues for development that would allow for change and development in urban design and character. The Guidelines are calling for quite radical change in the character of Ireland's urban areas to promote sustainable development. Such changes in character will inevitably result in very substantial visual effects. These resulting visual effects will be regarded as positive by some but as negative by many others, particularly those who live or work in established urban or suburban areas and who value the existing character of these areas.

In assessing the potential visual effect of development of increased height as called for by the Height Guidelines, it is very likely that the assessment will find that there will be negative visual impacts as well as positive. In some cases the negative may outweigh the positive. However, the purpose of the Guidelines is to seek densification and consolidation of existing urban areas, and this will lead to substantial planning gains, even where visual impacts may be regarded as negative by many.

Section 3.2 of the Height Guidelines sets out development management criteria, 17 in all. Specific Planning Policy Requirement, SPPR 3 then states that: -

"It is a specific planning policy requirement that where: -

(A) 1. an applicant for planning permission sets out how a development proposal complies with the criteria above; and

2. the assessment of the planning authority concurs, taking account of the wider strategic and national policy parameters set out in the National Planning Framework and these guidelines.

then the planning authority may approve such development, even where specific objectives of the relevant development plan or local area plan may indicate otherwise."

The first 8 criteria listed at Section 3.2 under the heading Development Management Criteria are as follows: -

*"**3.2** In the event of making a planning application, the applicant shall demonstrate to the satisfaction of the Planning Authority/ An Bord Pleanála, that the proposed development satisfies the following criteria: -*

At the scale of the relevant city/town

- *The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport.*
- *Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views. Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.*
- *On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape.*

At the scale of district/ neighbourhood/ street

- *The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape.*
- *The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered.*
- *The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management –Guidelines for Planning Authorities" (2009).*
- *The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner.*

- *The proposal positively contributes to the mix of uses and/ or building/dwelling typologies available in the neighbourhood.*

Where the relevant planning authority or An Bord Pleanála considers that such criteria are appropriately incorporated into development proposals, the relevant authority shall apply the following Strategic Planning Policy Requirement under Section 28 (1C) of the Planning and Development Act 2000 (as amended)."

Of the 8 criteria quoted above, only 6 involve issues that might be considered to relate to visual effects. These are the second and third criteria under the heading *'At the scale of the relevant city / town'* and the first to fourth criteria under the heading *'At the scale of district / neighbourhood / street'* In none of these criteria are visual effects the primary criterion.

Landscape and Visual Impact Assessments are prepared having regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft of August 2017),* published by the Environmental Protection Agency. The function of Landscape and Visual Impact Assessment as set out in this statutory guidance does not include the requirement to demonstrate compliance with the Height Guidelines or any other guideline made under Section 28 of the Planning and Development Act 2000, (as amended), such as the Architectural Heritage Protection Guidelines. Nevertheless, information contained in an assessment of visual effects may prove of assistance to an applicant who is required under SPPR 3 to demonstrate compliance criteria under Section 3.2 of the Height Guidelines which relate to visual impact. Moreover, as will be seen below, one of the criteria specifically requires a *'landscape and visual assessment'*.

Before addressing the landscape and visual impacts of the Proposed Development in detail, the following section examines the relationship between the criteria under Section 3.2 and the landscape and visual impact assessment which the applicant for permission is required under section 3.2 to include in its application. The text of each of the criteria is provided in italics below.

At the scale of the relevant city/town

- *Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views. Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.*

This criterion covers a range of factors, some of which may have a visual component. Some may not. Development is unlikely to meet the particular criterion quoted above on visual grounds alone. The reality is that new developments are almost always intended by the designers to integrate into and enhance the character of the area in which they are to be located, both in terms of function and appearance. It is also true that the whole thrust of the Urban Development and Building Heights Guidelines for Planning Authorities is that new development should integrate into and enhance the character of an area through the provision of increased density, thereby consolidating the area, and through providing sufficient new development to sustain the area and its character into the future. Observers may not always perceive a completed development as successfully integrating into the character of the area, either in terms of its function or visual character.

A landscape and visual assessment seeks to carry out objective analysis of how a proposed development integrates and or enhances the character of the area in which it is to be located, in the first instance by describing and evaluating in objective terms the existing character and sensitivities of the area. An evaluation of the character of the urban or rural landscape of the area would include a reference to existing key landmarks and protected views and prospects. A LVIA would, in the normal course, provide an objective description of the features of the Proposed Development in terms of materials, colour, fenestration pattern, height, scale etc. The methodology used in this chapter, as described in Section 12.2 and as applied in Section 12.5 uses this approach. This would be supported by an Architects' Design Statement outlining how and in what way the Proposed Development seeks to respond to its surroundings.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The extent and manner in which a new development integrates into or enhances the character an area, including the public realm, is heavily dependent on how visible the new development might be and from where; and where visible whether it is a large or small element in the view. The relative prominence of a development is a factor in determining the extent to which it integrates into or enhances the character of its surroundings. If a development is to enhance the public realm it is usually by contributing to publicly available amenities, public space, or increased permeability.

There are occasions where new development may seek to integrate by providing a visual counterpoint to other key features in its surroundings, a contrast. A new landmark building might be an example. In such an instance the new development might still integrate into the character of an area by creating a new character, where the existing and the new merge to create a new integrated and enhanced character. This is particularly likely to happen in locations with a high potential to absorb multiple new developments. For a new building to be considered a landmark does not necessarily imply a tall building. A building may be a landmark simply because it is distinctive or has a special function.

A landscape and visual impact assessment seeks to take a full range of issues into account and to provide a Planning Authority / An Bord Pleanala with an independent, systematic, objective and impartial assessment of the potential impacts of development, including the full range of the character of impacts, large and small, positive and negative, so that it cannot be argued that the Planning Authority or the Board, in making a determination was not in possession of the full facts.

The above criterion makes reference to *'cultural context'*. That has a wide range of possible meanings. If it were to relate to architectural or archaeological heritage. These matters could be addressed in appropriate architectural heritage or archaeological assessments.

At the scale of the relevant city/town

- *On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape.*

How a development meets this criterion would usually be set out in the architect's design statement. Town planning, urban design, traffic and other reports might also provide input. The criterion calls for *'a positive contribution to place-making, incorporating new streets and public spaces'*. In a large development there are likely to be proposed new streets or spaces within the development. A visual impact assessment might assess the visual effects of a large urban proposal of the surrounding urban character, but it would not be usual for impact assessment to discuss the internal character of a proposal or the impact of a proposal on itself.

At the scale of district/ neighbourhood/ street

- *The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape*

The response of a development to the natural environment would be primarily an ecological issue. In responding to the built environment, a development must, in the first instance, provide uses and a quantum of development appropriate to its context and appropriate to the 'urban neighbourhood and streetscape'. A visual impact assessment would assess the extent to which the proposed development is visible and discuss the visual sensitivity and capacity to absorb development of the surrounding context. A visual impact assessment would also discuss how a proposed development responds visually to the surrounding context in terms of scale, form, colour etc. However, how a development fulfils its purpose or meets perceived needs of the locality are the main determinants of how a development responds to its surroundings and are more important factors than visual character. The consideration of issues of visual sensitivity and visual capacity form part of the assessment of landscape and visual effects as set out in Section 12.5 of this chapter.

At the scale of district/ neighbourhood/ street

- *The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered.*

The intended meaning here is not quite clear. In relation to buildings, the word '*monolithic*' is usually taken to mean made of a single material. In this regard, some traditional or historic stone buildings, or even brick buildings, might be described as monolithic, though they might be very fine buildings; and some of Ireland's finest townscapes consist of *'long, uninterrupted walls of building'* in the form of Georgian or Victorian terraces. It is also the case that some of Ireland's best 20th century public housing is in the form of *'long, uninterrupted walls of building'*, as is the case throughout Europe. Surely, these are not the type of building that this criterion seeks to avoid.

The criterion literally says that *'slab blocks with materials / building fabric well considered'* should be avoided. Surely this must mean the opposite of what it says; and that what is sought is that slab blocks with materials / building fabric poorly considered should be avoided. What the criterion appears to be intending is that dull plain blocks of building without articulation in terms of form, height, material or colour should be avoided. It would seem to suggest that some variation in building height, either within a development or between a new development and its surroundings would be positive, as would variations in materials and form. Whatever the intended meaning, the criterion centres directly on the building form and materials of the Proposed Development as matters of fact. The criterion does not touch on the possible response of observers.

At the scale of district/ neighbourhood/ street

- *The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management –Guidelines for Planning Authorities" (2009).*

This criterion covers a lot of ground and puts urban design and flood management together. Urban design is about how people inhabit, use and move through the public realm in urban contexts. New developments can make contributions to urban design in numerous ways, but fundamentally by improving the amenity of the public realm, making a more pleasant place to be in and use. A successful public realm should be visually attractive, but utility, amenity, comfort and safety will necessarily be the main factors determining the quality of any public space. The contribution a development might make to legibility in an urban context is probably the main visual contribution to urban design.

At the scale of district/ neighbourhood/ street

- *The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner.*

This criterion suggests that the development, or elements of it should make a contribution to defining urban space or be identifiable as a marker within the urban realm. This implies additional height over that of the surrounding urban context but does not necessarily demand it. It is noted that the Building Height Guidelines as a whole are seeking additional height over the status quo. However, distinctive new development well located in an urban context, might define how urban spaces are read and so improve legibility and way finding, without necessarily being taller than its neighbours.

The assessment of visual effects can contribute to the discussion of visual aspects around the criteria set out under Section 3.2 of the Height Guidelines, but it is important to stress that none of the 17 criteria can be satisfied on visual grounds alone

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

12.3 RECEIVING ENVIRONMENT

The site of the Dublin Central Masterplan is bounded by O'Connell Street to the east, Henry Street to the south, Moore Street to the west and Parnell Street and Square to the north. O'Connell Street is traditionally regarded as the main street of Ireland, and Nelson's Pillar, which stood at the midpoint of the street, was seen as the centre of Dublin. Though the site of the Proposed Development may be at the core of the city, it lies in an area that has seen dramatic changes over the years, and which is the subject of much new development, recently completed, under construction, approved or lodged for approval.

12.3.1 O'Connell Street

The first paragraph in the introduction to the O'Connell Street Integrated Area Plan 1998 reads as follows: -

> *"For most Irish people, O'Connell Street is the heart of Dublin City. Its scale, symmetry, history, elements of architectural grandeur, and central location endow it with a sense of place and civic importance, which has embedded itself deeply in the psyche of the people. Being a wide, north-south street, it has excellent orientation and is always full of light. If one were to travel inwards from the outer limits of the city and experience the layers of the city built up over time, on reaching O'Connell Street one would have to declare, "This is it! This is the centre."*

O'Connell Street was begun in the 1740's and completed in 1800. Luke Gardiner, the eighteenth-century entrepreneur, was involved in the development of Sackville Street, named after Lionel Cranfield Sackville, first Duke of Dorset and Lord Lieutenant of Ireland, and Gardiner's Mall. Gardiner also developed Rutland Square, now Parnell Square, in the 1740s and 1750s. An engraving by the Dublin artist Oliver Grace shows of Sackville Street in 1749. The caption to the engraving gives the dimensions of the street as: -

> *"In length 1050 feet, in Breadth 150, in the midst is the Mall in length 800 feet in Breadth 50..."*

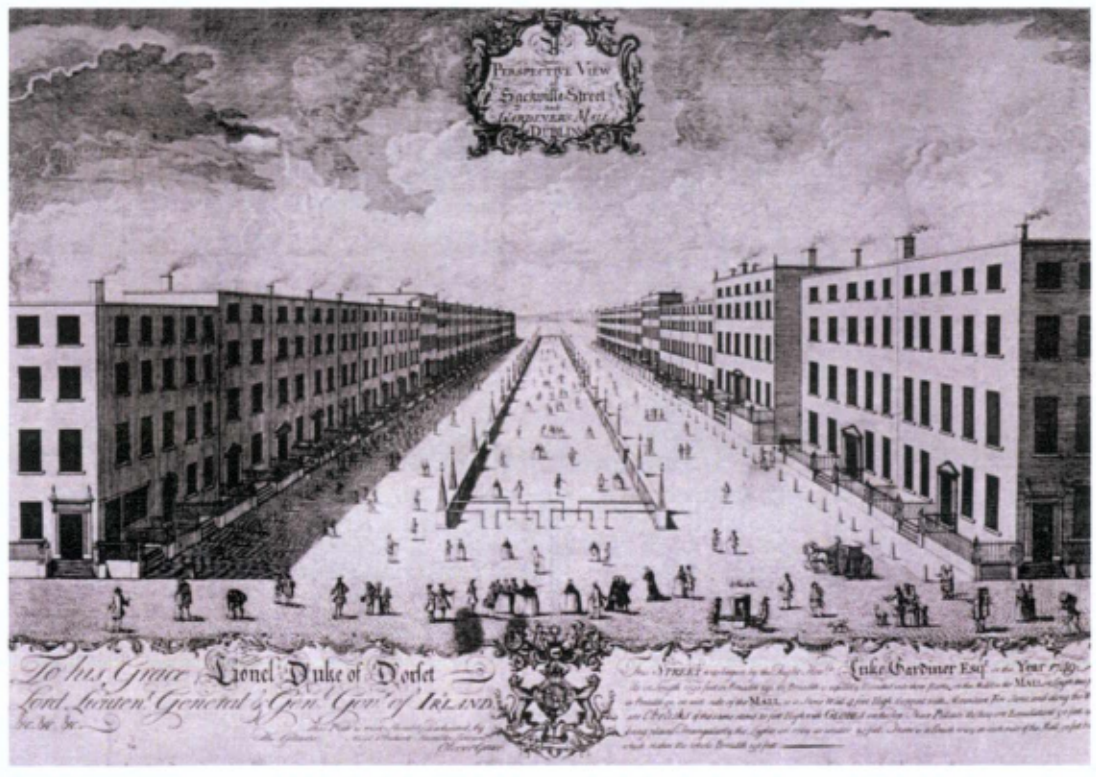


Figure 12.1: Grace's View of Sackville Street and Gardiners' Mall, 1749.

The Mall got its name from the game of Pall Mall, a ball game popular at the time, and the purpose of the mall was for playing Pall Mall. Before Sackville Street was set out, there had been an earlier narrower street, Drogheda Street, that ran along the east side of what is now O'Connell Street. Neither Drogheda Street, nor the original Sackville Street reached to the River Liffey. Sackville Street was finally extended to its current length, and brought to the river in 1800, by the efforts of the Wide Streets Commissioners. Nelson's Pillar was built in 1808, and the General Post Office was completed in 1818. Upper and Lower Sackville Street were officially renamed as Upper and Lower O'Connell Street in 1924, not long after the foundation of the Irish State.



Figure 12.2: John Rocque's Map of 1756. Sackville Street and Gardiners' Mall are well separated from the River.

John Rocque's Map of 1756, above, shows the narrow Drogheda Street, aligned with the east side of the present O'Connell Street, running south from Henry Street to Great Abbey Street. Even Drogheda Street didn't reach the river. Henry Street, Moore Street and Drogheda Street were named after Henry Moore, Earl of Drogheda, whose house was the large house on the east side of Sackvllle Street shown on Grace's illustration. It was the larger house shown on the corner of Sackville Street and Stable Lane on Rocque's map above. A large part of the site of the Dublin Central Project is shown on the map as a brick field.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The fact that the General Post Office was built on Sackville Street was more by accident than design. Warburton Whitelaw and Walsh's *History of the City of Dublin*, published in 1818, the same year as the GPO was completed. This book contains, as well as historical accounts of the City lengthy descriptions of the present state of Dublin as it was in 1818. The account of the development of the GPO is as follows: -

> *"The total revenues of the Post office for the year 1800 were £85,000. The gross receipts for the year 1816 were £250,000., from which deducting £150,000. for expenses, left a net profit of £100,000. in favour of the establishment. The great increase of business requiring a great increase of room, the Post-office has been removed at different times to more convenient situations. It was originally established on the north side of Dame-street, near Anglesea-street, which, after its removal, was still called the " Post-office yard." From thence it was transferred to the south side of College-green, where sundry efforts were made to enlarge the too narrow limits of the increasing office, without removing it from the convenience of a central situation. At length finding it impracticable to transact the business there much longer, a more spacious site, and one no less convenient was chosen whereupon to erect a new post-office. It was an open space of ground on the west side of Sackville-street. A long litigation had prevented it from being built on before, and an arrear of 20 years rent had accumulated. This was purchased by the Post-masters-General, and the first stone of the new edifice laid by his Excellency Lord Whitworth on the 12th August 1815. This extensive and magnificent building has proceeded with a degree of rapidity unexampled in this country. It is 223 feet in front, 150 feet in depth, and its height is 50 feet to the top of the cornice, consisting of 3 stories from the surface. In the centre is a very grand portico 80 feet in length, consisting of a pediment supported by six pillars of the Ionic order 4 feet 4 inches in diameter, which is considerably larger than that of any other in the metropolis. The pediment is surmounted by three beautiful statues executed by the younger Smith. That in the centre represents Hibernia, resting on her spear and harped shield ; on the right is Mercury, a nude figure with his caduceus and purse; that on the left is emblematic of Fidelity, with her finger on her lips and a key in the other hand. The tympanum of the pediment is ornamented with the Royal arms in high relief; an handsome balustrade surmounts the cornice all round the top, and gives an elegant finish to the whole. The bold and superb portico projects from the body of the building so as to range with the street, and to admit the flagged foot-way under it. The portico itself is of Portland stone, but the main structure is of mountain granite. The expense of this grand and useful edifice will not, it is said, amount to more than £50,000., to be defrayed from the net revenue of the post-office."*



Figure 12.3: View of Sackville Street with the GOP and Nelson's Pillar by Brocas c. 1820.

Nelson's Pillar was completed in 1808, ten years before the GPO. For generations of Dubliners the 'Pillar' was the centre of the city. When horse drawn trams began operating in Dublin in the 1870s the city centre terminus was the 'Pillar'. Later the 'Pillar' was the terminus indicated on CIE busses.

But if the account of Nelson's Pillar in Warburton Whitelaw and Walsh's History of the City of Dublin is anything to go by, the 'Pillar' was not popular when first erected: -

> *"The testimonials of national gratitude and admiration to the memory of this favourite naval hero are already numerous in the British dominions. That erected by public subscription in Dublin is perhaps the greatest of any of them. It is situated in the centre of Sackville-street, opposite Mary-street and Earl-street, and is composed of a pedestal, column, and capital of the Tuscan order, on the summit of which a colossal statue of Lord Nelson stands*
>
> *The design of this triumphal column was given by William Wilkins, Esq. architect, fellow of Caius College, Cambridge. It is of most ponderous proportions, which is not relieved by the least decoration. Its vast unsightly pedestal is nothing better than a quarry of cut stone, and the clumsy shaft is divested of either base, or what can properly be called a capital. Yet with all this baldness and deformity, it might have had a good effect when viewed at a distance, or placed anywhere else'; but it not only obtrudes its blemishes on every passenger, but actually spoils and blocks up our finest street, and literally darkens the two other streets opposite to it, which, though spacious enough, look like lanes. These were objections to its site at first, but they are now become still stronger, since the building of the new Post-office close to it, for, by contrast, it in a great measure destroys the effect of one of the largest and finest porticos in Europe."*

Nelson's Pillar was blown up in the middle of the night in 1966. In following years there were numerus proposals for a replacement and eventually there was a competition. The winning design was a stainless-steel needle 120 metres high. Now accepted, it stands there almost unnoticed. Like the Pillar before it, the Spire was not universally accepted. Christine Casey writing in 2005 in her book: The *Buildings of Ireland: Dublin*, describes the Spire is as follows: -

> *"At the Henry Street junction stands the SPIRE, a stainless-steel needle 120 metres (393 ft) high, of 2001-3 by Ian Ritchie, with clearly visible joints and nasty mirror-patterned base."*

After the construction of Nelson's Pillar and the General Post Office, it might have been expected the Sackville Street would have remained a street of Georgian houses with these two iconic structures at its centre. But this was not to be. Arthur Gibney, writing in the Environmental Impact Statement for the Spire says the following of the development of O'Connell Street in the 19th Century: -

> *"By the end of the century many of its original houses were replaced by Victorian hotels such as Gresham's, the Metropole and the Imperial, commercial institutions such as the Standard Life Insurance Company and the Scottish Provincial Insurance Company and large retail outlets such as Findlater's, Clery's and Gilbey's, the wine merchants. The pressure to expand commercially during the Victorian and Edwardian era resulted in a considerable disruption of the continuous eighteenth-century skyline....The former Dublin Bread Company premises, built in 1901, had a steel structure, which supported a turreted tower and roof, which exceeded 8 storeys in height."*



Figure 12.4: View of Sackville Street from the O'Connell Bridge c. 1905.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 12.5: View of Sackville Street from the Carlisle Bridge. The lack of tram tracks suggests that this image dates from the 1860s. The imperial Hotel is seen opposite the GPO and the Metropole Hotel is seen just south of the GPO. The Metropole was heavily remodelled later in the 19th century.



Figure 12.6: View of Sackville Street from the O'Connell Bridge c1910. The huge form of the Dublin Bread Company dominates the street.



Figure 12.7: View of the north end of Sackville Street c. 1900. The Gresham Hotel is seen to the left.

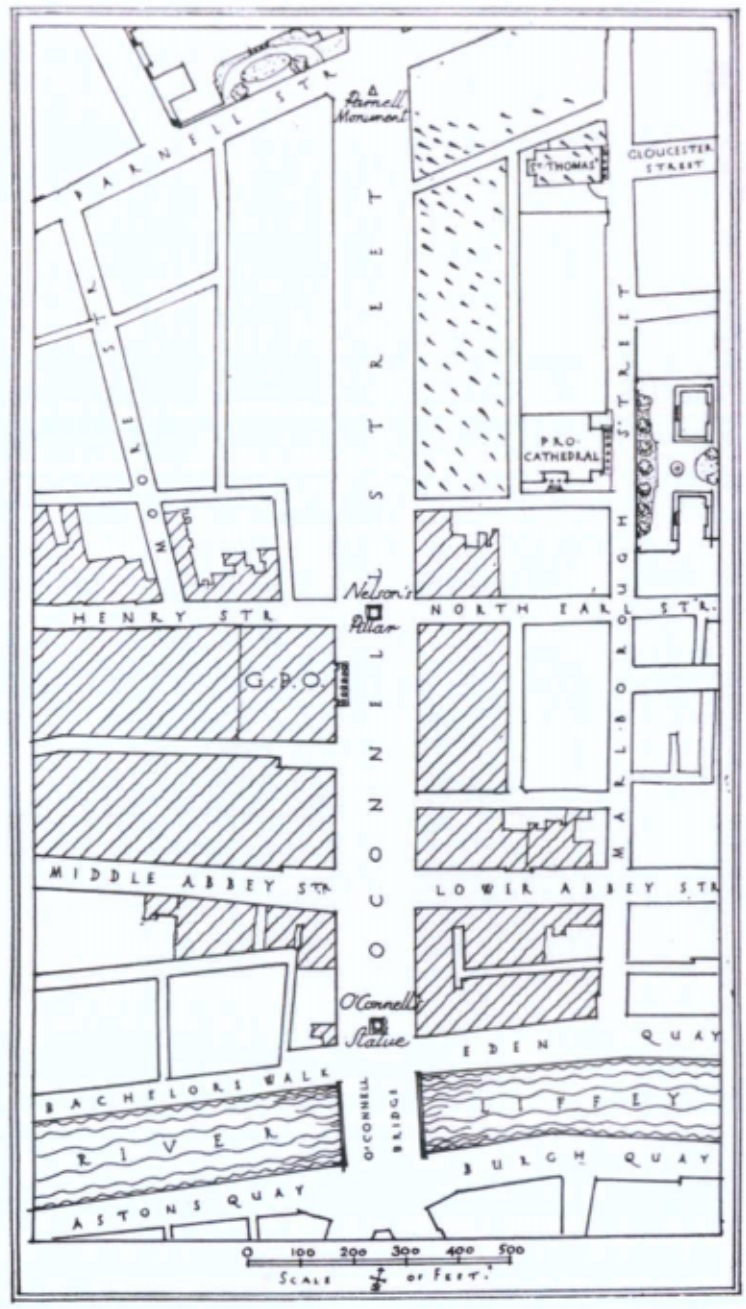


Figure 12.8: Post Card view of the centre of Sackville Street c. 1900. The GPO has long glazed rooflights above the cornice and balustrade. The Royal Coat of Arms is seen in the tympanum.

During the insurrection of Easter 1916 the central area of Dublin around the GPO was shelled by a British Gunboat, the Helga. The shelling started fires which were left to burn unchecked, since firefighters could not enter the city while fighting continued. Much of the south end of O'Connell Street and of surrounding streets was destroyed. The smouldering carcass of the GPO remained standing.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

In December 1916, the *Dublin Reconstruction (Emergency Provisions) Act 1916* was passed by the British Parliament and rebuilding began, particularly around the south end of O'Connell Street. Reconstruction was largely funded by the British Government. However, the War of Independence and the Civil War intervened and the Civil War in particular resulted in extensive further destruction in the Dublin. At one point the two sides fired on each other from within buildings on Upper O'Connell Street, with Republican forces on the eastern side. Shelling of the eastern side of the street and subsequent fires reduced most of the area between Cathedral Street and Parnell Street to ruins. Cathal Brugha was wounded in the fighting and died of his wounds.



The damaged areas in the neighbourhood of O'Connell Street. The hatched portions were destroyed in 1916 and the dotted portions in 1922. The destruction of St. Thomas' Church and the frontage in O'Connell Street will allow Gloucester Street, to be carried through.

Figure 12.9: Diagram from the Abercrombie plan of Dublin 1922 showing the pattern of destruction in 1916 and 1922. Gloucester Street was carried through as the present Cathal Brugha Street.



Figure 12.10: Irish Army Air Corps photograph published in the Dublin Civic Survey 1925 showing an area on the east side of Upper O'Connell Street from Cathedral Street to Findlater Place entirely cleared of buildings. Some reconstruction can be seen around the south end of O'Connell Street, but the GPO is still and empty shell.

On the 10th of July 1924 the Oireachtas of Saorstát Éireann passed the *Dublin Reconstruction (Emergency Provisions) Act 1924*. The Act gave compulsory purchase powers to the Corporation so that overly narrow sites could be combined and *'for the purpose of street improvements'*. The Act also gave considerable powers to the City Architect, who at the time was Horace T. O'Rourke, to direct the style, character and materials to be used in new or restored façades. Section 3(2) of the Act states: -

> *"(2) If it appears to the city architect, having regard to the nature and situation of the site of the proposed new building, or of the building proposed to be restored or altered, or the external design of any buildings erected or in the course of erection in the neighbourhood of that site, that the character of the proposed new building, restoration, or alteration is such as would be injurious to the amenity of the street which the front of the proposed new building or the building proposed to be restored or altered faces, whether on account of the proposed external design, the proposed line of frontage, or the materials proposed to be used in the external walls facing that street or in any portion of the building which will be visible from that street, he may require such reasonable alterations to be made as respects the design, line of frontage, and materials as he thinks proper, and may require the plans, sections and elevations to be amended accordingly. The front of a building at the corner of two streets shall be deemed to face each street for the purposes of this section."*

Section 3(3) of the Act the adds: -

> *"(3) A requirement of the city architect under this section shall not have effect unless notice thereof in writing is delivered or sent by post to the building owner within one month after the day on which the plans, sections, and elevations are delivered as aforesaid, or within fourteen days after the day on which the further particulars (if any) are furnished as aforesaid, whichever period expires later."*

The clear intention was that O'Connell Street and the surrounding streets would be restored, and restored quickly. The application of the 1916 and 1924 Reconstruction Acts resulted in a far more uniform appearance than had been the case before the destruction of 1916.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Christine Casey comments:

> *"Rebuilding was rapid and diverse in expression, unified only by restrictions on height, a prescribed cornice level and by a predominantly classical vocabulary. Reconstruction was carried out for the most part in reinforced concrete, use of which was by then well established in Ireland."*

The GPO was restored, but not as it had been before. It grew, both in height and in extent. Francis Johnston's classical façade and portico survived the destruction of 1916, but the rest is, in effect a utilitarian office building. The Shell Guide to Ireland, 1962 says of the GPO: -

> *"Destroyed by gunfire, it was rebuilt in 1929 by uninspired architects of the Office of Public Works."*

The image of the GPO below from the 1950 shows a roof much higher than the original. Warburton Whitelaw and Walsh writing in the year the GPO was completed said it was 3 storeys in height and: *'223 feet in front, 150 feet in depth'*. That is 68 metres facing onto O'Connell Street and 46 metres going back down Henry Street and Princes Street. Apart from the first two bays, the GPO buildings on Henry Street are 5 storeys in height including the mansard and they extend 100 metres along Henry Street and 115 metres down Princes Street. Historic maps confirm that the original plot size of the GPO was about half what it is at present.



Figure 12.11: O'Connell Street early 1950s.

After its restoration, the O'Connell Street again became the hub of the city, filled with new shops, hotels and cinemas. The cinemas included the Ambassador - in the 18th century Rotundo Assembly Rooms, the Savoy, the Carlton, the Metropole, and the Capitol, at the side of the Metropole. 'The Pillar' now became the terminus for busses not trams; the destination being an actual place and not a nebulous nowhere named 'An Lár'. The street bustled with activity. Buses and taxis huddled about the base of the Pillar. Moving neon signs glowed high on buildings. The flash bulbs of the many street photographers popped as they snapped passers by, hurriedly handing out a ticket in the hope of an order.

The new landscaping and paving of O'Connell Street arising from the O'Connell Street Integrated Area Plan 1998, has brought about some revitalisation of the street, but also changed its character considerably, creating a quite different sense of spatial enclosure. The 18th century Sackville Street was very different from the Victorian street. After most of that was destroyed, the new street of the 20th Century was different again. The recent reworking of the space within the street is yet one more reinvention.

12.3.2 Parnell Square



Figure 12.12: The Lying-in Hospital and the Assembly Rooms. Frontispiece from Volume 2 of Warburton Whitelaw and Walsh's *History of the City of Dublin* 1818.





Figure 12.13: A contemporary illustration of patrons in the Rotundo Gardens, and an advertisement for the Assembly Rooms listing events for the 1791 season and the very considerable charges for entry.

Christine Casey in: *The Buildings of Ireland: Dublin*, describes the establishment of Rutland Square (now Parnell Square) and of the Rotunda Hospital, the Assembly Rooms and the Rotundo Gardens in the centre of the Square as follows: -

> *"Remove from the mind's eye the ungainly cluster of C20 buildings and gardens that occupy its centre and replace them with a large central bowling green, lantern-lined walks, obelisks, a coffee room, and terracing rising towards a loggia and orchestra in the centre of the N side. The New Gardens were the brain-child of the young Dr Bartholomew Mosse, whose life's ambition was the construction of a lying-in hospital for the poor of Dublin. In 1748 Mosse leased a four-acre rectangle, its S end facing Great Britain Street (now Parnell Street), its S E angle adjoining the N W corner of Sackville Street.... The New Gardens, designed by Robert Stevenson, were first illuminated in 1749. Subscriptions and entrance fees were used to fund the construction of a large Palladian hospital building across the S edge of the site. The success of the gardens resulted in the development of the surrounding lands. In 1753 Luke Gardiner began to set out plots on the E side, then known as Cavendish Street, later as Cavendish Row, Dr Mosse lived at No. 9."*

The gardens were eventually closed as a result of a campaign by the Society for the Discountenancing of Vice.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 12.14: Extract from an Ordnance map of 1891. The Lying-in Hospital and the Rotundo Gardens are shown at the top of the map. Towards the bottom left-hand side of the map a densely packed area of markets is shown, bounded by Moore Street, Henry Street, Denmark Street and Great Britain Street (now Parnell St). The dark coloured striped areas on the map represent areas that are outdoor but covered.

12.3.3 Parnell Street, Moore Street and the Markets

The 18th and 19th century maps of Parnell Street, formerly Great Britain Street, show the street lined with small buildings. Back gardens shown on Rocque's map are gone on the 1847 Ordnance map. On Rocque's map, Moore Street is shown as incomplete, with only a few buildings on its east side. By 1847, it is lined with small buildings and is at the centre of a cramped and crowded urban network. The 1847 map, and the later 1891 edition illustrated above, both show a dense network of streets, lanes and back courts, occupying the area south from Parnell Street to Henry Street and west of Moore Street as far as Denmark Street, containing probably hundreds of buildings. There was Coles Lane, Samson's Lane, McCann's Lane, Horseman's Row, Taaffe's Row and Riddle's Row; Rotundo Market, Anglesea Market, Mason's Market and Norfolk Market, Moore Street Market (which was off Moore Street); and many more. By the mid 20th century, this area had been almost entirely cleared, and what was left was an open area of untended ground on which there was an ad hoc open air market, a shanty town of sheds and huts, selling second hand clothes, shoes, furniture and household goods. This dishevelled market should not be confused with street trading along Moore Street, which was a separate and far more thriving enterprise. In the 1970s, the ILAC Centre was built over the site of the market and of the complex urban fabric that was there before; one building where well more than 100 had stood.



Figure 12.15: Two views near the north end of Moore Street taken from the same place and with the same lens. The view on the left is from October 1969, that on the right from October 2012. *(Images Bill Hastings)*

Warburton Whitelaw and Walsh describe the markets area west of Moore Street as they were in 1818: -

> *"Rotunda market, or as it is now more generally called Norfolk market, from a bust of the Duke of Norfolk erected at one entrance, was originally a few mean and dirty stalls in Cole's-lane. As it was situated, however, in the extensive and opulent parishes of Mary's, Thomas, and George, and was the only market to supply the whole north-east side of the Liffey, it soon increased in size and consequence. It now has extended from Cole's-lane to Denmark-street on one side, and to Moore-street and Great Britain-street, through which it is approached on the other, and become the rival of Ormond market, to which, however, it is yet much inferior. It is not flagged, the passages are confined and dirty, and though equal in extent, is by no means so in variety. The number of stalls occupied is 79."*

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 12.16: Two images of Moore Street Market taken in October 1969. The view on the left looks north towards Moore Street. The modern building seen at the end of this view is No 22 Moore Street, which is still there and is included in Site 4. *(Images Bill Hastings)*



Figure 12.17: Extract from an Ordnance map of 1891 showing part of the markets area west of Moore Street. The two photographs above were taken in a narrow market alley called Moore Street market which is circled in red on the map above.

12.3.4 Henry Street

Henry Street is probably Ireland's busiest shopping street. Though it was largely spared the cavalry charges and shelling of 1916, it was not unscathed. The section between Moore Street and O'Connell Street was almost entirely destroyed. The changes in Henry Street have been more the result of commerce than national emergence. Rocque's map of 1756 shows Henry Street lined with small houses, each with its own back garden. The 1847 Ordnance map of the area also shows these many small houses, though most have lost their gardens. That map identifies 23 separate buildings on the south side of Henry Street between Moore Street and Liffey Street, and 20 on the north side. Henry Street is now the home of large department stores and shopping complexes; and the domestic scale it enjoyed in the 18th and 19th centuries is long gone.

12.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

12.4.1 Dublin Central Masterplan

The Dublin Central Project is a large mixed use project on a site comprises circa 2.17 Ha (c. 5.36 acres) and is bounded by Parnell Street, O'Rahilly Parade, O'Connell Street Upper, Henry Street, Moore Street, Henry Place and Moore Lane in Dublin 1. There have been previous planning applications and grants of permission for the subject site. A permission granted under DCC Reg. Ref. 2479/08, ABP Ref. PL29N.232347, for a mixed use retail, commemorative centre & residential development was extended under DCC Reg. Ref. 2479/08x1 until the 6 May 2022.

There is extensive ongoing development in the area of Dublin surrounding the subject site, and in addition to the extant permission on the Dublin Central Project site, there are a number of recent permissions that are of particular relevance to the emerging character of the area. There have been a number of large developments along Parnell Street in recent years and the south side of Parnell Street west of Moore Lane reads as a continuous wall of 6/7 storey development. The most recent addition to this wall is a proposed 9 storey hotel now under construction on the corner of the west side of Moore Lane and the south side of Parnell Street DCC Reg. Ref. 4352/18; ABP Ref. 303553-19 as amended by DCC Reg. Ref. 3393/19; ABP Ref. 305470-19. The parapet of this building is at 34.850 metres OD and the overall height is at 36.700 metres OD.

Other schemes approved but not yet under construction include the Parnell Square Cultural Quarter, a large and striking public building behind a terrace of restored Georgian houses on the north side of Parnell Square, the parapet of the public building being at 38.000 metres OD. On Middle Abbey Street / Williams Lane there is approval for the elevated Arnotts car park to be replaced with an hotel with an upper roof level of 33.750 metres OD. A little along the street a very large mixed use commercial and residential development above the Jervis Centre has recently been approved, with a parapet level of 45.900 metres OD and the top of the plant at 47.800 metres OD. Approved developments at Clery's and a hotel on Earl Place behind Clery's rise to 32.250 metres OD and 35.3 metres OD respectively.

A Masterplan has been prepared for the entirety of the Dublin Central Project. This Masterplan envisages that the project will be divided into 6 separate sites, with 4 separate firms of architects each preparing designs for one or more of the 6 sites. Site 1 is the most northerly site and has frontage on Parnell Street, Upper O'Connell Street and Moore Lane. Sites 2AB and 2C are located between Upper O'Connell Street and Moore Lane with site 2AB being the most southerly and Site 2C the most northerly. Site 3 is located on the east corner of Henry Street and Moore Street, and runs north and east as far as Henry Place. Site 4 is located between Moore Street and Moore Lane and is divided into two parts with one part located each side of the National Monument. Site 5 is has frontage on Moore Street, O'Rahilly Parade and Moore Lane.

The Masterplan envisages the upgrading of Moore Lane and Henry Place and the creation of new public streets / lanes and new public spaces, so as to provide increased permeability from O'Connell Street to Moore Street and via a new lane directly from Henry Street north to Moore Lane. Mixed use developments are envisaged on all 6 sites with retail, cultural or café / restaurant uses at ground floor level. A mixture of uses is proposed for the upper levels on Site 1, including an hotel. Office use is proposed for most of the upper levels on Sites 2AB and 2C. The principal uses proposed for the upper

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

levels on Site 3 are residential and an hotel. Development on Site 4 rises only to 3 storeys and the proposed upper floor use are mainly residential. The upper floor use proposed for Site 5 is office.

The Masterplan envisages and number of taller buildings. The Masterplan indicates 3 buildings rising to above 35.000 metres OD and one building rising to over 40.000 metres OD. The three building proposed in the Masterplan at over 35.000 metres OD are an office building at Site 2A, an hotel at the back of Site 3 and an office building at Site 5. The building proposed at over 40.000 metres OD is an office building at Site 2C. Design work for buildings on Sites 1, 2AB and 2C is still in progress.

Sites 1, 2AB, and 2C are all on the eastern side of the overall site, between O'Connell Street and Moore Lane. An underground station for Metrolink is proposed to be located beneath these sites, and discussions in relation to the underground station box with Transport Infrastructure Ireland are ongoing, and nearing completion. Once final details of access and servicing of the Metrolink station have been finalised, it will be possible to proceed with a planning application/applications for Sites1, 2AB, and 2C.

The current application relates to Sites 3, 4 and 5, sites on the Moore Street, western, side of the overall site. This assessment of landscape and visual effects covers the proposed developments on these three sites. A full assessment of the landscape and visual effects of development proposed on Sites 1, 2AB, or 2C will accompany the planning application/applications for these sites, and it will not be possible to undertake a full assessment of the landscape and visual effects of development on these 3 sites until the design of the buildings proposed on these sites is finalised. However, this chapter does include a preliminary overview of the potential landscape and visual effects likely to be associated with proposed development on these 3 sites.

The Masterplan is still being refined and discussions with the planning authority are ongoing. The Masterplan is not part of the current application. Therefore, although this assessment has had regard to the Masterplan as a useful and informative background document, this assessment does not include a full assessment of the landscape and visual effects of the Masterplan. The Masterplan envisages a new high quality public realm including the development of new streets, lanes and public spaces and the upgrading of Moore Lane and Henry Place. Parts of the proposed new public realm fall within the three sites being assessed in this chapter – Sites 3, 4 and 5. So does the upgrading of one side of Moore Lane and Henry place.

It is not really meaningful to carry out a landscape and visual assessment of half a public space. It would be like digging half a hole and not a whole hole. So this chapter includes a preliminary overview of the potential landscape and visual effects likely to be associated with the Masterplan, and of the ambition of the Masterplan in relation to public realm and permeability in particular.

12.4.2 Proposed Development – Site 3, 4 & 5

The overall site of the Dublin Central Project occupies part of the block bounded by Parnell Street, O'Rahilly Parade, O'Connell Street Upper, Henry Street, Moore Street, Henry Place and Moore Lane. The site has continuous street frontage on the west side of Upper O'Connell Street from No. 39 to No. 61. The site has street frontage from No. 36 to No. 41 Henry Street. The site occupies almost all of the street frontage on the east side of Moore Street, except for the National Monument at Nos 14 to 17 Moore street. The site has street frontage at Nos 7O and 71 Parnell Street. No 70 Parnell Street is Conway's public house which occupies the corner of Parnell Street and the east side of Moore Lane.

The site of the Dublin Central Project has street frontage along the entire eastern side of Moore Lane, on all of Henry Place except for the east side of No. 34 Henry Street, and on all of the west side of Moore Lane from Henry Place to O'Rahilly Parade, except for the rear of the National Monument at Nos. 9 and 10 Moore Lane.

12.4.2.1 Proposed Development of Site 3

Development on Site 3 is comprised of 2 main blocks, one each side of a new pedestrian lane which continues the line of Moore Lane south to Henry Street. No. 38 Henry Street is proposed to be demolished to provide for the junction of the new lane with Henry Street. East of the new lane, Block A will retain and upgrade Nos. 36 and 37 Henry Street, behind which an hotel rising to 9 storeys is proposed. West of the lane, Block B is proposed as 1 to 6 storeys in height, with the taller parts of the block at the Henry Street end. As part of the development of Block B, it is proposed to retain the facades of Nos. 39 and 40 Henry Street, Nos. 8 and 9 Moore Street and No 10 Henry Place. The main material for the newer parts of Blocks A and B is brick.

12.4.2.2 Proposed Development of Site 4

Proposed development on Site 4 include a number of small new buildings rising from 1 to 3 storeys in height, and the retention and restoration of Nos. 10, 20 and 21 Moore Street and Nos. 6 to 8 Moore Lane. The retention of the façade of No. 5 Moore Lane is also proposed. At the north end of Site 4, a large public plaza is proposed between Moore Street and Moore Street. A strip at the north side of this public plaza falls within Site 5. Proposed development in Site 4 includes the demolition of Nos. 18 and 19 Moore Street, and the provision in that location of a large arched opening between Moore Street and the new public plaza. A very shallow strip of building at the south side of this arch is proposed to provide service spaces for the National Monument. The materials for new development on Site 4 include brick, metal claddings and reclaimed materials laid in strata.

12.4.2.3 Proposed Development of Site 5

Proposed development on Site 5 consists of an office building of 3 to 6 storey's in height with a café / restaurant on the ground floor. Although the office building is proposed as a single building, it is proposed to step down the 4 and 3 storeys on Moore Street, where it will read as three separate buildings with red brick facades, the main 6 storey element of the office building set back from Moore Street. The main material proposed for buildings on Site 5 is brick, but the south façade of the office building facing onto the new public plaza is proposed as vertical stone fins. The top floor of the office building is proposed to be set back and to be clad in blue tiles. A strip at the north side of the public plaza falls within Site 5.

12.5 POTENTIAL IMPACTS & VISUAL EFFECTS

12.5.1 Dublin Central Masterplan

The Masterplan is still being refined and discussions with the Planning Authority are ongoing. The Masterplan is not part of the current application. Therefore, although this assessment has had regard to the Masterplan as a useful and informative background document, this assessment does not include a full assessment of the landscape and visual effects of the Masterplan.

The Proposed Development is intended, as indicated by the Masterplan for the Dublin Central Project, to provide a range of publicly accessible facilities including new public streets and spaces. There is a clear intention to provide a new and vibrant public realm. There is usually a positive public reaction to new public spaces and new publicly accessible facilities. A positive reaction by the public to what is being provided will tend to influence positively public reaction to the landscape and visual character of the development.

The site of the Dublin Central Project has been underutilised and semi derelict for some years, and there is a considerable potential for the Dublin Central Project to bring new life to the area. The ambition of the Masterplan to provide a new high quality public realm including the development of new streets, lanes and public spaces and the upgrading of Moore Lane and Henry Place will be widely welcomed and are likely to give rise to very positive landscape and visual effects. The existence of a Metrolink station below the eastern side of the Dublin Central Project will also bring new life and intensity to the area. Although the new station entrances are not likely to have a major visual

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

presence, their existence and the pedestrian traffic associated with them will have an important positive impact on the landscape and visual character of the surrounding urban area.

Some members of the public are likely to regard landscape and visual effects associated with the Dublin Central Project as significantly positive, others significantly negative. The strong character of what is proposed is unlikely to evoke neutral response. Because of the extent of new public facilities and space proposed and because of the quality and innovative nature of the design, it is thought that the public reaction to the visual character of what is proposed is likely to be positive, on balance. The visual effects of the proposed new development will be permanent, but the extent of these visual effects is likely to reduce over time, and as other developments in the surrounding area are built

12.5.2 Proposed Development – Site 3, 4 & 5

12.5.2.1 Potential Visibility of the Proposed Development

ARC Consultants have carried out an analysis of the potential visibility from the surrounding urban area of proposed development on Sites 3, 4 and 5. As part of this analysis, ARC carried out modelling analysis of the potential visibility of buildings on these sites from 22 view locations in the surrounding area. From 7 of the locations analysed ARC found that there was no potential for buildings on Sites 3, 4 and 5 to be visible. These included locations at Parnell Square, Cavendish Row, O'Connell Street North, Cathal Brugha Street, Sean Mc Dermott Street, and Parnell Street West. Sites 3, 4 and 5 are on Moore Street, with Site 3 turning the corner onto Henry Street. Proposed development on these sites is, therefore, openly visible along Moore Street and from parts of Henry Street and Parnell Street near Moore Street. Along the Mary Street - Henry Street – North Earl Street – Talbot Street axis visibility of the proposed development is confined to development on Site 3 and reduces with distance. On the O'Connell Street axis any visibility of development on Sites 3, 4 and 5 is confined to glimpses of the top of the 9 storey hotel on Site 3. There is likely to be a greater degree of visibility of this hotel building, seen above buildings on O'Connell Street, looking west up from Cathedral Street.

12.5.2.2 Sensitivity and Visual Capacity of the Surrounding Urban Environment

As has been noted above, the character of the surrounding urban area has changed repeatedly in the past, and is subject to continuous ongoing change. More than two thirds of the buildings in O'Connell Street were lost as a result of the insurrection in 1916 and the later Civil War. Almost all of the original buildings on Site 3 were also lost during that period. A significant number of the buildings on the O'Connell Street frontage of the site of the Dublin Central Project date from later in the 20th century.

As also noted above, some recent approved development in the area is very large in scale, including developments on O'Connell Street, Parnell Square, Parnell Street, Henry Street and Abbey Street. The scale and height of the approved development at the Jervis Centre, some 230 metres from the Dublin Central site, is much greater and much taller than anything proposed as part of the Dublin Central Project. The developments along Parnell Street West, taken together, are far greater in extent that the whole of the Dublin Central Project.

The existence of very large and extensive developments and approvals in the area indicates that the area has a high capacity to absorb development.

O'Connell Street is both a Conservation Area and an Architectural Conservation Area. There is a National Monument at Nos. 14 to 17 Moore Street. Both O'Connell Street and Moore Street are historically significant, which suggests high visual sensitivity. But this historical significance has not prevented large scale development on these streets.

In the imagination of Dubliners, Moore Street is a market, and market activity is the overwhelming visual experience of the street. If you were to ask Dubliners to describe the buildings that make the walls of the street and so contain the market, most could not. It is the activity in the space that matters, not the space itself. Given this context, the visual sensitivity of Moore Street to changes in the buildings that line its east side is much less than might be the case for other streets in the centre of our Capital City.

Four houses in the centre of the east side of Moore Street are listed, since 2007 as a National Monument and, as it says in the official Scope Note: -

> *"Numbers 14 -17 Moore Street are subject to a preservation order made under the National Monuments Acts 1930 to 2014 (PO no. 1/2007)"*

The existence of an National Monument in their midst probably doesn't register much in the day-to-day visual consciousness of the Moore Street stall holders or their customers. But the Monument does have a visual presence. The Scope Note says:

> *"The buildings at nos. 14 -17 Moore Street date from the mid-eighteenth century. The façades of all four buildings were rebuilt in the 19th century and they survive as a distinct and recognisable group in the streetscape."*

Any development, therefore, that might change the setting of Numbers 14 to 17 Moore Street has the potential to give rise to landscape and visual effects as might be perceived by some observers, but not by all.

The four buildings of Number 14 to 17 Moore Street all have gabled façades, each different from the other. It would appear from the fact that the ridge of the roofs of these houses runs perpendicular to the street, that these house were built as gabled houses, popularly known as 'Dutch Billys', and that some other buildings along the east side of Moore Street probably had the same form.

It is unlikely, however, that many people using or visiting Moore Street take the time to wonder what Moore Street must have been like in the late 18th century when these houses were first built or how the buildings that lined the east side of the street have changed over time. As has been mentioned above, Moore Street was at the centre of a thriving markets area that survived from the late 18th century until the Ilac Centre was built over most of the market areas west of Moore Street at the end of the 1970's

The map reproduced above from the Abercrombie Plan of 1922 showing areas destroyed in 1916 (Figure 12.9) indicates that, in the fighting, buildings were lost all along the north side of Henry Street, west from Henry Place to Moore Street and for a considerable distance beyond, and that the destruction extended along the east side of Moore Street from Henry Street almost as far as Henry Place. The destroyed areas were rebuilt by the fledgeling Irish State in the 1920s in a somewhat exuberant late neoclassical style. On Henry Street, Moore Street and parts of other streets this resulted in façades of terracotta coloured red bricks articulated with light coloured Portland stone or limestone quoins and cornices and white painted windows, oriel or bay windows in many cases. These buildings make an important contribution to the urban a character of their surroundings, though some are looking the worst for ware, particularly those on Moore Street. The association of these buildings with how the new Nation chose to rebuild the ruined core of its Capital City following the insurrection of 1916 makes these buildings more sensitive to change than their architectural contribution alone might imply.

That having been said, few observers are likely to regard O'Connell Street, Henry Street or Moore Street as a museum dedicated to past struggles, and it is the current uses and facilities that these streets provide that is, and is likely to remain into the future, the main focus of public interest.

12.5.2.3 Potential Landscape and Visual Effects of the Proposed Development

The extent of potential landscape and visual effects of the proposed development Sites 3, 4 and 5 on the built environment from locations in the surrounding area is tabled below. The development is unlikely to be visible at all from large sections of the city. The locations tabled below are representative of location from which mapping analysis suggested that the development might be visible. This table of the extent of potential landscape and visual effects does not address the issue of the character of effects, whether positive, negative or neutral. As is noted above, for each observer the character of effects is likely to depend, in large measure, on the extent to which they regard the development as socially or culturally acceptable.

Since development on Sites 3, 4 and 5 has been found by modelling analysis not to be visible from 7 representative locations tabled below, these locations being at Parnell Square, Cavendish Row,

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

O'Connell Street North, Cathal Brugha Street, Sean Mc Dermott Street, and Parnell Street West, the potential landscape and visual effects at these locations arising from the existence of proposed development on Sites 3, 4 and 5 is none. Along the Mary Street - Henry Street – North Earl Street – Talbot Street axis the potential landscape and visual effects are likely to range from 'imperceptible' to 'slight', becoming 'significant' on Henry Street close to the junction with Moore Street. On the Parnell Square – Cavendish Row – O'Connell Street axis the potential landscape and visual effects arising from proposed development on Sites 3, 4 and 5 is likely to range from none to 'imperceptible', becoming 'slight' to 'moderate' at locations near the Spire and the GPO. From Parnell Square North West there is a potential for part of the plant area on the roof of the office building on Site 5 to be visible over the top of the Jury's Inn on Parnell Street, giving rise to 'imperceptible' to 'slight' landscape and visual effects. Upper floors of the hotel building on Site 3 are likely to be seen above buildings on O'Connell Street, from a view location on Marlborough Street at looking west up Cathedral Street and from locations on Cathedral Street itself, giving rise to potential 'moderate' landscape and visual effects.

The greatest changes likely to arise from the existence of proposed developments on Sites 3, 4 and 5, and consequently the greatest potential for landscape and visual effects, will be on Moore Street and on the corner of Moore Street and Henry Street.

On Site 3, the 1920s buildings on the corner of Moore Street and Henry Street and along Moore Street as far as Number 8 are proposed to be replaced with new taller buildings accommodating residential use above retail. The main material for the façades of these new buildings is proposed as red brick of a colour referring to, but distinct from, the brick of the existing 1920s façades. The façades of the new corner building are proposed as having stone details in red sandstone on the upper levels. It is likely that the loss of the 1920s building will be perceived by some observers as having a negative landscape and visual effect on the character of the street, more because of the loss of a familiar feature than because of their historical significance.

On Moore Street the upper two floors of the 7 existing 1920s building read as a continuous horizontal façade. The existing buildings are 3 storeys, while the proposed buildings are 6 storeys, with the top two floor set back. So instead of a what reads as one long horizontal façade, what is proposed is a series of 5 vertical façades in red brick each the width of typical plot widths for large Georgian houses, and each with punched openings similar to the Georgian pattern. The separateness of these 5 façades is emphasised by vertical setbacks of brickwork between them and by the fact that the 5 façades vary in height. The 4th floor openings in these red brick façades are to be unglazed and serve as the front of an open terrace behind them. The Georgian pattern of these 5 façades belies the fact that behind them is a single 21st century building, not several 18th century ones. The proposed changes in scale, colour and material brought about on Henry Street and Moore Street by the existence of the proposed development on Site 3 are likely to give rise to 'moderate to significant' landscape and visual effects as perceived by observers; that is if those observers take the time to look up from the bustle of the street.

On Sites 4 and 5 the façades of new buildings along Moore Street are proposed to be in a variety of red bricks of colours similar to the various red bricks of facades of the 4 houses of the National Monument. The overall affect is likely to be regarded by observers as warm and familiar. New buildings on the street are proposed as having raised gables similar to those of the houses of the National Monument. Three new façades immediately south of the National Monument are proposed as having these gables. These three new façades are also proposed as being similar in width to the 4 facades of the National Monument and are proposed as having a similar fenestration pattern to the National Monument houses. There is a potential for the existence of new façades of the 2020s very similar in size, pattern and brick to the National Monument and right beside the National Monument to dilute the reading of the National Monument as something special in the street and in the City.

The building proposed immediately to the north of the National Monument incorporates a giant almost three storey high brick arch leading to a public plaza between Moore Street and Moore Lane, which will eventually form part of a new route from O'Connell Street to Moore Street. The sweeping curves of the sides of this arch, and of the underside of the top of the arch, are proposed as faced with brickwork, which will give the arch a very distinctive, almost fantastic character. North of the arch, Numbers 20 and 21 Moore street are to be restored. Between these houses and O'Rahilly Parade

three more gabled brick façades are proposed, one 3 bay and 3 storey and two 2 bay and 4 storey. Behind these 3 buildings a strikingly modern 6 storey office building is proposed as part of the development on Site 5, this building facing south onto the new public plaza and backing onto O'Rahilly Parade. The reaction of observers to the public plaza and to buildings facing onto it is likely to be positive. The reaction of observers to what is proposed on Moore Street on Sites 4 and 5 is also likely to be positive, tempered by some puzzlement about the historicist nature of some of the proposed facades.

Overall the landscape and visual effects likely to arise from the existence of the development proposed on sites 4 and 5 are assessed as being 'moderate' in extent and generally positive in character. Since the visibility of development on Sites 4 and 5 will be almost entirely confined to Moore Street, Henry Place, Moore Lane, the proposed new public plaza, O'Rahilly Parade, and very localised parts of Henry Street and Parnell Street, it is likely that the landscape and visual effects that arise will also be confined to these locations.

12.5.3 Sites 1, 2AB and 2C

ARC's modelling analysis has not included modelling analysis of the visibility of potential development on Sites 1, 2AB, or 2C. Such analysis will be carried out when planning applications for these sites is being made. However, since all 3 sites have frontage on O'Connell Street, it is certain that development on these sites will be openly visible from O'Connell Street, and the opening of the new east-west street from O'Connell Street to Moore Lane as envisaged in the Masterplan will also be visible. Parts of the development on these sites is also likely to be visible from the north, from Parnell Square west and from Parnell Street. The potential for development on Sites 1, 2AB, or 2C to be visible from other locations is a matter for future analysis.

Since, at the time of writing this chapter, the design of proposed buildings on Sites 1, 2AB, or 2C has not yet been finalised, it is only possible to provide a preliminary overview of the potential landscape and visual effects that might arise from development on these sites. From Parnell Square and Parnell Street the potential landscape and visual effects are likely to range from none to 'moderate', depending on the viewpoint. From the Cavendish Row - O'Connell Street axis the Landscape and visual effects are likely to range from 'slight' to 'moderate', although there is a potential for 'significant' impacts to arise in the vicinity of the GPO. Along the Mary Street - Henry Street - North Earl Street - Talbot Street axis the potential landscape and visual effects arising from the existence of buildings on Sites 1, 2AB, or 2C is likely to be none, since there is little potential for development on these sites to be visible from this axis. From the eastern end of Parnell Street and from some locations on Marlborough Street, Cathal Brugha Street and Sean McDermott Street there is a potential for development on Sites 1, 2AB, or 2C, where visible, to give rise landscape and visual effects ranging from 'imperceptible' to 'moderate'. There is little potential for development on Sites 1, 2AB, or 2C to be visible from the wider City and so there is little potential for landscape and visual effects to arise.

12.5.3.1 Construction Stage

The extent of visual impact of the development on Sites 3, 4 and 5 during the construction phase is likely to be similar to that for the operational phase, as tabled above. The character of visual impacts during the construction phase is likely to be wholly negative at first, becoming neutral to positive as work proceeds and the new buildings and structures become apparent.

12.5.3.2 Operational Stage

This table of landscape and visual effects below refers to the operational phase of the development on Sites 3, 4 and 5, when construction is complete and the buildings are in use.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Viewpoint	Distance	Extent of Effects
A. O'Connell Street at Cathal Brugha Street	40m	None
B. Cathal Brugha Street near O'Connell Street	60m	None
C. O'Connell Street at the Spire • Looking North	80m	Slight to Moderate
C1. O'Connell Street at the Spire • Looking West	80m	Moderate
D. O'Connell Street at the GPO	120m	Slight to Moderate
E. O'Connell Street at Abbey Street	200m	None to Imperceptible
F. O'Connell Bridge	360m	Imperceptible
G. Cavendish Row	120m	None
H. Parnell Square East	210m	None
I. Parnell Square North	270m	None
J. Parnell Square North West	280m	Imperceptible to Slight
K. Parnell Street at Moore Street	75m	Moderate
L. Moore Street near Parnell Street	30m	Moderate
M. Henry Street at Moore Street	10m	Moderate to Significant
N. Henry Street south of Moore Street	50m	Moderate to Significant
O. Henry Street at Liffey Street	200m	Slight
P. Mary Street	400m	None to Imperceptible
Q. Parnell Street at Dominick Street	130m	None
R. Sean McDermott Street at Gardiner Street	400m	None
S. Centre of Cathedral Street	90m	Moderate
S1. Cathedral Street at O'Connell Street	50m	Moderate to Significant
T. Marlborough Street at North Earl Street	240m	Slight to Moderate

Table 12.1: Table of Landscape and Visual Effects.

It should be noted in relation to the table above that development on Sites 4 and 5 is unlikely to be visible from O'Connell Street or locations to the east of O'Connell Street. Therefore, landscape and visual effects from these locations, as tabled above, relate to the existence of development on Site 3 alone.

12.5.3.3 View by View Description of Potential Landscape and Visual Effects

In the views described below, when the Proposed Development is concealed behind intervening obstacles the hidden location of the development is represented: in the case of Site 3 by a red line, in the case of Site 4 by a pink line, and in the case of Site 5 by a green line.

View A. O'Connell Street at Cathal Brugha Street: This view looks south west from the eastern pavement of O'Connell Street at the north side of the junction of Cathal Brugha Street and O'Connell Street. The proposed developments on Sites 3, 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View B. Cathal Brugha Street near O'Connell Street: This view looks west from within Cathal Brugha Street out onto O'Connell Street. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. Site 3 would be off to the left of this view. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View C. O'Connell Street at the Spire •Looking North: This view looks north west from the eastern side of O'Connell Street just south of the Spire. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. The top of the proposed hotel building that forms part of the proposed development on Site 3 will be visible over the top of the parapets of buildings on the west side of O'Connell Street just north of the Spire. The proposed development will be a minor element in the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact and the limited extent to which development on Site 3 will be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'slight' to 'moderate'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View C1. O'Connell Street at the Spire • Looking West: This view looks west from O'Connell Street into Henry Street from just south of the Spire. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. Buildings that form part of the proposed development on Site 3, including retained and restored buildings and retained and restored façades, will be visible along part of the north side of Henry Street between Henry Place and Moore Street. Upper levels of the proposed development will be visible above the retained buildings and façades, and the proposed building on the corner of Henry Street and Moore Street is proposed as two storeys taller than the existing buildings along that part of Henry Street. The proposed development will be notable element in the view, though not particularly prominent or the focus of the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact and the limited extent to which development on Site 3 will be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'moderate'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View D. O'Connell Street at the GPO: This view looks north west from the eastern side of O'Connell Street opposite the GPO. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by the GPO and by other existing buildings on the corner of O'Connell Street and Henry Street and their hidden location is represented by coloured outlines. The top of the proposed hotel building that forms part of the proposed development on Site 3 will be visible over the top of the parapet of the GPO and the roofs of buildings on the corner of O'Connell Street and Henry Street. The proposed development will be a minor element in the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact and the limited extent to which development on Site 3 will be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'slight' to 'moderate'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View E. O'Connell Street at Abbey Street: This view looks north west from the eastern pavement of O'Connell Street on the south side of the junction of Lower Abbey Street with O'Connell Street. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by the GPO and by other existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. From this location, the very top of the proposed hotel building that forms part of the proposed development on Site 3 may be just discernible over the top of the parapet of the GPO. If visible at all, the proposed development will be an extremely small element in the view. Given the very limited extent to which development on Site 3 may be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as none to 'imperceptible'.

The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View F. O'Connell Bridge: This view looks north west from a traffic island on the south side of Burgh Quat at its junction with O'Connell Bridge and D'Olier Street. The proposed developments on Sites 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. From this location, the very top of the proposed hotel building that forms part of the proposed development on Site 3 will be just visible in the middle distance over the top of the parapet of buildings south of the GPO. Where visible, the proposed development will be a very small element in the view. Given the very limited extent to which development on Site 3 is visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'imperceptible'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View G. Cavendish Row: This view looks south from the eastern pavement of Cavendish Row across the street from the Gate Theatre. The proposed developments on Sites 3, 4 and 5 will not be visible from this location, being concealed by existing buildings on the west side of O'Connell Street and by the Rotunda and the hidden location of developments on Sites 3, 4 and 5 is represented by coloured outlines. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View H. Parnell Square East: This view looks south from the eastern pavement of Parness Square East. The proposed developments on Sites 3, 4 and 5 will not be visible from this location, being concealed by the Gate Theatre and the Rotunda Hospital and the hidden location of developments on Sites 3, 4 and 5 is represented by coloured outlines. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View I. Parnell Square North: This view looks south from near the east end of Parness Square North. The proposed developments on Sites 3, 4 and 5 will not be visible from this location, being concealed by buildings at the Rotunda Hospital and the hidden location of developments on Sites 3, 4 and 5 is represented by coloured outlines. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View J. Parnell Square North West: This view looks south from west end of Parness Square North. The proposed developments on Sites 3 and 4 will not be visible from this location, being concealed by buildings on Parnell Square West and Parnell Street and the hidden location of developments on Sites 3 and 4 is represented by coloured outlines. Part of the Top of the plant enclosure on the roof of the office building on Site 5 will be visible in the middle distance above the roof of Jury's Inn on Parnell Street. In the view and immediately to the east of Jury's Inn a proposed 9 storey hotel is now under construction on the corner of the west side of Moore Lane and the south side of Parnell Street - DCC Reg. Ref. 4352/18; ABP Ref. 303553-19 as amended by DCC Reg. Ref. 3393/19; ABP Ref. 305470-19. When completed, this hotel will be fully two storeys taller than Jury's Inn and some 1.35 metres taller than the top of the plant enclosure on the Site 5 office building. This new hotel will, therefore be quite prominent in the view. The visible part of the proposed development on Site 5will be a very minor element in the view. Given the limited extent to which development on Site 5 will be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 5 is assessed as 'imperceptible' to 'slight'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3 and 4 are assessed as none.

View K. Parnell Street at Moore Street: This view looks south into Moore Street from the central reservation of Parnell Street. Parts of the proposed development on sites 3, 4 and 5 will be openly visible in the centre of the view. Other parts of developments on these three sites will not be visible being concealed by the Jury's Hotel building to the left in the view and the hidden location of unseen parts of development on Sites 3, 4 and 5 is represented by coloured outlines. The visible parts of the proposed development will be clearly noticeable elements in the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming

part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Sites 3, 4 and 5 is assessed as 'moderate'.

View L. Moore Street near Parnell Street: This view looks south east along Moore Street from the west side of Moore Street a little to the north of O'Rahilly Parade. Proposed development on sites 3, 4 and 5 will be openly visible in the centre of the view. The proposed developments will be major elements in the view and form the focus of the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Sites 3, 4 and 5 is assessed as 'moderate'.

View M. Henry Street at Moore Street: This view looks north east along Moore Street from the south side of Henry Street opposite the end of Moore Street. Proposed development on Sites 3, 4 and 5 will the dominant elements in the view, and the proposed development on Site 3 will dramatically change the character of the south end of Moore Street and the character of part of Henry Street. The considerable increase in height of buildings at the south east corner of Moore Street and Henry Street will result in a significant change in the urban character of the immediate area. This change in character is likely to be regarded as significant and negative by some observers. On the other hand, many may regard the introduction of new residential development in the area as very positive. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Sites 3, 4 and 5 is assessed as 'moderate' to 'significant'.

View N. Henry Street south of Moore Street: This view looks north east along Henry Street from the south side of Henry Street some 50 metres west of the junction of Henry Street and Moore Street. The considerable increase in height of buildings at the south east corner of Moore Street and Henry Street as part of the development on Site 3 will result in a significant change in the urban character of the immediate area. It is noted in this regard that all the buildings on the north side of Henry Street between Henry Place and Moore Street, and continuing for some 50 metres west of Moore Street are 4 storey 20th century buildings of a consistent pattern of design using red brick and stone. The introduction of new substantially higher buildings as part of the proposed development on Site 3 will break this pattern. This change in character and loss of the early 20th century pattern is likely to be regarded as significant and negative by some observers. On the other hand, many may regard the introduction of new residential development in the area as very positive. It is also noted that the north side of the GPO buildings extend for 100 metres along the south side of Henry Street across the street from the proposed development on Site 3 and that the GPO buildings on Henry Street are substantially the same height as the Site 3 residential development. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'moderate' to 'significant'. The proposed developments on Sites 4 and 5 will not be visible from this location, and so the potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View O. Henry Street at Liffey Street: This view looks east along Henry Street from the centre of the junction of Henry Street and Liffey Street. The considerable increase in height of buildings at the south east corner of Moore Street and Henry Street as part of the development on Site 3 will result in a small but noticeable change in the urban character of Henry Street as seen from this location. The proposed development on Site 3 is a minor element in the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact, and the limited visibility of the proposed development on Site 3, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed 'slight'. The proposed developments on Sites 4 and 5 will not be

RECEIVED: 07/06/2021

visible from this location, and so the potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View P. Mary Street: This view looks east along Mary Street and into Henry Street from the south pavement of Mary Street beside the former Saint Mary's Church. Proposed development on Sites 3, 4 and 5 will be almost entirely concealed from view by intervening buildings on Henry Street and Mary Street. It is just possible that the very top of the south west corner of the proposed development on Site 3 may be visible from this view location. If visible at all, the proposed development will be an extremely small element in the view. Given the very limited potential visibility of proposed development on Site 3, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 are assessed as none to 'imperceptible'. The proposed developments on Sites 4 and 5 will not be visible at all from this location, and so the potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View Q. Parnell Street at Dominick Street: This view looks east from the central reservation of Parnell Street at the junction with Dominick Street. The proposed developments on Sites 3, 4 and 5 will not visible from this location, being for the most part off to the right of the view and the building on Site 5 being concealed by existing buildings on the south side of Parnell Street. The hidden location of developments on Site 5 is represented by a coloured outline. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View R. Sean McDermott Street at Gardiner Street: This view looks west from the north eastern corner of the junction of Gardiner Street and Sean McDermott Street. The proposed developments on Sites 3, 4 and 5 will not be visible from this location, being concealed by existing buildings on the south side of Sean McDermott Street west of the junction and the hidden location of developments on Sites 3, 4 and 5 is represented by coloured outlines. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 3, 4 and 5 are assessed as none.

View S. Centre of Cathedral Street: This view looks west up Cathedral Street towards O'Connell Street from the centre of Cathedral Street just north of the Pro Cathedral. The proposed developments on Sites 4 and 5, and most of the development on Site 3 will not be visible from this location, being concealed by existing buildings on Cathedral Street and on the west side of O'Connell Street and the hidden location of these developments is represented by coloured outlines. The top floors of the proposed hotel building that forms part of the proposed development on Site 3 will be visible over the top of the parapets of buildings on the west side of O'Connell Street. The proposed development will be a clearly obvious element in the view, and is likely to be the focus of the view west along Cathedral Street. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact and the extent to which development on Site 3 is likely to be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'moderate'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View S1. Cathedral Street at O'Connell Street: This view looks west across O'Connell Street from the junction of Cathedral Street with O'Connell Street. The proposed developments on Sites 4 and 5, and most of the development on Site 3 will not be visible from this location, being concealed by existing buildings on Cathedral Street and on the west side of O'Connell Street, and the hidden location of developments on Sites 4 and 5 is represented by coloured outlines. From this view location, the top floors of the proposed hotel building that forms part of the proposed development on Site 3 will be visible over the top of the parapets of buildings on the west side of O'Connell Street. The proposed development will be a clearly obvious and prominent element in the view. From the east side of O'Connell Street for some distance east and west of Cathedral Street the extent of visibility of the proposed development will be similar in extent to what is seen in this view. The design, materials and fenestration pattern of the proposed hotel give it a modern expression quite different from traditional character of the facades on the west side of O'Connell Street above and behind which the top of the

hotel is visible. It is of course appropriate that a new building 21st century building should have a different character to that of the 18th and 19th century building on O'Connell Street. Some observers are likely to regard the landscape and visual effects of the existence of the proposed development as seen from this location as 'significant'. However, having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given this fact and the extent to which development on Site 3 is likely to be visible in this view, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 is assessed as 'moderate' to 'significant'. The potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

View T. Marlborough Street at North Earl Street: This view looks west along North Earl Street from the east side of Marlborough Street. Proposed development on Sites 3, 4 and 5 will be almost entirely concealed from view by intervening buildings on Henry Street and North Earl Street. The top of the south end of proposed development on Site 3 will be visible from this view location. The proposed development will be a minor element in the view. Having regard to the character and extent of recent existing and approved development in the area, proposed development forming part of the Dublin Central Project must be considered to be consistent with existing and emerging trends. Given the extent of potential visibility of proposed development on Site 3, the potential landscape and visual effects likely to arise at this view location from the existence of proposed development on Site 3 are assessed as none to 'slight' to 'moderate'. The proposed developments on Sites 4 and 5 will not be visible at all from this location, and so the potential landscape and visual effects likely to arise at this view location from the existence of proposed developments on Sites 4 and 5 are assessed as none.

12.5.3.4 Do-Nothing Impact

In the 'do-nothing' scenario, no development will take place, and the present, partly obsolescent character of the site will remain.

12.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

12.6.1 Dublin Central Masterplan

Not applicable as the Masterplan is still being refined and discussions with the Planning Authority are on-going. Notwithstanding this, as the Masterplan presents an integrated design for a new city quarter, no remedial or reductive measures are likely to be applicable.

12.6.2 Proposed Development – Site 3, 4 & 5

12.6.2.1 Construction Stage

No mitigation measures have been proposed with respect to effects from the construction of the Proposed Development.

12.6.2.2 Operational Stage

Since the Proposed Development is an integrated design for a new city quarter, no remedial or reductive measures are applicable. In these circumstances, during the construction or operational phases scope for mitigation measures, which would preserve a sustainable level of density, is limited. However, developments already planned, approved or under construction near the site or elsewhere in the city will reduce the potential visibility of the Proposed Development, and thereby mitigate the extent of its visual impact.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

12.7 RESIDUAL IMPACT

12.7.1 Dublin Central Masterplan

Not applicable as the Masterplan is still being refined and discussions with the Planning Authority are on-going. Notwithstanding this, as the Masterplan presents an integrated design for a new city quarter, no remedial or reductive measures are likely to be applicable.

12.7.2 Proposed Development – Site 3, 4 & 5

Since remedial and reductive measures do not apply, residual impacts will, initially, be as tabulated for potential impacts, above. Reduction in the visibility of the Proposed Development, resulting from the construction of other development, will gradually reduce its visibility and thereby its impacts, whether positive, negative or neutral in character.

12.7.2.1 Worst Case Impact

The effects considered above represent the 'worst case' scenario

12.8 MONITORING

Monitoring is not applicable to this chapter.

12.9 REINSTATEMENT

Reinstatement is not applicable to this chapter.

12.10 DIFFICULTIES ENCOUNTERED

No difficulties were encountered in the preparation of this chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

13 MATERIAL ASSETS (TRANSPORTATION)

13.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact on traffic and transportation of the Proposed Development. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 13.1 below indicating the Dublin Central Masterplan area) which will be assessed also.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

This chapter was completed by Brian McCann, BE, MSc(Eng), DIC, CEng, FIEI, MIStructE, MConsEI.

Brian has in excess of 30 years' experience of transportation planning and assessment.

13.1.1 Dublin Central Masterplan Site

The 2.2 ha Dublin Central Masterplan site comprises four blocks located in the administrative area of Dublin City Council within the area bounded by Parnell Street, O'Connell Street Upper, Henry Street and Moore Street. See Figure 13.1.



Figure 13.1: Location Map – Dublin Central Masterplan Site.

13.1.2 Proposed Development – Sites 3, 4 and 5

The site for Sites 3, 4 and 5 with a combined area of 0.82 ha comprises two blocks in the administrative area of Dublin City Council within the area bounded by O'Rahilly Parade, Moore Lane, Henry Place and Henry Street. See Figure 13.2.

Future development comprising Sites 1, 2AB and 2C is proposed to be located in a separate block bounded by Parnell Street to the north, O'Connell Street Upper to the east, Henry Street to the south and Moore Lane to the west.

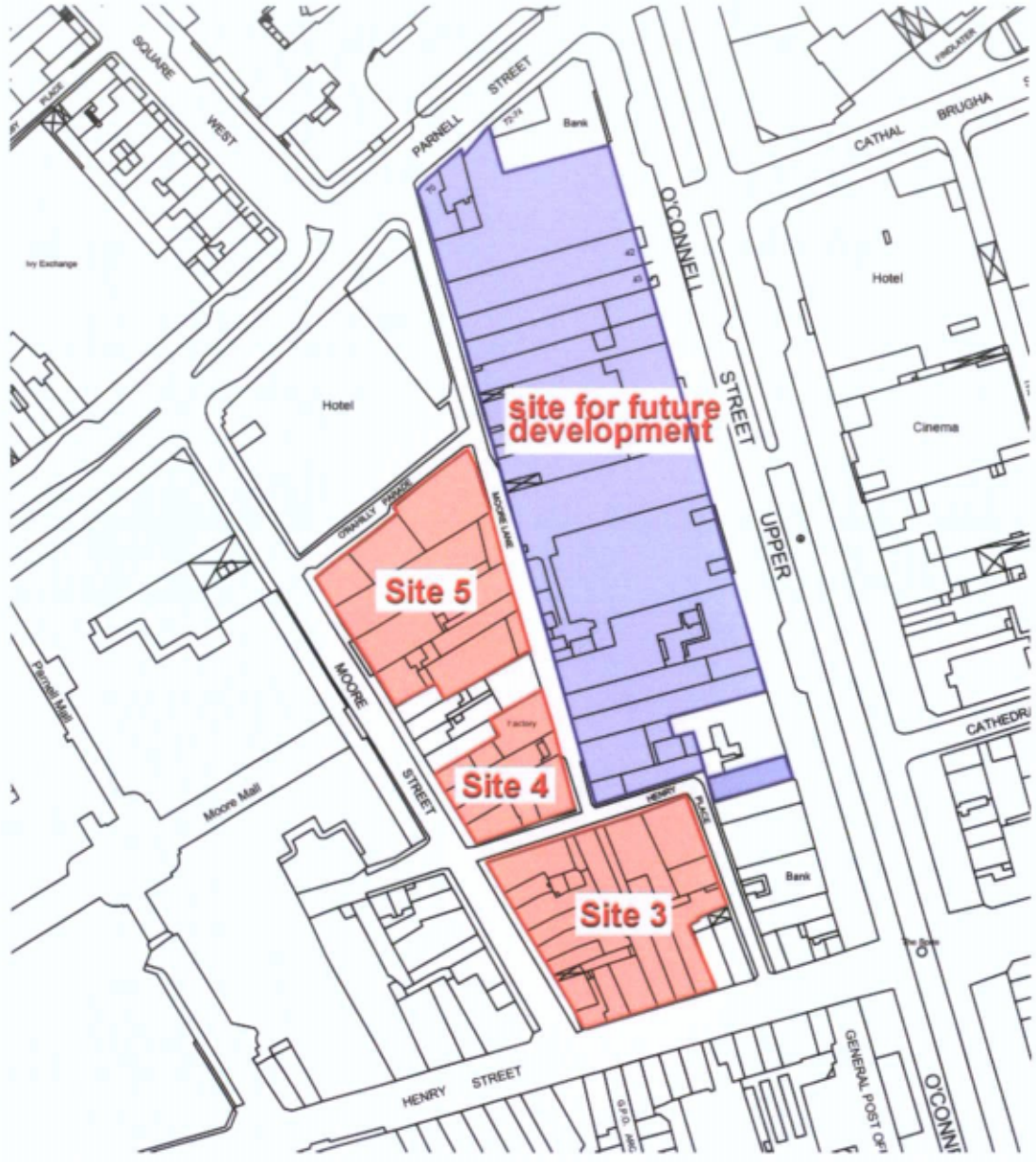


Figure 13.2: Location Map – Proposed Development – Sites 3, 4 and 5.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

13.1.3 Project Timelines

Development of Site 1 of Dublin Central is programmed to commence in late 2022 with completion some three years later at the end of 2025.

Development of Site 2AB and 2C of Dublin Central is programmed to commence with the MEW in late 2022 with completion some seven years later at the end of 2029.

Development of Sites 3 and 4 of Dublin Central is programmed to commence in mid-2023 with a completion some five years later in mid-2027.

Development of Site 5 of Dublin Central is programmed to commence with the MEW in late 2022 with completion some ten years later in late 2032.

13.2 ASSESSMENT METHODOLOGY

13.2.1 Scope

This chapter of the EIAR is a comprehensive review of all the potential transport impacts of the overall development including a detailed assessment of the transportation systems provided and the impact of the Proposed Development on the surrounding environment and transportation network.

13.2.2 Methodology

Chapter 13.0 of the EIAR was prepared by Waterman Moylan in accordance with the requirements of Section 8.5.5 of the Dublin City Development Plan 2016 – 2022 and Traffic and Transport Assessment Guidelines, Transport Infrastructure Ireland, May 2014 using the following methodology: -

(a) Desktop review of the planning stage documentation provided by the project design team.

(b) Visits to the site and surrounding area including a review of the existing transportation facilities and observation of traffic movements.

(c) Review of public transport services, routes, and timetables.

(d) Review of proposals for transportation improvements by TII, NTA and DCC.

(e) Review of future trips to and from the Proposed Development.

(f) Review of public transport capacity, existing and proposed.

(g) Assessment of the transportation impacts of the Dublin Central development.

13.2.3 Transport Assessment

For the purpose of planning assessment Dublin Central has been divided into a number of planning applications and transport assessments.

The transport elements of Sites 3, 4 and 5 are described in *Volume 1: Transport Assessment – Sites 3, 4 and 5.*

The transport elements of Sites 1 and 2 (AB and C) are described in *Volume 2: Transport Assessment – Sites 1 and 2.*

The transport elements of the overall development are described in *Volume 3: Transport Assessment – Overall Development.*

13.2.4 Contents of Transport Assessment

In compliance with Section 4.1.4 of Appendix 4 of the Dublin City Development Plan 2016 – 2022, the contents of the TAs include: -

- A Non-Technical Summary
- A description of the existing development and traffic/transportation conditions including information on the existing and proposed public transport facilities.
- A description of the Proposed Development.
- The traffic / transportation implications of the development including consideration of
- Trip attraction / mode choice
- Trip distribution
- The time periods applicable to the TA.
- The impact(s) of the development on the local and surrounding street network.
- The effect(s) of the development on the environment (natural and man-made) and urban fabric.
- Road and traffic considerations.

13.2.5 Threshold for Transport Assessment

Section 4.1.3 of Appendix 4 of the Dublin City Development Plan 2016 – 2022 requires the submission of a Transport Assessment where a Proposed Development meets one or more of the following criteria: -

- Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
- Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive.
- Residential development in excess of 200 dwellings
- Retail and leisure development in excess of 1,000 sqm.

In the case of the subject development, it is the threshold for the size of the Proposed Development rather than the volume of traffic to and from the development which is likely to be exceeded.

13.3 RECEIVING ENVIRONMENT (BASELINE SITUATION)

13.3.1 Dublin Central Masterplan Site

13.3.1.1 Location and Description

The site for the Proposed Development is located in the administrative area of Dublin City Council (DCC) within the area bounded by Parnell Street, O' Connell Street Upper, Henry Street to the south and Moore Street. The site comprises the city blocks highlighted in Figure 13.1.

At the time of writing in March 2021, the existing land uses on the site comprised: -

(a) A number of vacant plots.

(b) A number of discreet buildings some of which were partly or totally vacant.

(c) A diverse collection of 1 – 6 storey buildings accommodating a mix of land uses including convenience shops, retail outlets, financial institutions, offices, and other non-retail uses.

(d) A number of car parks, van parks and depots.

13.3.1.2 Road Network – Existing

The subject site is located at Junction 34 (Parnell Square West / Parnell Street) on the Inner Orbital Route. See Figure 13.3.

The purpose of the Inner Orbital Route which roughly encircles the core of Dublin city centre, is to provide a route from one side of the city centre to another which avoids the busiest traffic in the core of the city. It is also an access route to the car parks in the City Centre.

The subject site is located within the block bounded by the R803 Parnell Street to the north, Henry Street to the south, O'Connell Street Upper to the east and Moore Street to the west. See Figure 13.2. Internal lanes within the block are Moore Lane, O'Rahilly Parade and Henry Place.

O'Connell Street Upper is a dual carriageway with a bus lane, traffic lane and Luas line northbound on the west side. Along the bus lane, there is a proliferation of bus stops and a multi-purpose inset lay-bys.

Between O'Connell Street Upper and Parnell Square West, Parnell Street is a 24-hour clearway with one traffic lane westbound on the south side of the street, one shared traffic lane/LUAS line westbound in the centre of the street and one eastbound LUAS line on the north side of the street.

Between Parnell Square West and Moore Street, Parnell Street is a 24-hour clearway with one traffic lane westbound on the south side of the street, one traffic lane eastbound in the centre of the street separated by a median from two LUAS lines on the north side of the street.

Between Moore Street and Dominick Street, Parnell Street is a 24-hour clearway with two traffic lanes westbound on the south side, one traffic lane eastbound in the centre of the street separated by a median from two LUAS lines on the north side of the street.

Signalised junctions with pedestrian facilities at provided on Parnell Street at the junctions with O'Connell Street Upper, Parnell Square West, and Dominick Street.

Traffic movements are one-way southbound on Moore Lane between Parnell Street and O'Rahilly Parade. Between O'Rahilly Parade and Henry Place, traffic movements are two-way on Moore Lane with a 24-hour clearway designation and double yellow lines on both sides.

Traffic movements on O'Rahilly Parade are two-way with double yellow lines on both sides.

Traffic movements on Henry Place are two-way with a 24-hour clearway designation and double yellow lines on both sides.

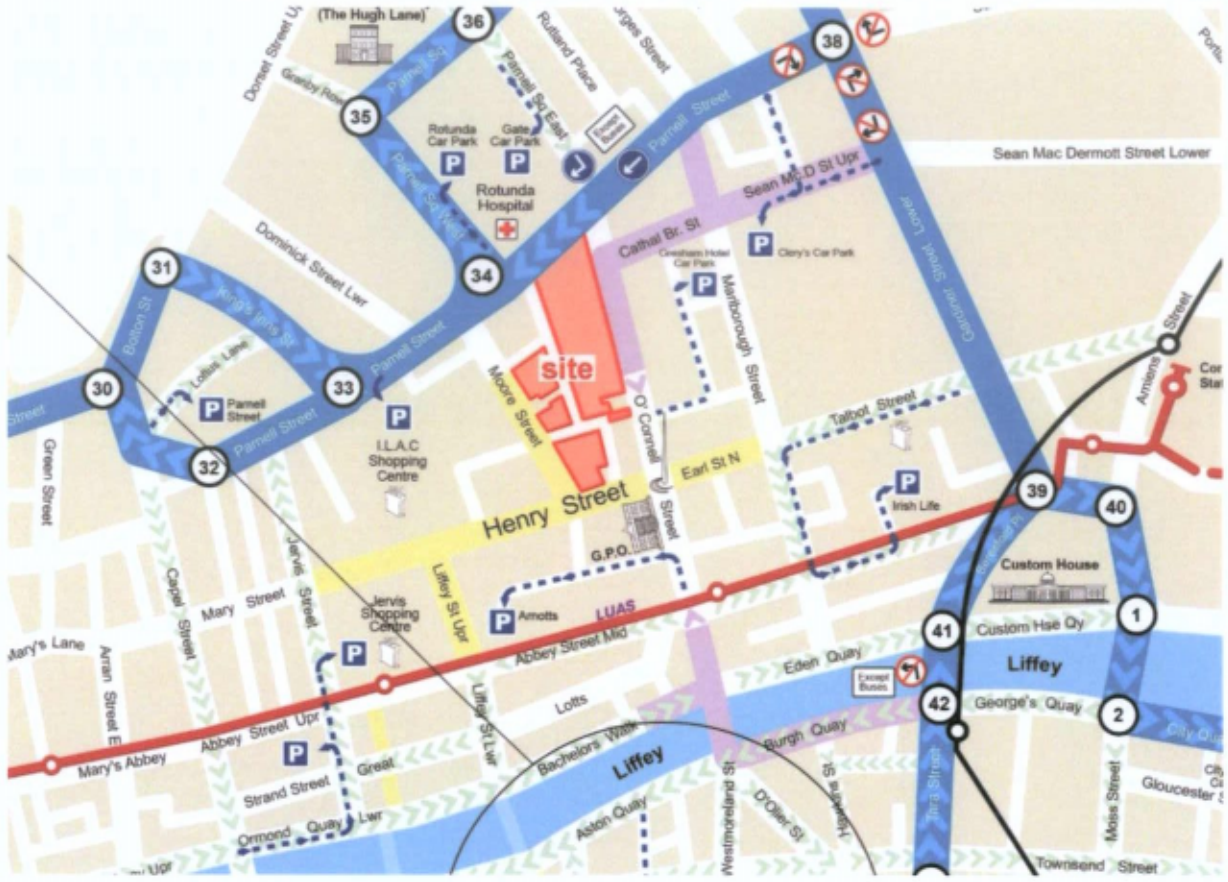


Figure 13.3: Map of Inner Orbital Route (Luas Green Line omitted for clarity).

13.3.1.3 Car Parking – Existing

The existing parking provision on the subject site comprises number of car parks, van parks and depots including: -

- Moore Lane Car Park at the rear of 47 O'Connell Street (c. 95 / 121 spaces).
- Car parking at O'Rahilly Parade (c. 12 spaces).
- Dublin City Council waste depot at O'Rahilly Parade (c. 10 street cleaning vehicles).
- Car parking at 51 O'Connell Street Upper (c. 25 spaces).

The total car parking provision on the subject site in March 2020 was some 160 spaces.

There is no on-street car parking on O'Connell Street Upper or on Parnell Street Nor is there any on-street car parking on O'Rahilly Parade, Moore Lane, or Henry Place

Off-street car parking is provided in the ILAC Centre and within the grounds of the Rotunda Hospital.



Figure 13.4: Entrance to Moore Lane Car Park.

13.3.1.4 Pedestrian Facilities – Existing

Pedestrian facilities in the area of the subject site comprise a series of footpaths on both sides of the surrounding streets being Parnell Street, O'Connell Street, Henry Street and Moore Street.

In addition, signal operated pedestrian crossings with drop kerbs and tactile paving are provided on Parnell Street and O'Connell Street Upper.

The footpaths on O'Connell Street Upper are wide and operate satisfactorily.

The footpaths on Parnell Square West and Parnell Square East are narrow and can become congested due to the high number of bus passengers waiting to board.

The footpath on the south side of Parnell Street is narrow with regular congestion due to its narrow width and significant volume of pedestrians.

Footpaths are provided on both sides of Moore Street partly occupied by street traders.

Extensive on-street deliveries take place one-way westbound on Henry Street prior to 11h00 after which the street is pedestrian only.

There are no pedestrian facilities on O'Rahilly Parade, Moore Lane, and Henry Place where on-street deliveries can take place all day.

13.3.1.5 Cycle Facilities – Existing

A north – south cycle lane is provided along both sides of O'Connell Street Upper passing the eastern frontage of the subject site. An advisory cycle lane is provided on Parnell Street westbound.

Cycle parking is provided on Moore Street, Parnell Street, Parnell Square and at the Ambassador Cinema.

There are no cycle facilities on Henry Street, O'Rahilly Parade, Moore Lane, or Henry Place.

However, the Proposed Development is within a short walking distance of a number of Dublin Bike stations including which are listed in Table 13.1.

Station Location	Station Size	Walking Time to Development
Cathal Brugha Street	20	3 min
Parnell Street	20	3min
Princes Street	23	3 min
Parnell Square North	20	5 min
Jervis Street	21	6 min

Table 13.1: Proximity of DCC Bicycle Stations to Development.

13.3.1.6 Motorcycle Facilities – Existing

No parking for motorcycles is provided in the area of the subject site.

13.3.1.7 Tram Services – Existing

The Luas Green line operates between Brides Glen and Broombridge. The Luas Red Line operates between Saggart / Tallaght and the 3Arena / Connolly. The two lines intersect at the junction of O'Connell Street and Abbey Street adjacent to the south-east corner of the site for Dublin Central.

The Luas system has sixty-seven stations on 42 km of revenue earning track. Between them, the two Luas lines carry some 42 million passengers per year.

In the area of the subject site, there is a one-way northbound track along O'Connell Street Upper, Parnell Street and Dominick Street. Along Parnell Street between O'Connell Street Upper and Dominick Street, the northbound Luas track shares the carriageway with a westbound traffic lane.

The corresponding southbound Luas track is routed along Dominick Street, Parnell Street and Marlborough Street.

The permanent way also includes a turnback facility at the Parnell Monument for northbound traffic.

The walking distance to the nearby LUAS stops from Dublin Central are set out below: -

- O'Connell Street Upper 2 minutes' walk (Northbound Green Line)
- Dominick Street 3 minutes' walk (Green Line)
- Middle Abbey Street 5 minutes' walk (Red Line)
- Parnell Street 4 minutes' walk (Southbound Green Line)

Luas services operate at 2 – 15-minute intervals in both directions on both lines.

13.3.1.8 Rail Services – Existing

One of the two major stations for local and intercity rail traffic is located at Connolly Station on Amiens Street. LUAS services link Abbey Street with Connolly Station and Store Street at 10-minute intervals in both directions. Connolly Station is a 10 – 12-minute walk from the subject site.

13.3.1.9 Bus Services – Existing

The Proposed Development is located adjacent to the epicentre of bus transport in Dublin. Bus transport within 200 metres (2 - 5 minutes' walk) of the development includes: -

- Dublin Bus city services on O'Connell Street Upper (31 No routes).
- Private interurban and airport services on O'Connell Street Upper.

There is an extensive provision of bus stops on O'Connell Street Upper and Parnell Square serving these routes. The locations of the stops on O'Connell Street Upper along the eastern frontage of the subject site are shown in Figure 13.5.



Figure 13.5: Bus Stops on O'Connell Street Upper.

13.3.1.10 Interurban Bus Services – Existing

Bus Eireann

The major station in Dublin for interurban services to all parts of Ireland including Northern Ireland is location in Busaras adjacent to the LUAS stop at Store Street. LUAS services link Abbey Street with Store Street at 10-minute intervals in both directions. Busaras is an 8 - 10-minute walk from the Proposed Development.

Aircoach

Aircoach operate a 24-hour service at 10 – 20-minute intervals to Dublin Airport through O'Connell Street Upper from Sandyford, Greystones Cork, and Belfast. O'Connell Street Upper is a 2 - 3-minute walk from the Proposed Development.

City Link

City Link provides an hourly service in each direction from Dublin Airport to Galway via Bachelors Quay (eastbound) and Aston Quay (westbound). City Link also provides seven return services per day from Dublin Airport to Limerick also via Bachelors Quay (northbound) and Aston Quay (southbound). Both quays are a 6 - 7-minute walk from the subject site.

Wexford Bus

Wexford Bus provides 13 return services between Wexford and Dublin Airport via Custom House Quay (northbound) and Georges Quay (southbound). Both quays are a 9 - 10-minute walk from the subject site.

13.3.1.11 Loading Bays – Existing

No dedicated loading bays were noted in the area of the subject site other than the shared taxi and loading bay located on the south side of Parnell Street between Moore Lane and Moore Street. The operational hours for the loading bay are 06h00 – 11h00 Monday – Sunday.

Extensive on-street deliveries take place on Henry Street prior to 11h00.

On-street deliveries take place all day on Moore Lane. O'Rahilly Parade and Henry Place.

13.3.1.12 Taxi Facilities – Existing

A taxi rank is located in front of the Gate Theatre on Parnell Square East.

A shared taxi and loading bay are located on the south side of Parnell Street between Moore Lane and Moore Street. The operational hours for taxis are 11h00 – 06h00 Monday – Sunday.

No other taxi facilities were noted in the area of the subject site following removal of the taxi rank from O'Connell Street Upper opposite the Carlton Cinema as part of the works for the Luas Green Line extension to Broombridge in 2017.

13.3.1.13 Road Traffic – Existing

Historic Traffic Surveys

Background

Due to the restrictions imposed by Covid-19, it was not possible to carry out a traffic survey for this EIAR. However, between 2008 and 2020, a number of traffic surveys were carried out in the area of the subject site including: -

- Traffic Impact Assessment (TIA), Dublin Central, ILTP Consulting, October 2008.
- Environmental Impact Study (EIS), Luas St Stephen's Green to Broombridge, RPA, 2011.

Dublin Central 2008

A series of Classified Traffic Counts were carried out on Wednesday, 31 May 2006, Thursday, 15 June 2006, and Thursday, 26 October 2006.

The surveys were carried out at three junctions at the following locations on Parnell Street during the AM and PM Peak Hours: -

- **Location 1:** Junction Parnell Street, Parnell Square East, and O'Connell Street Upper.
- **Location 8:** Junction Parnell Street and Moore Street.
- **Location 9:** Junction Parnell Street, Parnell Square West, and Moore Lane.

The primary movement recorded was 1,100 – 1, 200 vehicles per hour westbound on Parnell Street between O'Connell Street Upper and Parnell Square West.

Luas 2011

Traffic surveys were undertaken in October 2008 at a total of 41no. junctions including: -

- **Junction 22:** O'Connell Street Upper / Cathal Brugha Street.
- **Junction 26:** O'Connell Street Upper / Parnell Street.
- **Junction 27:** Parnell Street / Parnell Square West.
- **Junction 30:** Parnell Street / Dominick Street.

The results of the survey were incorporated into the *LUAS BXD Local Area Model* (LAM) but not reproduced in the EIS.

Canal Cordon Survey

Each November, traffic counts have been carried out by DCC, DTO and NTA at 33 locations on a canal-based cordon around Dublin. The counts cover the AM peak period 07h00 – 10h00.

An annual report is published by DCC in May of each year. The results of the canal cordon survey since 2006 would indicate an ongoing reduction in the number of private cars and goods balanced by increases in public transport, cycling and walking.

TII Traffic Survey 2018

Background

As part of the preparation of a planning application for Metrolink, traffic surveys were carried out by TII on Thursday 17th May 2018 at the locations shown in Figure 13.6.

Junction 9 at the intersection of O'Connell Street Upper and Parnell Street is located to the northeast of the subject site.



Figure 13.6: TII Traffic Survey Locations May 2018.

Results of Survey

A summary of the survey results from the count at nine of the junctions for a period of 24 hours from 00h00 to is presented in Table 13.2.

These junctions are located on the emerging preferred haul routes for construction traffic described in Section 13.5.1.1.5 of this EIAR.

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Junction	Location	Approach Flow 00h00 – 23h59 (pcu)
9	O'Connell Street Upper Parnell Street Cavendish Row	26,826
22	Dorset Street N Circular Road	56,640
24	Summerhill Gardiner Street Parnell Street	29,030
25	Bolton Street Capel Street	28,649
62	Dorset Frederick Street Blessington St	36,197
66	Summerhill Portland Row N Circular Road	35,200
83	Seville Place Guild Street	18,987
88	East Wall Road Sherriff Street	39,780
92	Dorset Street Dominick Street	26,862

Table 13.2: Summary of Traffic Survey May 2018 (pcu).

Dublin City Council Traffic Survey 2020

A classified traffic survey was carried out by Dublin City Council on Tuesday, 4 February 2020. The results of the survey for Parnell Street in the AM Peak Hour are presented in Figure 13.7.



Figure 13.7: Traffic Survey AM Peak Hour February 2020.

13.3.1.14 Cycle Traffic – Existing

The City Centre Cycle and Pedestrian Counts are carried out by Dublin City Council each May at a number of locations along The Quays between Heuston Station and the East Link Bridge.

For the purpose of this EIAR, only the survey results for Location 25 at Parnell Street / Dominick Street were interrogated.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The total number of cyclists and pedestrians recorded travelling in any direction at Location 25 during the 12-hour period between 07h00 and 19h00 are set out in Table 13.3.

Year	2015	2016	2017
Cycles	1,685	1,659	1,686
Pedestrians	16,878	15,615	15,593

Table 13.3: Cycle and Pedestrian Survey Parnell Street 2015 - 2017 (12 hour).

13.3.1.15 Pedestrian Traffic – Existing

Due to Covid-19 restrictions, it was not possible to carry out a pedestrian movement survey for this EIAR.

However, between 2008 and 2020, a number of pedestrian movement surveys were carried out in the area of the subject site including: -

- Pedestrian Benefits Report, Atkins, October 2008.
- City Centre Cycle and Pedestrian Counts, Dublin City Council, 201 – 2020.
- Urban Baseline study, Space Syntax, 2018.
- Dublin City Centre Footfall, Dublin City Council, 2019.

Based on the results of these surveys, baseline traffic flows for a weekday in 2020 are presented in Figure 13.8 for the off-peak hours between 10h00 and16h00.

These movements exclude the reductive impact of the Covid-19 restrictions.



Figure 13.8: Base Pedestrian Movements (pph) 10h00 – 16h00 (Numbers rounded for clarity)

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13.3.1.16 Deliveries to Adjoining Premises – Existing

Due to the restrictions imposed by Covid-19, it was not possible to undertake a survey of deliveries to adjacent premises for this EIAR.

13.3.1.17 Traffic Conditions – Existing

Operating conditions on the street network around the site are generally reasonable. However, short term congestion occurs regularly on Parnell Street between O'Connell Street Upper and Parnell Square West.

Dublin City Council's approach to traffic management in the city seeks to restrict through traffic and calm traffic generally within the City Centre giving increased levels of priority for pedestrians, achieve modal share targets crossing the canal of 55% for public transport, 15% for cycling, 10% for walking and 20% for private car use by 2017.

Although none of the roads within the city centre are designated as national primary roads, the major roads carry significant volumes of traffic and provide important links to the local, regional, and national road network. The existing road network is running at or close to capacity during peak hours.

13.3.1.18 Public Transport Improvements – Bus

Bus Connects is an ongoing project by the National Transport Authority (NTA) to deliver a more efficient, reliable, and better bus system for the Greater Dublin Area (GDA). This will be achieved by redesigning the bus network to provide a more efficient network with high frequency spines, new orbital routes, and increased services.

The project was programmed for delivery during the period 2021 – 2023. However, the impact of the Coronavirus Covid-19 is likely to affect this timescale.

O'Connell Street Upper, Parnell Square East, Parnell Street and Parnell Square West are four of the essential primary links in the proposed network. See Figure 13.10.

No information on the proposed works to O'Connell Street Upper or Parnell Street to accommodate Bus Connects or the timing for their implementation has become available up to the time of writing in March 2021. Current proposals available to the public just stop short of O'Connell Street Upper at the junction with Parnell Street. See Figure 13.9 below.

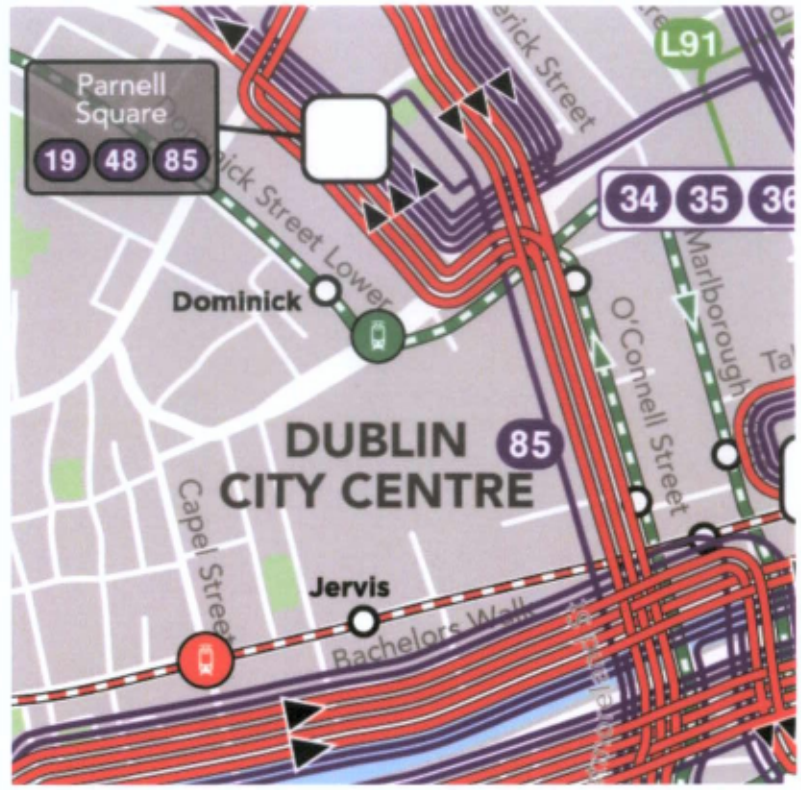

Figure 13.9: Bus Connects – Revised Bus Network 2020 (Site boundary omitted for clarity).

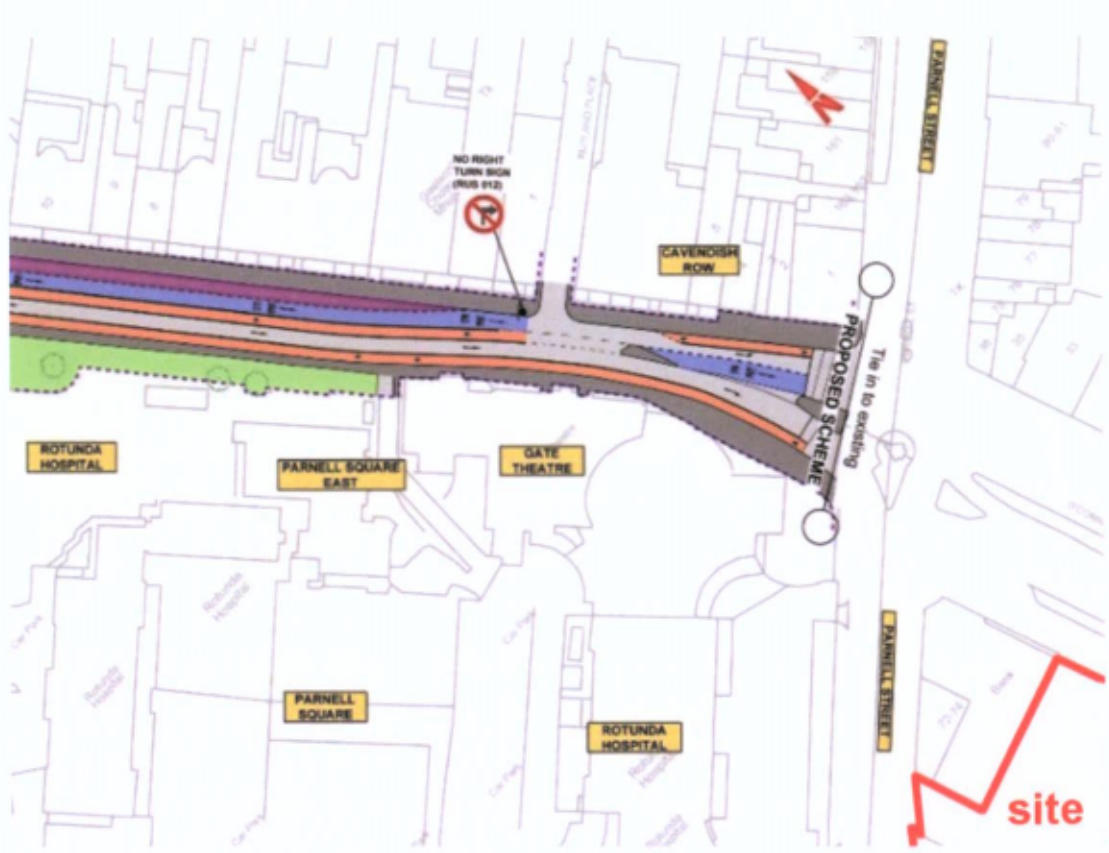

Figure 13.10: Bus Connects Proposals at Parnell Square.

13.3.1.19 Public Transport Improvements – Rail

The Metrolink Project, currently being promoted under the auspices of the National Transport Authority (NTA) and Transport Infrastructure Ireland (TII), provides for a high-capacity, high-frequency rail service between Swords and the LUAS Green Line at Charlemont.

The line will be some 19 km long and carry up to 50 million passengers per year.

Within the City Centre, it is proposed that the line be located underground with one of the stations at O'Connell Street Upper. The Preferred Route announced in 2018 provided for this station to be located directly under O'Connell Street Upper.

The National Transport Agency (NTA) and Transport Infrastructure Ireland (TII) approached the Applicant in 2018 with a view to locating a future MetroLink Station serving O'Connell Street Upper within the Dublin Central site, in an effort to avoid locating the Station within the central median of O'Connell Street Upper. TII is in the process of finalizing the design of the MetroLink project. TII is expected to make an Application for a Railway Order for the MetroLink project, including the O'Connell Street Upper Station, in Q2 / Q3 2021.

The Applicant has agreed a Memorandum of Understanding with the NTA/TII to complete the enabling works that would accommodate the future station, but which would also ensure that the Applicant's project was structurally independent of, and not prejudicial to, the MetroLink project. These enabling works comprise the provision of a structural 'box' positioned below ground, within which the MetroLink project can be positioned and above which the Applicant's project can be constructed. The provision of this structural box (sometimes referred to as the "Station Box") and its ancillary works below ground are known collectively as the Metro Enabling Works (MEW) in the context of the Applicant's overall Dublin Central project.

The provision of the MetroLink O'Connell Street Upper Station and its associated tunnel works would be completed by the NTA/TII once ready to do so and subject to the required consents being in place. It is envisaged that the MEW works would be completed in advance of the NTA/TII tunnel boring machines reaching the area.

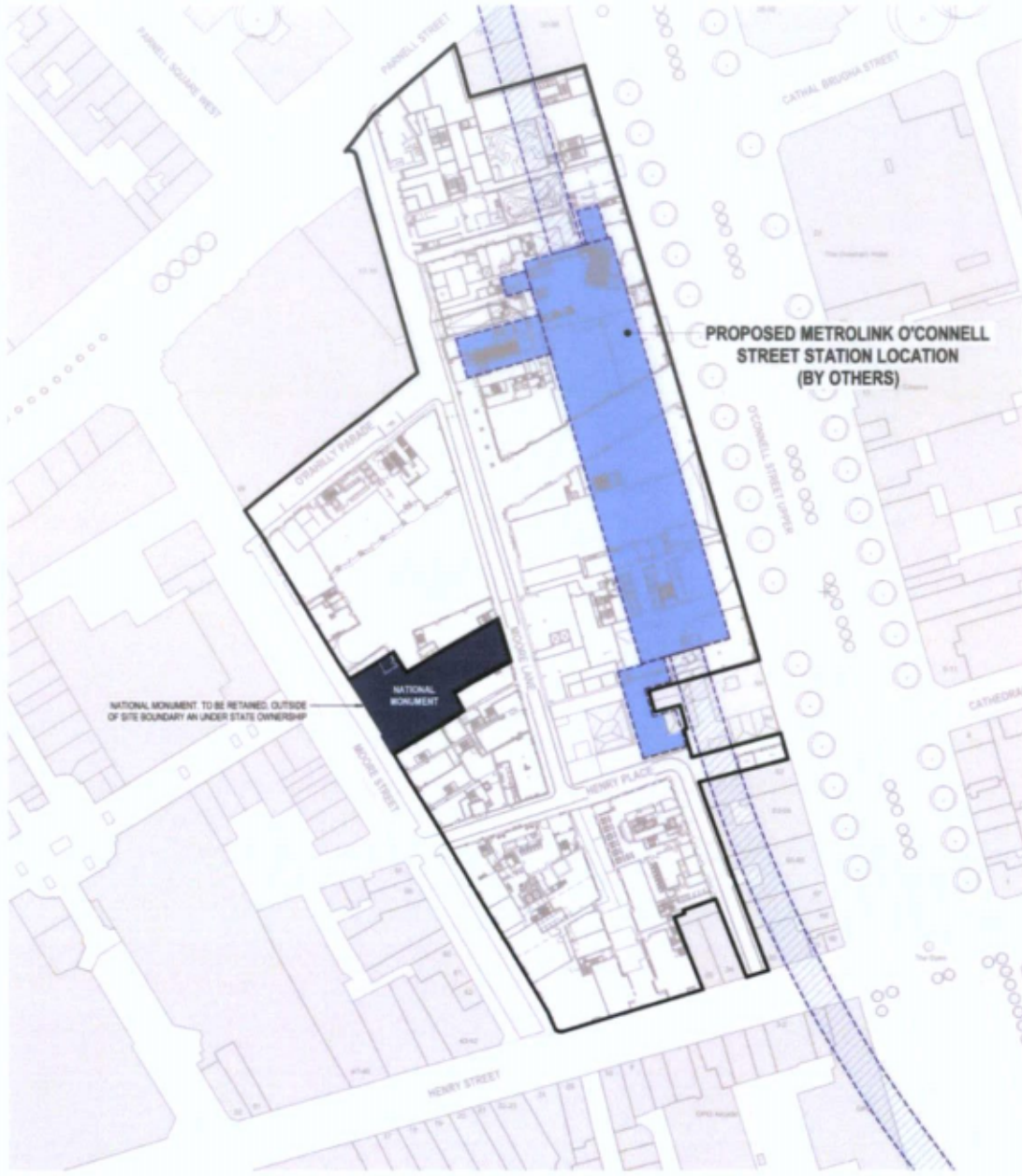

Figure 13.11: Location Plan for Metrolink Station at O'Connell Street Upper.

13.3.1.20 Parnell Square Contraflow Cycle Facility

Dublin City Council in conjunction with the National Transport Authority are introducing a new cycling link that will provide a direct route for cyclists on O'Connell Street Upper wishing to access Dorset Street. The works will involve introducing a contraflow cycle lane on Cavendish Row/Parnell Square East and improving the cycling facilities on North Frederick Street for both northbound and southbound cyclists.

The main elements of the proposed work include: -

- Re-allocating a section of the carriageway at the northern end of O'Connell Street Upper to allow for the introduction of a protected cycle lane and stacking area for northbound cyclists.
- Introduction of dedicated cycle signals to allow cyclists access the contraflow on Cavendish Row.

At the time of writing in March 2021, the Parnell Square Contraflow Cycle Facility was under construction along the O'Connell Street Upper frontage of the Dublin Central site. See Figure 13.12.

When finished, the traffic provision on O'Connell Street Upper over the 100 metres between 43 O'Connell Street Upper and the Parnell Monument, will be reduced to: -

- The existing footpath.
- A two-way cycle lane with a width of 2.5 metres.
- A traffic island with a width of 1.0 metres.
- A single one-way all-purpose northbound traffic lane with a width of 3.5 metres.
- A single one-way northbound Luas line.

This area will also include an inset coach set down area for one coach with a length of 15.0 metres and a depth of 2.5 metres. A dedicated cycle signal will be provided at the junction of O'Connell Street Upper and Parnell Street. Accordingly, the traffic signals at this junction will in the future cater for four groups pf movements being general traffic including buses, LUAS, cyclists, and pedestrians.

The Parnell Square Contraflow Cycle Facility has been incorporated into the traffic modelling described in Section 13.5.1.1.10 of this EIAR.



Figure 13.12: Parnell Square Contraflow Cycle Facility.

13.3.2 Proposed Development – Site 3, 4 & 5

The Receiving Environment for the Proposed Development will be the same as that for the Dublin Central Masterplan Site and described in Section 13.3.1 of this chapter.

13.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

13.4.1 Dublin Central Masterplan

The Dublin Central Masterplan will include a number of land uses in a series of blocks on an overall site of 2.2 ha off O'Connell Street Upper.

The Proposed Development which is illustrated in Figures 13.13 and 13.14 will comprise the following land uses in a series of multi-storey buildings of varying heights: -

- Retail 5,672 sq. m.
- Offices 44,217 sq. m.
- Food and Beverage 2,456 sq. m.
- Cultural 183 sq. m.
- Hotel 15,269 sq. m (210 bedrooms).
- Residential 7,905 sq. m (94 apartments).
- Metro Enabling Works 1,386 sq. m.
- Total 77,090 sq. m.
- Car Parking (33 spaces).
- Cycle parking (686 spaces).
- Access to the Metrolink underground station below the development.
- Public open space.

The development includes Metro Enabling Works for the future underground station at O'Connell Street Upper envisaged or planned at Sites 2AB and 2C as part of the Dublin Central Masterplan and to be undertaken by DCGP Ltd on behalf of TII / NTA in advance of tunnelling and station construction works.

In addition, the Proposed Development will include resurfacing works to O'Rahilly Parade, Moore Lane and Henry Place, reversal of traffic flow on Moore Lane from southbound to northbound and pedestrianisation on Moore Lane and Henry Place after 11h00.

The Proposed Development will also include the retention of a number of protected buildings and facades.

Full details in relation to the Proposed Development can be found in Chapter 3.0 of this EIAR.



Figure 13.13: Site Layout – Ground Level 00.



Figure 13.14: Site Layout – Basement Level.

DCC PLAN NO.2861/21
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13.4.1.1 Summary of Land Use and Gross Floor Areas

The land uses and gross floor areas proposed for the various sites are set out in Table 13.4.

	Site 1	Site 2AB	Site 2C	Site 3	Site 4	Site 5	Total
Use	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**
Office	3,610	17,484	17,029	-	295	5,799	**44,217**
Hotel	8,094	-	-	7,175	-	-	**15,270**
Residential	-	-	-	6,452	1,454	-	**7,906**
Retail	-	1,876	1,255	1,954	617	-	**5,672**
Café / Restaurant	-	625	150	138	864	679	**2,456**
Cultural / Gallery / Cafe	-	-	-	123	-	-	**123**
Extension to National Monument for ancillary use to National Monument – a cultural facility	-	-	-	-	60	-	**60**
Metro Enabling Works	-	555	831	-	-	-	**1,386**
Total	**11,704**	**20,541**	**19,235**	**15,842**	**3,290**	**6,478**	**77,090**

Table 13.4: Summary of Land Use and Gross Floor Areas (sq. m).

13.4.1.2 Access

Pedestrian access to the Proposed Development will be from the surrounding streets and lanes. Pedestrian access to the future Metrolink Station will be from the public open space between O'Connell Street Upper and Moore Lane.

Vehicular access to the car parking at basement level will be from Moore Lane via a traffic-controlled ramp at the location shown in Figure 13.15.

Cycle access to the cycle parking will also be from the surrounding streets and lanes at the locations shown in Figure 13.15.

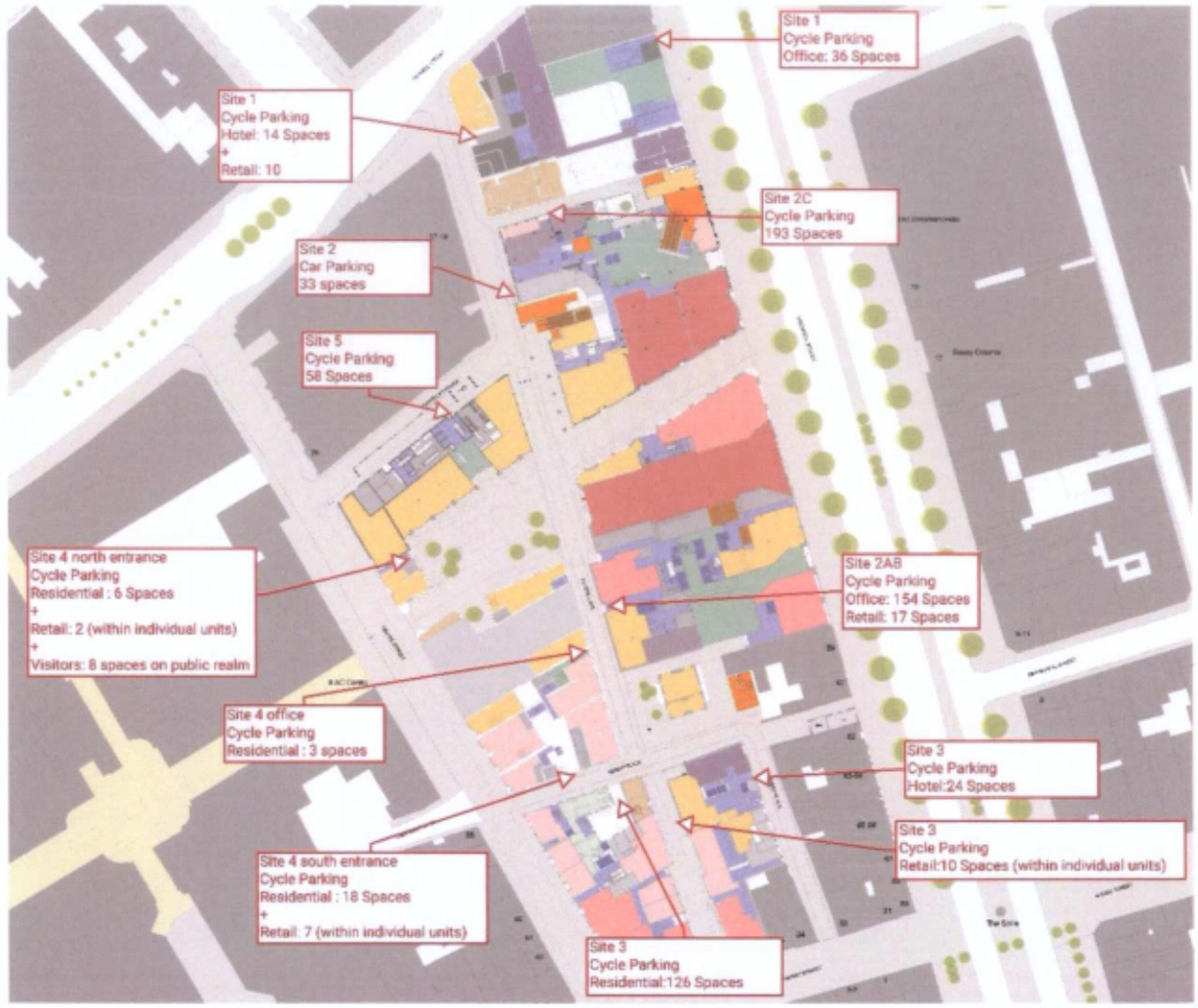

Figure 13.15: Access to Car and Cycle Parking.

13.4.1.3 Public Streets

Subject to the approval of Dublin City Council, it is proposed to reorder the existing streets in the area of the subject site as illustrated in Figure 13.16 and described below.

- **O'Rahilly Parade** (Moore Street – Moore Lane)

  One-way eastbound at all times with a loading bay on the south side (48m).

- **Moore Lane** (Parnell Street – O'Rahilly Parade.

  One-way northbound at all times with a loading bay on the east side (24m)

- **Moore Lane** (O'Rahilly Parade – Henry Place).

  Two-way as existing 06h00 – 11h00 with pedestrian zone after 11h00.

- **Henry Place**

  Two-way as existing 06h00 – 11h00 with pedestrian zone after 11h00.

There are no proposals for the provision of traffic signals or cycle lanes on Moore Lane, O'Rahilly Parade or Henry Place.



Figure 13.16: Street Layout – Proposed.

13.4.1.4 Servicing and Deliveries

Servicing and deliveries will be managed during the Operational Stage under the Servicing Strategy for Dublin Central.

Servicing and deliveries will take place on Moore Lane south of O'Rahilly Parade and on Henry Place between the hours of 06h00 and 11h00 Monday – Sunday. After 11h00, both Moore Lane and Henry Place will become pedestrian priority areas similar to Henry Street.

Servicing and deliveries will take place on O'Rahilly Parade and Moore lane north of O'Rahilly Parade Place on a 24-hour basis Monday – Sunday.

Deliveries will be undertaken in rigid trucks and vans. Loading bays will be provided on Moore Lane (24m) and O'Rahilly Parade (48m) as shown on Figure 13.16. Other deliveries will be on-street.

Waste collection will also take place using the same facilities and access.

13.4.1.5 Car Parking

13.4.1.5.1 Dublin City Development Plan 2016 – 2022

Standards for car parking in new developments are set out in Table 16.1 of the Dublin City Development Plan 2016 – 2022 and the Parking Areas ate delineated on Map J.

As shown on Map J, Dublin Central is located within Parking Area 1.

The maximum car parking standards for Dublin Central based on a location in Zone 1 are reproduced in Table 13.5.

Land Use	Standard
Retail	1 space per 350 sq. m GFA
Offices	1 space per 400 sq. m GFA
Restaurant / Cafe	None
Cultural	1 space per 400 sq. m
Hotel	1 space per 4 bedrooms
Residential – Apartments	1 space per dwelling

Table 13.5: Maximum Car Parking Standards, Dublin City Development Plan 2016 – 2022.

13.4.1.5.2 Car Parking – Development Plan

Based on the car parking standards set out in the Dublin City Development Plan, the maximum quantum of car parking for Dublin Central would be 275 spaces as calculated in Table 13.6.

Land Use	Size	Standard	Spaces
Retail	5,672 sqm	1 per 350 sq. m GFA	16
Offices	44,217 sqm	1 per 400 sq. m GFA	111
Restaurant / Cafe	2,456 sqm	None	-
Cultural	183 sqm	1 per 400 sq. m GFA	1
Hotel	210 rooms	1 per 4 rooms	53
Residential	94 apartments	1 space per apartment	94
Metro Enabling	1.386 sqm	-	-
		Total	**275**

Table 13.6: Maximum Car Parking for Dublin Central.

13.4.1.5.3 Car Parking for Apartments

Guidelines for the provision of car parking in new apartments are set out in *Sustainable Urban Housing: Design Standards for New Apartments* issued by the Department of Housing, Heritage and Local Government in December 2020. Section 4.18 – 4.27 of the Standards addresses the issue of car parking.

Qualifications in the standards for reduced parking for new apartments include: -

- Location within 10 minutes walking distance of DART and/or commuter rail.
- Location within 5 minutes walking distance of bus service with minimum 10-minute peak hour frequency.

The subject site is well within these walk time criteria. In addition, it is located within the City Centre and will enjoy easy access to high frequency public transport.

Having regard to these standards, the availability of public transport together, the location of the development and the modest number of apartments, no car parking is included within Dublin Central for the residential units.

DCC PLAN NO. 2861/21
RECD: 01/06/2021

13.4.1.5.4 Proposed Car Parking

Having regard to its City Centre location and the high availability of public transport in the surrounding area, the proposed provision of car parking has been reduced to 33 spaces to be located in Site 2.

13.4.1.6 Cycle Parking

13.4.1.6.1 Dublin City Development Plan 2016 – 2022

Standards for cycle parking in new developments are set out in Table 16.2 of the Dublin City Development Plan 2016 – 2022. As shown on Map J, Dublin Central is located within Parking Area 1.

The cycle parking standards for the Proposed Development at Dublin Central are reproduced in Table 13.7.

Land Uses	DCC Standards
Retail	1 space per 150 sq. m
Offices	1 space per 100 sq. m
Restaurant / Cafe	1 space per 150 sq. m
Cultural	1 space per 100 sq. m
Hotel	None
Residential	1 space per unit
Residential Visitors	To be decided on a case by case basis
Train Stations	7 spaces per number of trains in 2-hour period AM (min. of 100)

Table 13.7: Cycle Parking Standards Dublin City Development Plan 2016 – 2022.

13.4.1.6.2 Cycle Parking Required

Based on the cycle parking standards set out in the Dublin City Development Plan, the quantum of cycle parking required for the Proposed Development is 611 spaces as calculated in Table 13.8 below.

Land Uses	No. Units/GFA	DCC Standards	Parking Required
Retail	5,978 sq. m	1 no. per 150 sq. m	38
Offices	44,217 sq. m	1 no. per 100 sq. m	442
Restaurant/Café	2,718 sq. m	1 no. per 150 sq. m	16
Hotel	210 no. rooms	None	-
Residential	94 no. units	1no. per unit	94
Residential Visitors	94 no. units	1 no. per 5no. units	19
Train Stations	48 no. trains	7 no. per train	-
		Total	**611**

Table 13.8: Cycle Parking Required.

13.4.1.6.3 Proposed Cycle Parking

The proposed provision of cycle parking at Dublin Central Masterplan is 689no. spaces located as shown below. Access to these spaces is shown on Figure 13.15.

- **Site 1:** 60no. spaces.
- **Site 2:** 364no. spaces.
- **Site 3:** 160no. spaces.
- **Site 4:** 44no. spaces.
- **Site 5:** 58no. spaces.

Total: 686no. spaces.

This total does not include spaces to be provided by NTA / TII for the future Metrolink Station.

13.4.1.6.4 Future Cycle Parking for Metrolink Station

Assuming a 5-minute frequency in both directions, the number of trains passing through the O'Connell Street Upper Station would be 48 in 2-hours.

This level of service would generate a cycle parking requirement of 336 spaces which are expected to be included by TII in their future planning application for Metrolink.

13.4.1.7 Cumulative Development

The Characteristics of the Cumulative Development are the same as the Characteristics of the Proposed Development described in Section 13.4.1.

13.4.2 The Proposed Development – Site 3, 4 & 5

The Proposed Development will include a number of land uses in a series of blocks to the west of O'Connell Street Upper between Moore Street and Moore Lane:

The Proposed Development which is illustrated in Figure 13.17 will comprise the following land uses in a series of multi-storey buildings of varying heights: -

- Retail 2,571 sq. m.
- Offices 6,094 sq. m.
- Food and Beverage 1,681 sq. m.
- Cultural 183 sq. m.
- Hotel 7,175 sq. m (150 bedrooms).
- Residential 7,905 sq. m (94 apartments).
- Cycle parking 262no. spaces.

In addition, the Proposed Development will include resurfacing works to O'Rahilly Parade, Moore Lane and Henry Place, reversal of traffic flow on Moore Lane from southbound to northbound and pedestrianisation on Moore Lane and Henry Place after 11h00.

The Proposed Development will also include the retention of a number of protected buildings and facades.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021



Figure 13.17: Site Layout – Ground Level 00. Proposed Development outlined in red – future development outlined in blue.

13.4.2.1 Access

Pedestrian access to the Proposed Development will be from the surrounding streets and lanes. Pedestrian access to the future Metrolink Station will be from the public open space between O'Connell Street Upper and Moore Lane.

Cycle access to the cycle parking will be from the surrounding streets and lanes at the locations shown in Figure 13.18.

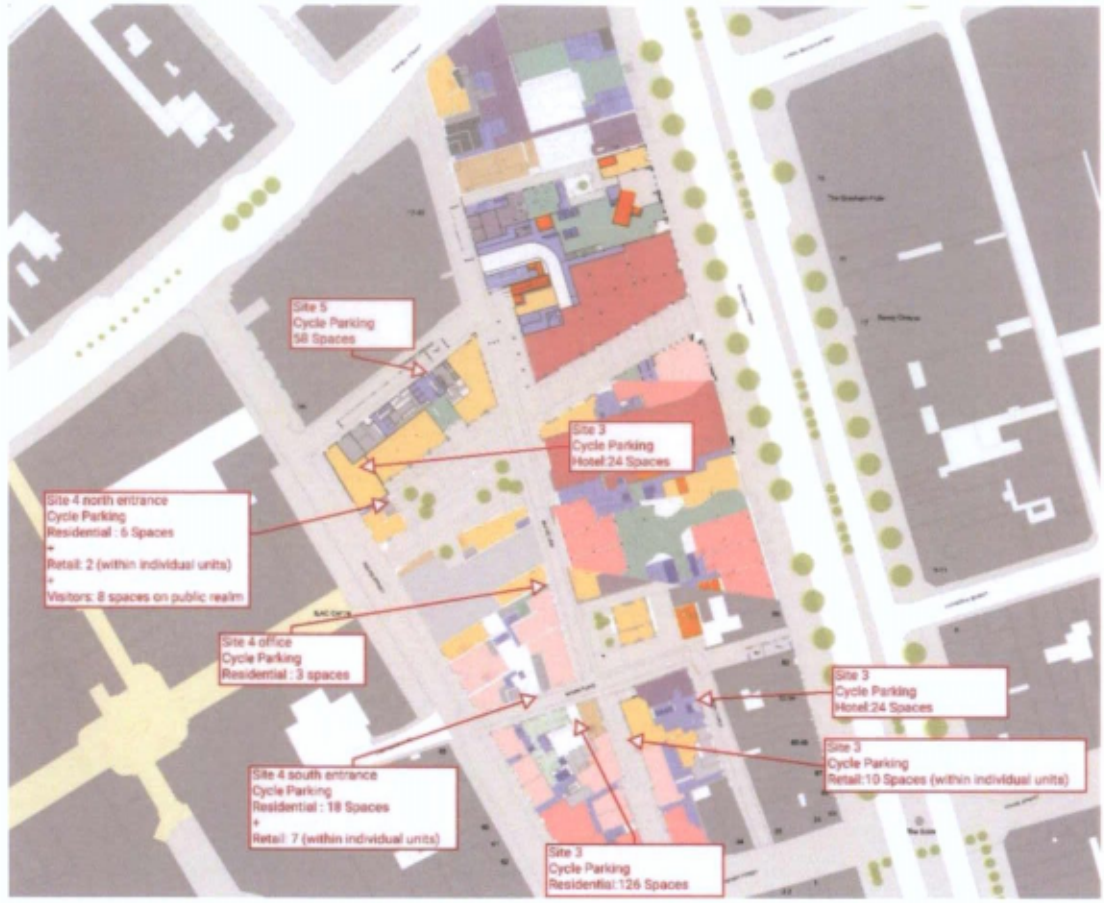

Figure 13.18: Access to Cycle Parking

13.4.2.2 Public Streets

Subject to the approval of Dublin City Council, it is proposed to reorder the existing streets in the area of the subject site as illustrated in Figure 13.19 and described below.

- O'Rahilly Parade (Moore Street – Moore Lane)

  One-way eastbound at all times with loading bay on south side (48m)

- Moore Lane (Parnell Street – O'Rahilly Parade

  One-way northbound at all times with loading bay on east side (24m)

- Moore Lane (O'Rahilly Parade – Henry Place)

  Two-way as existing 06h00 – 11h00 with pedestrian zone after 11h00.

- Henry Place

  Two-way as existing 06h00 – 11h00 with pedestrian zone after 11h00.

There are no proposals for the provision of traffic signals or cycle lanes on Moore Lane, O'Rahilly Parade or Henry Place.



Figure 13.19: Street Layout – Proposed. Proposed Development outlined in red – future development outlined in blue.

13.4.2.3 Servicing and Deliveries

This EIAR is accompanied by a detailed *'The Dublin Central Masterplan Servicing Strategy'* developed by Sweco for Dublin Central GP Limited. This TA should be read in conjunction with that Strategy.

Servicing and deliveries will take place on Moore Lane south of O'Rahilly Parade and on Henry Place between the hours of 06h00 and 11h00 Monday – Sunday. After 11h00, both Moore Lane and Henry Place will be pedestrian priority areas similar to Henry Street.

Servicing and deliveries will take place on O'Rahilly Parade and Moore lane north of O'Rahilly Parade Place on a 24-hour basis Monday – Sunday.

Deliveries will be undertaken in rigid trucks and vans. Loading bays will be provided on Moore Lane (24m) and O'Rahilly Parade (48m) as shown on Figure 13.19. Other deliveries will be on-street.

Waste collection will also take place using the same facilities and access.

A detailed Servicing Strategy has been prepared by SWECO UK Ltd and accompanies this planning submission. This transport assessment should be read in conjunction with the SWECO Servicing Strategy.

13.4.2.4 Car Parking

13.4.2.4.1 Dublin City Development Plan 2016 – 2022

Standards for car parking in new developments are set out in Table 16.1 of the Dublin City Development Plan 2016 – 2022 and Parking Areas are illustrated on Map J. As shown on Map J, Dublin Central is located within Parking Area 1.

The maximum car parking standards for Dublin Central based on a location in Zone 1 are reproduced in Table 13.9.

Land Use	Standard
Retail	1 space per 350 sq. m GFA
Offices	1 space per 400 sq. m GFA
Restaurant / Cafe	None
Cultural	1 space per 400 sq. m
Hotel	1 space per 4 bedrooms
Residential – Apartments	1 space per dwelling

Table 13.9: Maximum Car Parking Standards, Dublin City Development Plan 2016 – 2022.

13.4.2.4.2 Car Parking – Development Plan

Based on the car parking standards set out in the Dublin City Development Plan, the maximum quantum of car parking for Sites 3, 4 and 5 at Dublin Central would be 155 spaces as calculated in Table 13.10.

Land Use	Size	Standard	Spaces
Retail	2,571 sq. m	1 per 350 sq. m GFA	7
Offices	6,094 sq. m	1 per 400 sq. m GFA	15
Restaurant / Cafe	1,681 sq. m	None	-
Cultural	183 sq. m	1 space per 400 sq. m	1
Hotel	150no. rooms	1 per 4 rooms	38
Residential	94no. apartments	1 space per apartment	94
		Total	**155**

Table 13.10: Maximum Car Parking for Dublin Central – Sites 3, 4 and 5.

DCC PLAN NO. 2861/21
01/06/2021

13.4.2.4.3 Car Parking for Apartments

Guidelines for the provision of car parking in new apartments are set out in Sustainable Urban Housing: Design Standards for New Apartments issued by the Department of Housing, Heritage and Local Government in December 2020. Section 4.18 – 4.27 of the Standards addresses the issue of car parking.

Qualifications in the standards for reduced parking for new apartments include: -

- Location within 10 minutes walking distance of DART and/or commuter rail.
- Location within 5 minutes walking distance of bus service with minimum 10-minute peak hour frequency.

The subject site is well within these walk time criteria. In addition, it is located within the City Centre and will enjoy easy access to high frequency public transport.

Having regard to these standards, the availability of public transport together, the location of the development and the modest number of apartments, no car parking for the residential units is included within Dublin Central for the residential units.

13.4.2.4.4 Proposed Car Parking

Having regard to its City Centre location and the high availability of public transport in the surrounding area, no car parking is proposed for any of the other land uses in Sites 3, 4 or 5.

13.4.2.5 Cycle Parking

13.4.2.5.1 Dublin City Development Plan 2016 - 2022

Standards for cycle parking in new developments are set out in Table 16.2 of the Dublin City Development Plan 2016 – 2022.

As shown on Map J, Dublin Central is located within Parking Area 1.

The cycle parking standards for the Proposed Development at Dublin Central are reproduced in Table 13.11.

Land Uses	DCC Standards
Retail	1 space per 150 sq. m
Offices	1 space per 100 sq. m
Restaurant / Cafe	1 space per 150s q. m
Cultural	1 space per 100 sq. m
Hotel	None
Residential	1 space per unit Visitor spaces to be determined on a case by case basis

Table 13.11: Cycle Parking Standards, Dublin City Development Plan 2016 – 2022.

13.4.2.5.2 Cycle Parking Required

Based on the cycle parking standards set out in the Dublin City Development Plan, the quantum of cycle parking required for Sites 3, 4 and 5 is 204 spaces as calculated in Table 13.12 below.

Land Uses	No. Units/GFA	DCC Standards	Parking Required
Retail	2,571 sq. m	1 per 150 sq. m	17
Offices	6,094 sq. m	1 per 100 sq. m	61
Restaurant/Café	1,681 sq. m	1 per 150 sq. m	11
Cultural	183 sq. m	1 space per 100 sq. m	2
Hotel	150no. rooms	None	-
Residential	94no. apartments	1 per unit	94
Residential Visitor	94no. apartments	1 per 5 units	19
		Total	**204**

Table 13.12: Cycle Parking Required – Sites 3, 4 and 5.

13.4.2.5.3 Proposed Cycle Parking

The proposed provision of cycle parking in Sites 3, 4 and 5 at Dublin Central is 262 spaces located as shown below.

- **Site 3:** 160no. spaces
- **Site 4:** 44no. spaces
- **Site 5:** 58no. spaces

Total: 262 spaces

Access to these spaces is shown on Figure 13.18.

13.4.2.6 Cumulative Development

The Characteristics of the Cumulative Development are the same as the Characteristics of the Proposed Development described in Section 13.5.1.

DCC PLANNING 2861/21
01/06/2021

13.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

13.5.1 Dublin Central Masterplan

13.5.1.1 Construction Stage

13.5.1.1.1 Construction Phasing

Due to its location and size together, it is proposed to construct the Dublin Central development on a number of sites over a period of ten years between 2022 and 2032.

The locations of the various sites are shown in Figure 13.20.



Figure 13.20: Construction Phasing

13.5.1.1.2 Construction Program

The construction program for the various construction sites of the Dublin Central development between 2022 and 2032 is presented in Figure 13.21.

The construction activities on each site can be broadly sub-divided into three categories, demolition / excavation, construction and fit-out.

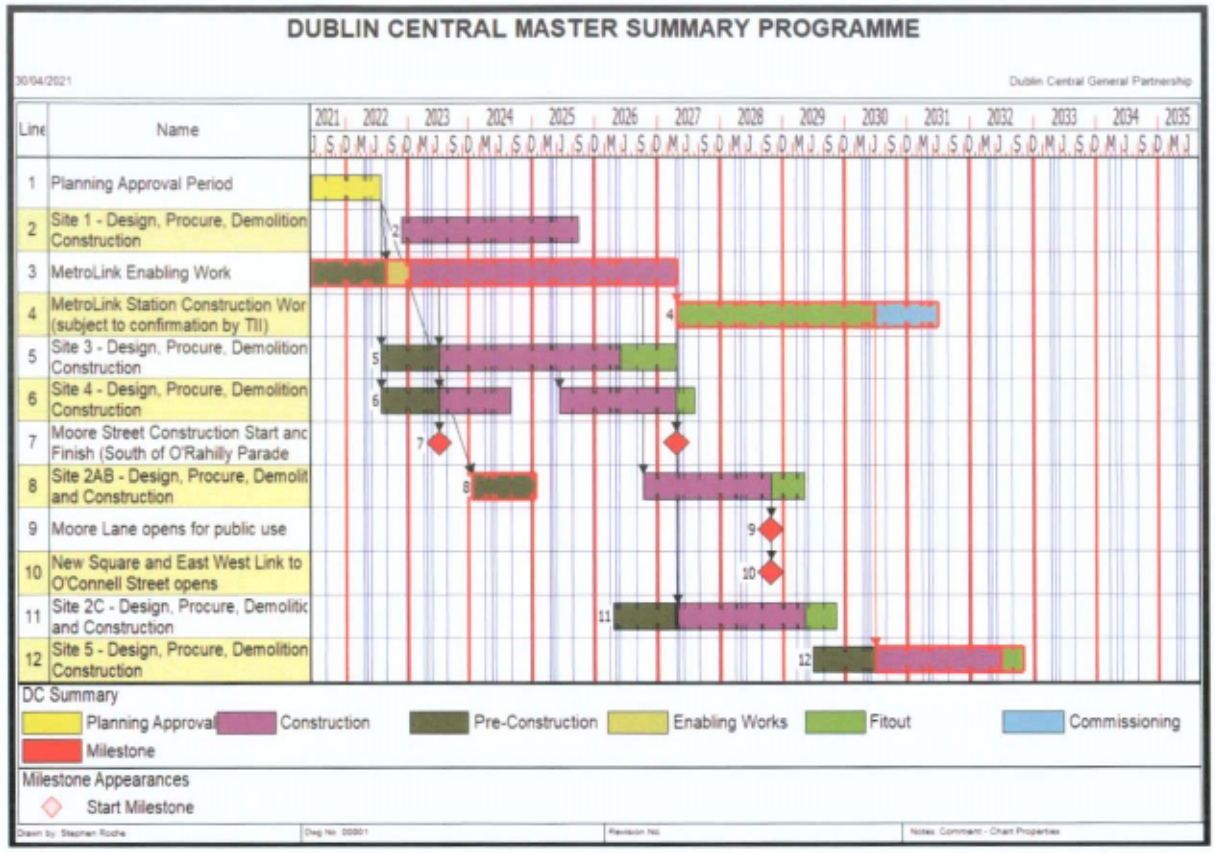

Figure 13.21: Construction Program.

13.5.1.1.3 Preliminary Construction Traffic Management Plan

Construction traffic from this development is addressed in the *Preliminary Construction Traffic Management Plan* (PCTMP) issued by Waterman Moylan in April 2021.

The purpose of the Plan is to address how construction traffic will access and egress this City Centre development site. It also addresses the impact of construction related traffic on the surrounding road network during the construction stage.

The objectives of the Plan are to ensure that the construction traffic for Dublin Central can be accommodated on the surrounding street network without significant impact on other road users.

It will ultimately the responsibility of the main appointed Contractor to prepare and submit the detailed *Construction Traffic Management Plan* to Dublin City Council for approval. The preliminary plan has been discussed with Dublin City Council and will be used to provide guidance to the main Contractor when he commences the preparation of the detailed plan.

The construction of Dublin Central is programmed to extend over a period of 7 years between 2022 and 2029. However, the major heavy construction is expected to be carried out during the first four years from 2022 to 2026.

During the construction period, there will be a number of high activity sites where construction related traffic will be significant.

The most intensive of these sites are likely to be: -

(a) Demolition of existing buildings and removal of demolition waste off site.

(b) Excavation of Metro Enabling Works and disposal of the excavated spoil.

(c) Pouring of the concrete box and frame.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

The nature of the construction process is such that the traffic generated will comprise short periods of intense activity interspersed with longer periods with relatively low level of truck movements into and out of the site. In addition, the various activities will occur at multiple locations around the site giving rise to a need for multiple access for construction traffic from the street network.

13.5.1.1.4 Predicted Traffic Movements

The expected traffic movements during the construction period will vary significantly from month to month depending on the activity in progress.

For the purpose of this EIAR and the PCTMP, a worst-case scenario has been assumed based on: -

- A 10-hour day between 08h00 and 18h00 Monday – Friday.
- 20 working days per month.

The single largest activity in terms of truck movements will be the excavation for Site 2 including the station box extending to 133,565 cubic metres over a period of 12 months between 2025 and 2026.

The excavated material is expected to be removed in 32 tonne trucks with a self-weight of 12 tonnes and a carrying capacity of 20 tonnes. On the basis of a maximum soil weight of 1.3 - 1.7 tonnes per cubic metre, each truck would have a capacity of 12 – 15 cubic metres per truck.

Based on an average payload of 8 cubic metres per truck, this operation is predicted to generate an average of 67 arrivals and 67 departures per working day equivalent to 7 arrivals and 7 departures in the AM peak hour between 08h00 and 09h00.

Allowing for other on-site activities during the same period particularly completion and fit-out to Sites 3 and 4, the construction related truck movements during the AM peak hour between 08h00 and 09h00 are expected to peak at 12 arrivals and 12 departures per hour.

Overall, the expected HGV movements during the construction stage are predicted to vary from 65 – 95 arrivals per day and 65 – 95 departures per day.

These movements represent some 1% of the existing traffic flow of 1,100 – 1,400 vehicles per hour each way on Parnell Street during the same period.

13.5.1.1.5 Haul Routes

The Preliminary Construction Traffic Management Plan (PCTMP) for this development requires that all deliveries to and collection from the subject site comply with the DCC requirements for HGV movements including the use of the designated HGV Routes illustrated in Figure 13.22.

Two construction routes to the site have been identified both to Parnell Street. One would be via Summerhill and Parnell Street and the second preferred route via Dorset Street and Dominick Street Lower as shown in Figure 13.23.

Traffic and other movements on the road network during the construction Site will be managed by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

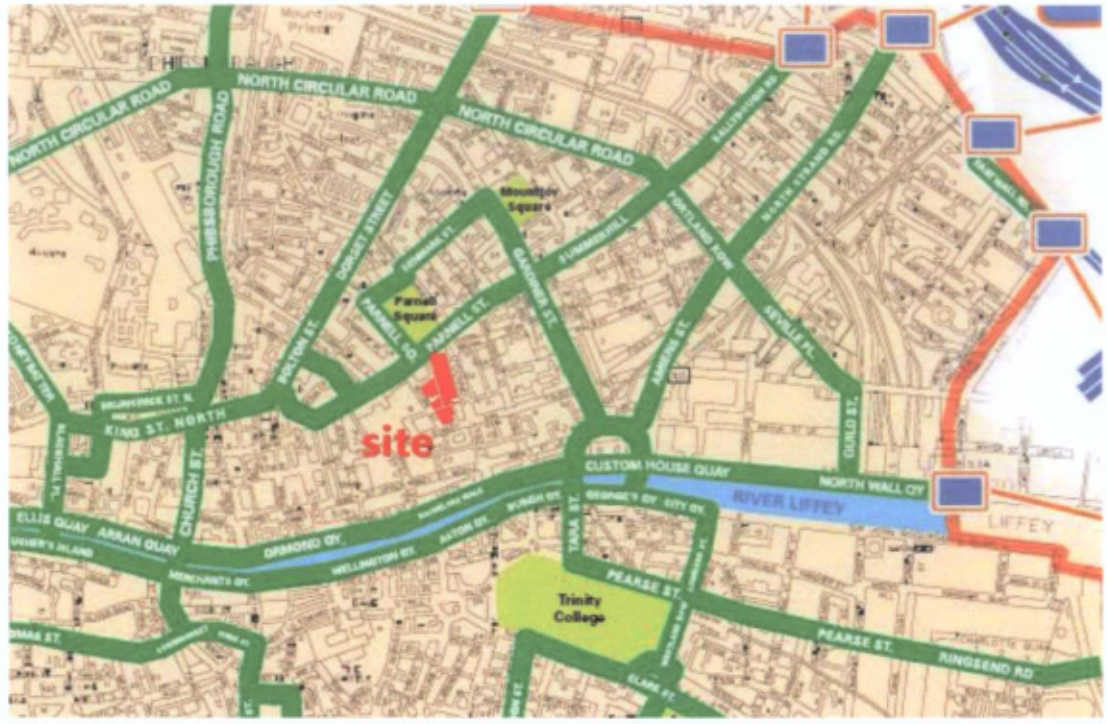

Figure 13.22: Designated HGV Routes in the City Centre.



Figure 13.23: Emerging Haul Routes for Construction Traffic (Inbound in green and outbound in red).

13.5.1.1.6 Local Traffic Management

The local traffic management for construction vehicles in the area of the site has been based inter alia on the haul routes described above and a series of tracking checks carried out on the local roads and junctions using Autotrack.

Based on these constraints, a series of proposals for a number of differing construction scenarios was prepared. The scenarios were based on the project phasing from Figure 13.20 and the construction program from Figure 13.21.

Two alternative scenarios were developed in detail based on clockwise and anti-clockwise circulation around the block bounded by Moore Street, O'Rahilly Parade and Moore Lane.

The preferred option is the anticlockwise circulation included the local traffic management proposals presented in Figure 13.24. Inbound access for the majority of construction vehicles is proposed from Parnell Street to Moore Street / O'Rahilly Parade and outbound departures from Moore Lane to Parnell Street.

This preferred option was selected on the basis of a number of local constraints including: -

- The lack of a stacking lane on Parnell Street in advance of the left turn into Moore Lane should there be a delay entering Moore Lane for whatever reason.
- The restricted width of the left turn from Parnell Street around Conway's public house into Moore Lane which could cause delays due to the slow deliberate turning for vehicles across a busy restricted area.
- The relatively easy right (and left) turns from Parnell Street to Moore Street.
- The availability of a stacking area for the right (and left) turns from Parnell Street into Moore Street.
- Local traffic management on Moore Lane would require the presence of temporary traffic signals and/or flagmen at different locations and at different times to facilitate vehicles passing depending on the movements in progress.

Arrivals are proposed from Parnell Street via Moore Street and O'Rahilly Parade. Some limited departures are proposed to O'Connell Street Upper via Henry Street up to 11h00 after which Henry Street is restricted to pedestrians only. The remaining departures are proposed to Parnell Street via Moore Lane.

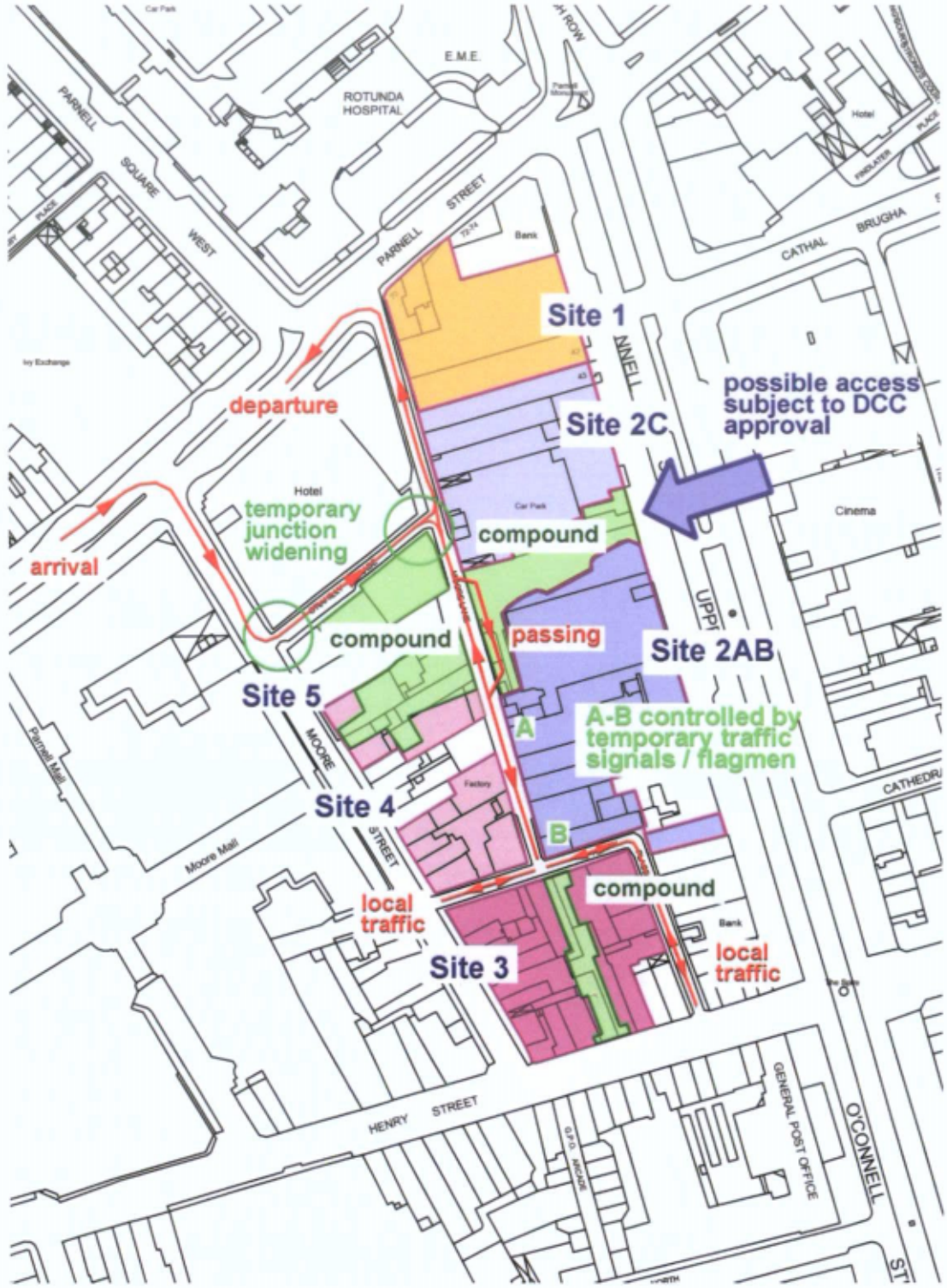

Figure 13.24: Construction Traffic Management.

DCC PLAN NO.2861/21
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13.5.1.1.7 Alternative Access for Long Vehicles to Site 3

Arising from the restricted junctions at both ends of O'Rahilly Parade, an alternative part time access to Site 3 from Parnell Street via Moore Lane is also proposed. This access would be for long vehicles only and would operate in the mornings up to 11h00 as illustrated in Figure 13.25.

Long vehicles travelling south on Moore Lane would require the presence of temporary traffic signals and/or flagmen at different locations at different times depending on the movements in progress.

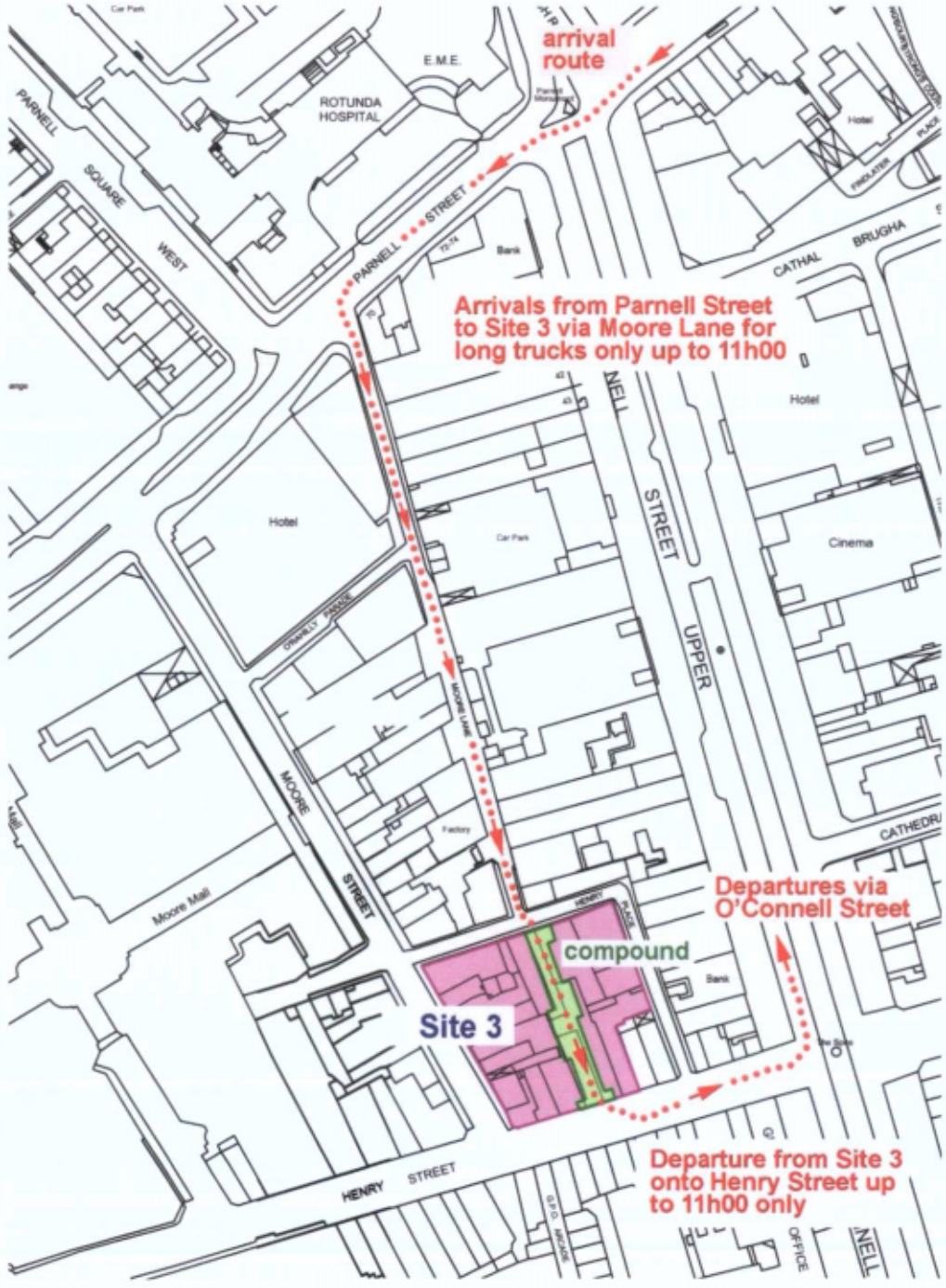

Figure 13.25: Alternative Access for Long Vehicles to Site 3.

13.5.1.1.8 Temporary Street and Junction Upgrade Works

The layout and width of the existing streets and lanes in the area of the subject site is such that the identification of the preferred option has generated a requirement for temporary local upgrades to the network.

The upgrades required, which are shown on Figure 11.26, comprise local junction widening at either end of O'Rahilly Parade and local carriageway widening midway along Moore Lane.

The temporary upgrade works required for the construction traffic movements include: -

(a) Junction Moore Street and O'Rahilly Parade

- Relocation of existing street furniture.
- Realignment of existing kerbs.

(b) Junction O'Rahilly Parade and Moore Lane

- Removal of existing depot boundary wall.
- Realignment of existing kerbs.

(c) Moore Lane

- Removal of existing boundary wall to create passing area.

Details of the widening works are included on the drawings which form part of the planning applications for Dublin Central to Dublin City Council.

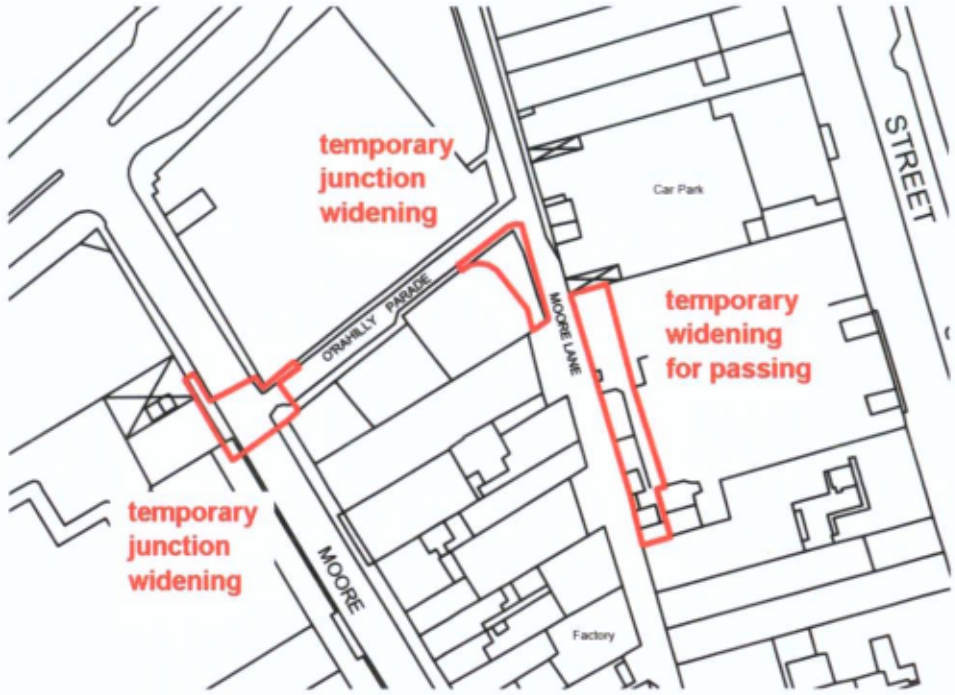

Figure 13.26: Temporary Street and Junction Upgrade Works.

13.5.1.1.9 Parking During Construction

For the purpose of this chapter of the EIAR, it has been assumed that there will be no car parking for construction staff on site.

Construction staff will either travel to site by public transport or park off-site.

13.5.1.1.10 Traffic Modelling

TRANSYT Overview

The traffic modelling described in this EIAR was carried out by Waterman Moylan using the industry standard software package TRANSYT.

TRANSYT is a computer program for studying everything from isolated road junctions to large signal-coordinated networks. It is capable of developing optimum signal settings for representative traffic conditions of a system. Priority intersections (non-signalised junctions) and roundabouts can also be modelled using TRANSYT, however this is only appropriate where these junctions form part of a larger network comprised of signalised junctions.

TRANSYT contains two main components – a traffic model and a signal optimiser. The traffic model predicts a Performance Index (PI) for a network based on a fixed signal timing plan and set of average traffic flows. The PI is a measure of the overall cost associated with congestion and is a weighted combination of total vehicle delay and stops experienced by traffic within the modelled network. The signal optimisation component within TRANSYT modifies signal timings and assesses whether those adjustments have reduced the PI.

The output report of a TRANSYT model also includes a number of other results to evaluate the studied system, such as Degree of Saturation percentage (DOS%) figure, Mean Maximum Queue (MMQ) and Mean Delay per pcu for each link on the road network.

Degree of Saturation (DOS):

DOS, also referred to as Volume to Capacity Ratio (v/c), is a measure of performance which represents the capacity of a junction/traffic lane/link to accommodate the vehicular demand and indicates how near the network is to the maximum capacity available. A DOS less than 85% generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the DOS approaches 100%, traffic flow may become unstable, and delay and queuing conditions may occur.

Mean Maximum Queue (MMQ):

MMQ is the highest estimated mean number of Passenger Car Units (pcu) queued in any lane of a junction approach link, averaged over the entire analysis period.

Mean Delay per Vehicle (seconds):

Mean Delay per vehicle is the average delay experienced by a vehicle on a junction approach link or traffic stream as a result of having to queue at signals or having to give way at a priority junction.

Description of Modelled Network

Four junctions along the section of Parnell Street between its intersections with O'Connell Street Upper and Dominick Street have been assessed. The junctions modelled were: -

Junction 1: Parnell Street @ O'Connell Street Upper and Parnell Square East

This junction is a signalised crossroads with LUAS line and new northbound cycle phase. Its layout has been recently altered as part of the Parnell Square Contraflow Cycle Scheme to comprise the following configuration: -

- Reduction of O'Connell Street Upper (southern approach) to a single 3.5m wide traffic lane catering for all traffic with no bus priority.
- Inclusion of north-south signal phase on O'Connell Street Upper (southern approach) for cyclists wishing to cross Parnell Street towards Parnell Square East.
- Reduction of Parnell Square East (northern approach) to one lane for right turns onto Parnell Street (western approach).

Junction 2: Parnell Street @ Parnell Square West (Signalised T-junction with LUAS line).

Junction 3: Parnell Street @ Moore Street (Priority-controlled T-junction).

Junction 4: Parnell Street @ Dominick Street (Signalised T-junction with LUAS line).

Between O'Connell Street Upper and Parnell Square West, Parnell Street is a 24-hour clearway with one traffic lane westbound on the south side of the street, one shared traffic lane/LUAS line westbound in the centre of the street and one eastbound LUAS line on the north side of the street.

Between Parnell Square West and Moore Street, Parnell Street is a 24-hour clearway with one traffic lane westbound on the south side of the street, one traffic lane eastbound in the centre of the street separated by a median from two LUAS lines on the north side of the street.

Between Moore Street and Dominick Street, Parnell Street is a 24-hour clearway with two traffic lanes westbound on the south side, one traffic lane eastbound in the centre of the street separated by a median from two LUAS lines on the north side of the street.

Approach

The approach undertaken for carrying out this TRANSYT analysis consisted of: -

1) Inputting local Sydney Coordinated Adaptive Traffic System (SCATS) provided by Dublin City Council (DCC) which include vehicle/tram flows and stage sequences and timings of each signalised junction.

2) Setting up TRANSYT models of each junction to establish the base scenario.

3) Adding Proposed Development's construction traffic to the base scenario to project the Construction Stage scenario.

   a. Comparing both assessed scenarios to identify any potential effects that may arise during the Construction Stage of the Proposed Development.

During the Construction Stage, the appointed Contractor will be required to maintain access along Moore Lane and Henry Place to existing properties at the times currently permitted by Dublin City Council or as may otherwise be agreed with the property owners and DCC.

Assessed Scenarios

The performance of the modelled road network as described above has been analysed for the critical AM Peak Hour 09h45 to 10h45 (based on surveyed results by DCC for Tuesday 4th February 2020) for the following scenarios: -

- **Base Scenario:** Road network with baseline flows (including LUAS line and new northbound cycle phase on Junction 1) and without subject development trips.
- **Construction Stage:** Road network with baseline flows (including LUAS line and new northbound cycle phase on Junction 1) with construction traffic added to the baseline flows. In this scenario, a slight change to the road network configuration has been adopted which consists of Moore Lane (from Parnell Street to O'Rahilly Parade) been reversed to northbound traffic only to facilitate construction traffic departing from the subject site.

Construction of TRANSYT Base Network

Having adopted the approach and the extent of the study area, the TRANSYT models have been developed. Typical input data to construct a TRANSYT model include traffic flows (vehicles or pcu per time segment), traffic signal controller phases and stages, intergreen times, saturation flows and lane lengths. Stage sequences and timings, intergreen times, and traffic flows were provided by DCC for all signalised junctions in the form of SCATS.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Baseline Flows – Peak Hour (SCATS Data from DCC)

Baseline Traffic (Normal, Bus and Tram)

As previously described earlier in this TA, due to ongoing travel restrictions that have been implemented to curb the spread of COVID-19, carrying out traffic count survey was not possible for this TA, and in any case would be unlikely yield useful data. Instead, SCATS pre-COVID traffic counts provided by DCC from a survey in February 2020 has been examined to identify the peak hour amongst all assessed junctions surveyed. The Peak Hour for the junctions located in Figure 13.7 was identified at 09h45 to 10h45.

Pedestrian Movements

Again, due to COVID-19 restrictions, carrying out pedestrian movement survey was also not possible for this TA. Instead, historic pedestrian movement surveys from a number of surveys were examined and used to predict existing data (pre COVID-19 restrictions). The pedestrian movements resultant of this exercise, which were used as input data on TRANSYT model, are illustrated in Figure 13.8 of this report.

Model Set-Up

Streams Controller, Signal Timings, and Intergreen Periods

The modelled road network incorporates the following four junctions: -

- Parnell Street @ O'Connell Street Upper and Parnell Square East (Signalised Crossroads with LUAS line and new northbound cycle phase).
- Parnell Street @ Parnell Square West (Signalised T-junction with LUAS line).
- Parnell Street @ Moore Street (Priority-controlled T-junction).
- Parnell Street @ Dominick Street (Signalised T-junction with LUAS line).

Each signalised junction (Junctions 1, 2 and 4) is controlled by a Controller Streams which contains all the signal control data associated with the junction it is controlling. A controlled stream includes all signal timing data such as cycle, phases, stages and intergreen values; stage library (phases on each stage) and stage sequence.

Stage Libraries and Sequencies

Details of the existing typical stage libraries and sequencies of each signalised junction have been obtained from DCC in the form of SCATS. This data, which include pedestrian, normal traffic tram and new cycle phases have been input in the TRANSYT models for each signalised junction.

Signal Timings

Average cycle times and minimum/average signal timings for each phase/stage have been provided by DCC. These values were input in the TRANSYT models for each signalised junction.

Intergreens

An intergreen period refers to the period of time between the end of the green signal giving right of way for one phase and the beginning of the green signal for the next phase. The normal minimum value of an intergreen period is 5 seconds (3 seconds amber and 2 seconds all red), but this is very often longer for larger junctions. The *'Traffic Management Guidelines'* published by the Stationery Office states the following with regards to intergreen times: -

"The intergreen times can vary between 5 seconds for compact junctions and 10 seconds or more for junctions with a long distance between entries and exits. Particular care is needed when pedestrian phase follows a traffic phase."

Intergreen values for each stage of each signalised junction have been provided by DCC and input to the TRANSYT model.

Saturation Flows

Saturation flow is a common concept in Traffic Engineering and largely used in junction modelling. For a signalised intersection, a Base (or unadjusted) Saturation Flow can be defined as the maximum amount of flow crossing a stop line if the signals were permanently on green, and is given by the following relationship:

$$S = 3600 / h$$

Where: S = Saturation Flow (pcu/hour or Vehicle/hour); h = Saturation headway (sec/pcu or sec/veh); 3600 = number of seconds in one hour.

When developing a model with TRANSYT, the software initially adopts all signalised lanes of the network as having a Base Saturation Flow of 1,800 pcu/hour based on a saturation headway value of 2 seconds per pcu (or vehicle). This value represents a base or unadjusted saturation flow.

In TRANSYT, there is also the option to calculate the saturation flow of each lane using the equations of the UK's RR67 (Research Report 67 – The Prediction of Saturation Flows for Road Junctions Controlled by Traffic Signals). By selecting this option, extra data for each lane needs to be specified such as Site Quality Factor, Road Surface Condition, Gradient, Width, Proportion that turn, Turning Radius and Nearside Lane. These additional data included, provide for a more accurate saturation flow value for each lane, sometimes higher and sometimes lower than the default value of 1,800 pcu/hour per lane as described above. In that case, saturation flows for each lane on the modelled network have been calculated using RR67.

All details of the model set up, including Saturation Flows, are provided within the TRANSYT output reports.

13.5.1.1.11 Construction Traffic (pcu)

Traffic is composed of various types of vehicles. TRANSYT software normally utilises a common unit - known as the Passenger Car Unit (pcu), to represent general mixed-traffic on a road network. The conversion factor assigned to Heavy Goods Vehicles (HGV), so that an equivalent pcu value is generated, is 2.3. This is in line with TII 'Project Appraisal Guidelines for National Roads Uni 5.2 – Data Collection' which references the typical pcu values suggested by Transport for London (TfL).

As earlier in tis TA, the construction-related truck movements during the AM peak hour are estimated at 12 arrivals and 12 departures. Based on that, the equivalent pcu value input in TRANSYT to represent the construction traffic was 28 pcu arrivals and 28 pcu departures.

13.5.1.1.12 Construction Trip Distribution

Two construction routes to the site have been identified both to Parnell Street and both complying with the DCC requirements for HGV movements. One would be via Summerhill and Parnell Street and the second preferred route via Dorset Street and Dominick Street Lower. See Figure 13.27.

For this assessment, it has been assumed that 50% of the construction traffic will arrive from Summerhill and 50% from Dorset Street/Dominick Street Lower. The corresponding pcu flows based on the assumed distribution is 13 pcu per route. This assumption can be revised in future analysis if necessary.

With regards to departure route, it was assumed that 100% of construction traffic will leave the site via Moore Lane (reversed during constructing stage from the current layout to accommodate these construction movements), turn left onto Parnell Street and then right onto Bolton Street/Dorset Street. This also complies with the DCC requirements for HGV movements.



Figure 13.27: Construction Traffic Trip Distribution.

13.5.1.1.13 Modelling Results

Base Scenario

A summary of the TRANSYT modelling results for each assessed junction for the Base Scenario is provided below. The assessed junctions were labelled as follows:

- **Junction 1:** Parnell Street @ O'Connell Street Upper and Parnell Square East (signalised Crossroads with LUAS line and new northbound cycle phase). It is worth remembering that the following alterations to Junction 1 has been recently undertaken as part of the Parnell Square East Contraflow Cycle Scheme: -
  - Reduction of O'Connell Street Upper (southern approach) to a single 3.5m wide traffic lane catering for all traffic with no bus priority.
  - Inclusion of north-south signal phase on O'Connell Street Upper (southern approach) for cyclists wishing to cross Parnell Street towards Parnell Square East.
  - Reduction of Parnell Square East (northern approach) to one lane for right turns onto Parnell Street (western approach).
- **Junction 2:** Parnell Street @ Parnell Square West (Signalised T-junction with LUAS line)
- **Junction 3:** Parnell Street @ Moore Street (Priority-controlled T-junction)
- **Junction 4:** Parnell Street @ Dominick Street (Signalised T-junction with LUAS line)

The TRANSYT analysis results as summarised in Table 13.13 below indicate that all modelled junctions are currently operating within capacity during the critical AM peak hour (09h45 – 10h45) with the highest DOS at 85% and a corresponding queue of 10.22 pcu occurring on Parnell Street (E), Junction 1.

Junction (Control Type)	Approach	Number of Lanes or Lane Type	Movement	DOS% or RFC	Mean Max Queue (pcu)	Mean Delay per Vehicle (s)
Junction 1 (Signalised Crossroads)	O'Connell Street Upper (S)	1	L	73	11.31	39.13
		LUAS	L/R	3	0.34	31.55
	Parnell Street (W)	LUAS	S	2	0.18	40.27
	Parnell Square East (N)	1	R	34	3.58	40.58
		1	S	23	6.15	12.00
		1	S/L	10	1.57	13.60
	Parnell Street (E)	1	S	85	10.22	137.51
		1	S	75	4.75	135.94
Junction 2 (Signalised T-junction)	Parnell Street (E)	1 shared w/ LUAS	S/R	68	7.09	42.88
		1	S/L	28	4.96	5.69
		1	S	27	1.56	1.66
	Parnell Street (W)	LUAS	S	8	0.29	84.48
		1	L	61	4.38	44.27
Junction 3 (Priority T-junction)	Parnell Street (W)	1	S/R	19	0.24	3.30
	Moore Street (S)	1	L/R	15	0.18	4.78
Junction 4 (Signalised T-junction)	Parnell Street (E)	2	S	22	3.96	5.59
		LUAS	R	8	0.31	54.09
	Parnell Street (W)	1	S	18	1.59	5.59
	Dominick Street Upper (N)	1	L	27	0.83	27.65
		LUAS	L	5	0.19	53.52

Table 13.13: Results for TRANSYT Base Scenario.

Construction Stage

A summary of the TRANSYT modelling results for each assessed junction for the Construction Stage scenario is provided below. It is worth remembering that for this scenario Moore Lane (from Parnell Street to O'Rahilly Parade) was reversed form the current southbound flow to northbound traffic only to accommodate construction traffic departing from the subject site.

The TRANSYT analysis results as summarised in Table 13.14 below indicate that all modelled junctions would continue to operate within capacity for the Construction Stage scenario during the critical AM peak hour (09h45 – 10h45), with the highest DOS of 91% and a corresponding queue of 12.20 pcu at Junction 1 (O'Connell Street Upper / Parnell Street).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Summary

The results of the assessment as summarised in Table 13.14 indicate that the modelled network would continue to operate within capacity for the Construction Stage scenario during the AM Peak Hour.

No significant change in performance of any junctions were recorded due to the inclusion of the construction traffic of the Proposed Development. Details of the predicted impact of the Proposed Development during the construction stages summarised in Table 13.14 below.

Junction (Control Type)	Approach	Number of Lanes or Lane Type	Movement	DOS% or RFC	Mean Max Queue (pcu)	Mean Delay per Vehicle (s)
Junction 1 (Signalised Crossroads)	O'Connell Street Upper (S)	1	L	73	11.31	39.14
		LUAS	L/R	3	0.34	31.55
	Parnell Street (W)	LUAS	S	2	0.18	40.27
	Parnell Square East (N)	1	R	34	3.58	40.58
		1	S	23	6.15	12.00
		1	S/L	10	1.57	14.60
	Parnell Street (E)	1	S	91	12.20	163.57
		1	S/L	82	5.53	164.08
Junction 2 (Signalised T-junction)	Parnell Street (E)	1 shared w/ LUAS	S/R	68	7.09	42.88
		1	S	29	5.14	5.77
		1	S	30	4.41	1.95
	Parnell Street (W)	LUAS	S	8	0.29	84.48
		1	L	61	4.38	44.27
	Moore Lane (S)	1	L	3	0.00	0.05
Junction 3 (Priority T-junction)	Parnell Street (W)	1	S/R	21	0.26	3.48
	Moore Street (S)	1	L/R	16	0.18	4.84
Junction 4 (Signalised T-junction)	Parnell Street (E)	2	S	23	4.18	5.66
		LUAS	R	8	0.31	54.09
	Parnell Street (W)	1	S	18	1.59	5.59
	Dominick Street Upper (N)	1	L	34	1.10	29.25
		LUAS	L	5	0.19	53.52

Table 13.14: Results for TRANSYT Construction Stage Scenario.

13.5.1.1.14 Traffic Impact

Methodology

Two separate methods were used to assess the impact of construction traffic on the operation of the road network. Firstly, the trips generated by the development were compared with the surveyed approach flows at a number of the junctions on the construction haul routes to determine if the construction trips would exceed 5% of the traffic on the adjoining roads. Secondly, the operation of the street network was modelled using industry standard software.

Traffic Threshold

The approach flow for each of the nine junctions surveyed on the construction haul routes for the Dublin Central development are presented in Table 13.15. The approach flows, which are for the weekday period 07h00 – 19h00, were extracted from the traffic survey carried out by TII In May 2018. The flows in the table include motorcycle, car, bus, coach, LGV, OGV1 and OGV2. They do not include cyclists or pedestrians.

The construction traffic trips in Table 13.14 were taken from Section 13.5.1.1.4 of this EIAR.

Three alternative scenarios for trip distribution during the Construction Stage were reviewed during the preparation of Table 13.15. These are described below: -

a) All of the construction traffic could use the haul route to the site via Summerhill and Parnell Street.

b) All of the construction traffic could use the haul route to the site via Dorset Street and Dominick Street Lower.

c) The construction traffic would be divided between the two routes.

Following a review, Table 13.15 was formulated on the basis that a combination of (a) and (b) would represent the worst-case scenario.

From Table 13.15, it will be seen that the traffic generated by the construction stage of the Proposed Development at Dublin Central is significantly below the threshold of 5% of the flow on the adjoining road as set by Section 4.1.3 of Appendix 4 of the Dublin City Development Plan 2016 – 2022.

The location at which the highest increase of 1.48% is predicted to occur is Junction 83 at the intersection of Sherriff Street and Seville Place. This location is well outside the City Centre.

The equivalent increase at Junction 9 O'Connell Street Upper / Parnell Street, the nearest junction to the Proposed Development, would be 1.33%.

Notwithstanding the failure to trigger the 5% threshold and on foot of discussions with DCC and TII, an assessment was carried out on the operation of Parnell Street between O'Connell Street Upper and Dominick Street during the Construction Stage using the computer program TRANSYT.

DCC PLAN NO. 2861/21
01/06/2021

Junction	Location	Approach Flow 07h00-19h00 vehicles	Construction Traffic 07h00-19h00 vehicles	Ratio
9	O'Connell Street Upper Parnell Street Cavendish Row	13,193	190	1.33%
22	Dorset Street N Circular Road	36,764	190	0.52%
24	Summerhill Gardiner Street Parnell Street	20,402	190	0.93%
25	Bolton Street Capel Street	20,393	95	0.47%
62	Dorset Frederick Street Blessington St	22,978	190	0.82%
66	Summerhill Portland Row N Circular Road	24,818	190	0.77%
83	Seville Place Sherriff Street	12,805	190	1.48%
88	East Wall Road Sherriff Street	26,726	190	0.71%
92	Dorset Street Dominick Street	19,076	190	1.00%

Table 13.15: Junction Approach Flow – Construction Stage.

Traffic Modelling

For the Construction Stage, an assessment was carried out on the operation of Parnell Street between O'Connell Street Upper U and Dominick Street using TRANSYT. The section of Parnell Street modelled included the LUAS Green Line and the Parnell Square Contraflow Cycle Facility under construction at the time of writing in March 2021.

The predicted impact of the Proposed Development on the operation of Parnell Street is summarised in Table 13.16.

From Table 13.16, it will be seen that the highest changes in performance during the Construction Stage occur on Parnell Street (E) – Junction 1 and on Dominick Street Upper (N) – Junction 4. These roads are the two designated access routes for construction traffic to the subject site.

In summary, the results of the traffic modelling confirmed the results of the Traffic Threshold analysis that the construction traffic generated at Dublin Central would not significantly the operation of the surrounding road network.

Junction (Control Type)	Approach	Number of Lanes or Lane Type	Movement	DOS% or RFC	Mean Max Queue (PCU)	Mean Delay per Vehicle (s)
Junction 1 (Signalised Crossroads)	O'Connell Street Upper (S)	1	L	0	0	0
		LUAS	L/R	0	0	0
	Parnell Street (W)	LUAS	S	0	0	0
	Parnell Square East (N)	1	R	0	0	0
		1	S	0	0	0
		1	S/L	0	0	0
	Parnell Street (E)	1	S	6	1.98	26.06
		1	S/L	7	0.78	28.13
Junction 2 (Signalised T-junction)	Parnell Street (E)	1 shared w/ LUAS	S/R	0	0	0
		1	S	1	0.18	0.08
		1	S	3	2.85	0.29
	Parnell Street (W)	LUAS	S	0	0	0
		1	L	0	0	0
	Moore Lane (S)	1	L	3	0	0.05
Junction 3 (Priority T-junction)	Parnell Street (W)	1	S/R	2	0.02	0.18
	Moore Street (S)	1	L/R	1	0	0.06
Junction 4 (Signalised T-junction)	Parnell Street (E)	2	S	1	0.22	0.07
		LUAS	R	0	0	0
	Parnell Street (W)	1	S	0	0	0
	Dominick Street Upper (N)	1	L	7	0.27	1.6
		LUAS	L	0	0	0

Table 13.16: Predicted Impact During the Construction Stage.

13.5.1.1.15 Consultations

An essential element of the planning stage for Dublin Central was a series of consultations with the Transportation Department, Dublin City Council (DCC) and with Transport Infrastructure Ireland (Luas and Metro).

The meetings which were held between September 2020 and February 2021 discussed a number of issues relating to the Construction Stage including: -

- Program and phasing.
- Quantum and timing of construction traffic.

- Excavation and dewatering for the Metro Box.
- Interaction of construction vehicles with Luas on Parnell Street.
- Haul routes.
- Parking for construction workers during construction.
- Construction access from O'Connell Street Upper.

Arising from the meetings, construction traffic was identified as the main traffic related issue to be addressed for the Construction Stage.

13.5.1.1.16 Potential Impacts

The potential impacts during the Construction Stage arising from the proposed redevelopment of Dublin Central are set out below: -

- Non-compliance with the Construction Traffic Management Plan and / or the Construction Management & Waste Management Plan including adherence to the HGV routes designated by Dublin City Council for the City Centre. could lead to traffic delays / congestion and endanger vehicle, cycle, and pedestrian safety.
- The volume of construction traffic on Parnell Street could lead to vehicular delays.
- Reducing the width of the road carriageway on Parnell Street to facilitate hoarding, scaffolding or other construction works could lead to vehicular delays.
- Reducing the width of the road carriageway on Henry Street to facilitate hoarding, scaffolding or other construction works could lead to vehicular delays before 11h00 and pedestrian delays after 11h00.
- Reducing the width of the footpath on Moore Street to facilitate hoarding, scaffolding and other construction works could restrict street trading and cause pedestrian delays after 11h00.
- Reducing the width of the carriageway on O'Rahilly Parade, Moore Lane, and Henry Place to facilitate hoarding, scaffolding and other construction works could lead to vehicular delays for existing users.
- Temporary closure of O'Rahilly Parade, Moore Lane and Henry Place to pedestrians could lead to additional walking time for pedestrians.
- The use of improperly designed access and egress points to the site for the development could endanger vehicle, cycle, and pedestrian safety.
- HGVs waiting on public roads outside the site could lead to traffic delays and congestion.
- No check(s) on each departing vehicle at the exit from site onto the public road could lead to the deposition of demolition material, mud and/or debris onto the public roads.
- Non-compliance with DCC regulations for HGVs could endanger vehicle, cycle, and pedestrian safety.
- The installation of underground services including drainage and watermains particularly on O'Rahilly Parade, Moore Lane and Henry Place could lead to vehicular delays, congestion, or diversion.

The impacts of each or all of (a) –(l) listed above are likely to be slight negative and short term.

13.5.1.2 Operational Stage

13.5.1.2.1 Methodology

The impact of the Operational Stage was assessed by comparing the trips generated by the completed development with the traffic on the adjoining roads.

13.5.1.2.2 Trip Generation

Arising from the minimal provision of car parking and the high public transport provision, vehicle trip generation from Dublin Central will be extremely low. As a result, the modal split for the private car will be significantly less than for other developments in the Dublin area.

At Dublin Central, trips will be generated the 26 car parking spaces at basement level and the service / delivery vehicles supporting the development. These trips are presented in Table 13.17.

From Table 13.17, it will be seen that the traffic predicted to be generated during the Operational Stage comprises a total of 72 movements during the critical AM peak hour (44 arrivals and 28 departures) and 38 movements during the PM peak hour (10 arrivals and 28 departures).

Time	AM Peak Hour 08h00 -09h00		PM Peak Hour 17h00 -18h00	
Mode	Arrivals	Departures	Arrivals	Departures
Cars	20	4	4	20
Deliveries	17	17	2	2
Local /Other	8	8	4	4
Total	45	29	10	28

Table 13.17 : Summary of Generated Trips for AM and PM Peak Hours – Dublin Central Masterplan Site.

13.5.1.2.3 Trip Distribution

In this EIAR, it has been assumed that 100% of the cars arriving to the 26 car parking spaces at basement level will arrive from Parnell Street via Moore Street, O'Rahilly Parade and Moore Lane. Departure would be via Moore Lane to Parnell Street.

It has also been assumed that 50% of the service vehicles will arrive from O'Connell Street Upper via Henry Street into Henry Place. The remaining 50% would arrive from Parnell Street via Moore Street into O'Rahilly Parade. Departures would be 50% to Henry Street and 50% to Parnell Street from Moore Lane.

The trips generated by the development during the AM Peak Hour 08h00-09h00 are presented in Figure 13.28.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

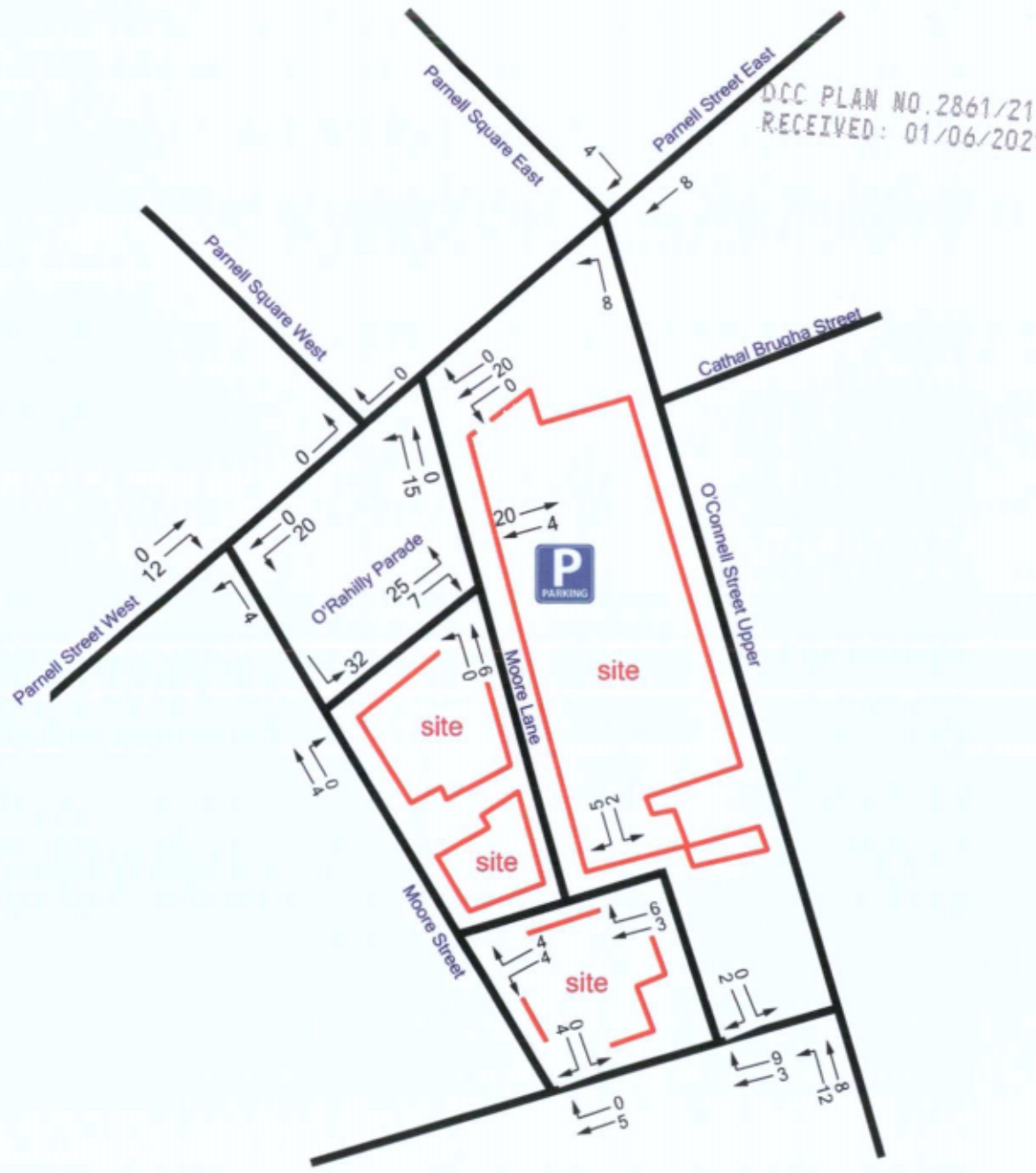

Figure 13.28: Development Trips AM Peak Hour 08h00 – 09h00.

13.5.1.2.4 Traffic Impact

By comparing the generated traffic (Figure 13.28) with the existing traffic surveyed by DCC In February 2020 (Figure 13.7), it will be seen that the trips generated by the development (Figure 13.29) are less than 5% of the traffic on the surrounding streets.

Since the vehicle trips expected to be generated by the Proposed Development during the Operational Stage will not exceed the 5% threshold for junction modelling as set out under the Traffic and Transport Assessment Guidelines (TII/NRA, May 2014). It can therefore be concluded that a Traffic Assessment is not required for the Operational Stage and that there will be minimal traffic impact on the surrounding road network post construction.

13.5.1.2.5 Consultations

An essential element of the planning stage for Dublin Central was a series of consultations with the Transportation Department, Dublin City Council (DCC) and with Transport Infrastructure Ireland (Luas and Metro).

The meetings which were held between September 2020 and February 2021 discussed a number of issues including: -

- Development mix and quantum
- Basement parking and access (car lifts).
- Cycle parking.
- Servicing.
- Moore Street traders.
- The timeline for making the planning application.

Arising from the meetings, servicing was identified as the main traffic related issue to be addressed for the Operational Stage.

13.5.1.2.6 Potential Impacts

The potential impacts during the Operational Stage arising from the proposed redevelopment of Dublin Central are set out below.

- The development of the O'Connell Street Upper station on the proposed Metrolink line under Dublin Central will lead to a significant increase in public transport capacity for the surrounding area.
- Removal the existing car parking on Moore Lane could lead to an increased demand for car parking in the surrounding area.
- The existing passenger demand and the future combined provision of Bus Connects, Metrolink, Strategic Green Route, GDA Cycle Network, Strategic Pedestrian Route etc. in the surrounding area when taken together could cause the combined operation of these facilities to exceed the environmental and transportation capacity of the surrounding area. Unless the intensification of future public transport services is limited to its environmental and transportation capacity, any impact is likely to be cumulative negative long term.

The proposed mitigation measures and the predicted impact of these potential impacts are addressed below.

13.5.1.3 Cumulative Development

13.5.1.3.1 Construction Stage

The Potential Impact of the Cumulative Development arising from the Construction Stage is the same as the Potential Impact of the Proposed Development described in Section 13.5.1.1

13.5.1.3.2 Operational Stage

The Potential Impact of the Cumulative Development arising from the Operational Stage is the same as the Potential Impact of the Proposed Development described in Section 13.5.1.2.

13.5.1.3.3 Do Nothing Impact

In the event that the Dublin Central development and the Metrolink Station do not proceed, the transportation environment in the surrounding area will remain as existing.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

In this scenario, there will be no Metrolink Station in O'Connell Street Upper nor will there be a public plaza between O'Connell Street Upper and Moore Street.

The existing lanes at O'Rahilly Parade, Moore Lane and Henry Place will remain in their current dilapidated state with inadequate carriageways and no footpaths.

Finally, public transport services including Dublin Bus and the Luas Green Line should continue to operate as at present.

Overall, the do-nothing impact will be to retain the existing poor environment for cyclists and pedestrians between O'Connell Street Upper and Moore Street.

13.5.2 Proposed Development – Site 3, 4 & 5

13.5.2.1 Construction Stage

The Potential Impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the Potential Impacts of the Proposed Development (Dublin Central Masterplan Site) described in Section 13.5.1.1.1.

13.5.2.2 Operational Stage

13.5.2.2.1 Trip Generation

Arising from the minimal provision of car parking and the high public transport provision, vehicle trip generation from Sites 3, 4 and 5 will be extremely low. As a result, the modal split for the private car will be significantly less than for other developments in the Dublin area. Within Sites 3, 4 and 5, trips will be generated only by the service / delivery vehicles supporting the development. These trips are presented in Table 13.18.

Time	AM Peak Hour 08h00 -09h00		PM Peak Hour 17h00 -18h00	
Mode	Arrivals	Departures	Arrivals	Departures
Cars	-	-	-	-
Deliveries	8	8	1	1
Local /Other	8	8	4	4
Total	16	16	5	5

Table 13.18: Summary of Generated Trips for Am and PM Peak Houses – Sites 3, 4 and 5

13.5.2.2.2 Trip Distribution

For the purpose of this EIAR, it has been assumed that 50% of the service vehicles will arrive from O'Connell Street Upper via Henry Street into Henry Place before 11h00. The remaining 50% would arrive from Parnell Street via Moore Street into O'Rahilly Parade. Departures would be 50% to Henry Street before 11h00 and 50% to Parnell Street from Moore Lane.

The trips generated by the development during the AM Peak Hour 08h00-09h00 are presented in Figure 13.29.



Figure 13.29: Development Trips AM Peak Hour 08h00 – 09h00.

13.5.2.3 Cumulative Development

13.5.2.3.1 Construction Stage

The Potential Impact of the Cumulative Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Potential Impact of the Proposed Development (Dublin Central Masterplan Site) described in Section 13.5.1.3.1.

13.5.2.3.2 Operational Stage

The Potential Impact of the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Potential Impact of the Dublin Central Masterplan described in Section 13.5.1.3.2.

13.5.2.4 Do Nothing Impact

The Do-Nothing Impact of the Cumulative Development arising from the non-development of the Proposed Development (Sites 3, 4 and 5) will be the same as the Do-Nothing Impact of the Dublin Central Masterplan described in Section 13.5.1.3.3.

13.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

13.6.1.1 Dublin Central Masterplan

13.6.1.1.1 Construction Stage

The primary mitigation measure during the Construction Stage will be the implementation of the *Construction Traffic Management Plan* and the *Construction Management & Waste Management Plan*.

This will require all deliveries to and collection from the subject site to comply with the DCC requirements for HGV movements including the use of the Designated HGV Routes illustrated in Figure 13.2.

Two construction routes to the site have been identified both to Parnell Street. One will be from Dorset Street via Dominick Street and one from Summerhill via Parnell Street.

Proposal for local traffic management during the various stages of construction have also been prepared and will be incorporated in the detailed *Construction Traffic Management Plan* to be prepared by the appointed Contractor in conjunction with Dublin City Council for approval.

Traffic and other movements on the road network during the Construction Stage will be managed by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

During the Construction Stage, the appointed Contractor will be required to maintain access along Moore Lane and Henry Place to existing properties at the times currently permitted by Dublin City Council or as may otherwise be agreed with the property owners and DCC.

13.6.1.1.2 Operational Stage

The primary mitigation measure during the Operational Stage will be the implementation of the Travel Plan for Dublin Central and in particular the Action Plan section of the Travel Plan which will implement the management of travel demand.

Mitigation measures to limit the impact of the future intensification of public transport services through Bus Connects and Metrolink, are outside the control of the Dublin Central project.

13.6.1.2 Cumulative Development

13.6.1.2.1 Construction Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 13.6.1.1.1.

13.6.1.2.2 Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 13.6.1.1.2.

13.6.2 Proposed Development – Site 3, 4 & 5

13.6.2.1 Construction Stage

The Mitigation Measures for the Proposed Development arising from the Construction Stage of the Proposed Development will be the same as the Mitigation Measures for the Dublin Central Masterplan described in Section 13.6.1.1.1.

13.6.2.2 Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Mitigation Measures for the Dublin Central Masterplan described in Section 13.6.1.1.2.

13.6.2.3 Cumulative Development

13.6.2.3.1 Construction Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage of the Proposed Development will be the same as the Mitigation Measures for the Dublin Central Masterplan described in Section 13.6.1.2.1.

13.6.2.3.2 Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Mitigation Measures for the Dublin Central Masterplan described in Section 13.6.1.2.2.

13.7 RESIDUAL IMPACT

13.7.1 Dublin Central Masterplan

13.7.1.1 Construction Stage

13.7.1.1.1 Car Parking

During the Construction Stage, there will be a permanent loss of 160no. car parking spaces on the subject site currently accessed from O'Rahilly Parade and Moore Lane. The reduction in car parking is predicted to be a **permanent long-term slight** impact which will be ameliorated by the high provision of public transport in the surrounding area.

13.7.1.1.2 Traffic Flow / Speed

The presence of construction traffic on the surrounding streets during the Construction Stage is not expected to lead to significant delays to vehicular traffic including public transport. Construction traffic is predicted to generate a temporary **slight negative, short term** impact during the construction site.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

13.7.1.1.3 Diversion of Traffic

No traffic diversions are proposed on Parnell Street or O'Connell Street Upper. Local traffic diversions could occur on O'Rahilly Parade, Moore Lane and Henry Place which could lead to a temporary **slight negative, short term** impact during the Construction Stage.

13.7.1.1.4 Delays to Public Transport

No delays or disruption to bus or Luas services are predicted. Some delays may occur to bus or Luas services on Parnell Street and O'Connell Street Upper northbound due to construction traffic for Dublin Central using Parnell Street to access the development site. This impact is expected to be **temporary, short-term, slight,** and **negative.**

13.7.1.1.5 Capacity of Public Transport

Due to the proposed non-provision of car parking on-site, there is likely to be an increased demand for public transport from construction workers. The impact of the additional passenger demand is expected to be **temporary, short-term, slight,** and **negative.**

13.7.1.1.6 Cycle and Pedestrian

During construction works for the installation of underground services on the public streets, temporary facilities will be required to be provided by the main contractor to maintain cycle connectivity and pedestrian access. These facilities will be provided in accordance with the Construction Management & Waste Management Plan and the Construction Traffic Management Plan. The impact is predicted to be **temporary, short-term, slight,** and **negative**.

13.7.1.1.7 Overall

Overall, the impact of the Construction Stage on the transportation environment in the area of the subject site is predicted to be **temporary, short-term, slight**, and **negative**.

13.7.1.2 Operational Stage

13.7.1.2.1 Car Parking

The loss of 160 car parking spaces on Moore Lane will result in the permanent loss of car parking revenue to the operators together with an increased demand on other car parking in the surrounding area, primarily off-street. The loss of car parking is likely to be a **permanent, long-term, slight**, and **negative impact** which will be ameliorated by the high provision of public transport in the surrounding area.

13.7.1.2.2 Traffic Flow / Speed

No works are proposed to the carriageways or junctions on O'Connell Street Upper, Parnell Street or Moore Street. The results of the traffic modelling undertaken demonstrates that the surrounding street network will operate without any material or significant impact on the road infrastructure. As a result, the Proposed Development is predicted to have a **permanent, neutral, long term slight** and **impact** on traffic flows and speeds on O'Connell Street Upper and Parnell Street.

13.7.1.2.3 Diversion of Traffic

No traffic diversions are proposed on Parnell Street or O'Connell Street Upper. Permanent reversal of traffic flow from one-way southbound to one-way northbound is proposed on the northern section of Moore Lane. Pedestrianisation is proposed on Henry Place and on the southern section of Moore Lane. These changes are predicted to have a **permanent, long term, moderate** and **positive impact** on the transportation network.

13.7.1.2.4 Delays to Public Transport

No delays or disruption to bus or Luas services are predicted. The impact of the development is predicted to be **permanent, long term, imperceptible** and **neutral.**

13.7.1.2.5 Capacity of Public Transport

The commissioning of Metrolink and the high level of public transport usage by staff, guests, and residents at Dublin Central are predicted to **create a permanent, long term, significant** and **positive impact** on public transport in the City Centre.

13.7.1.2.6 Cycle and Pedestrian

The proposed pedestrian area on Moore Lane and Henry Place in conjunction with the extensive provision of cycle parking are predicted to create **a permanent, long term, significant** and **positive impact** on the pedestrian and cycle environment in the City Centre.

13.7.1.2.7 Overall

Overall, the impact of the Operational Stage on the transportation environment in the area of the subject site is predicted to be permanent, long-term, slight, and positive.

13.7.1.3 Cumulative Development

13.7.1.3.1 Construction Stage

The Residual Impact for the Cumulative Development arising from the Construction Stage will be the same as the Residual Impact for the Proposed Development described in Section 13.7.1.1.

13.7.1.3.2 Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage will be the same as the Residual Impact for the Proposed Development described in Section 13.7.1.2.

13.7.1.4 Worst Case Impact

Where the various mitigation measures (ameliorative, remedial, reductive, and monitoring) described in Section 13.6 are not implemented correctly or fail, the proposal is likely to have to be a **negative short-term moderate impact** on the transportation environment during the Construction Stage and **a negative long term slight impact** on the transportation environment during the Operational Stage.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

13.7.2 Proposed Development – Site 3, 4 & 5

13.7.2.1 Construction Stage

The Residual Impact for the Proposed Development arising from the Construction Stage of the Proposed Development will be the same as the Residual Impact for the Dublin Central Masterplan Site described in Section 13.7.1.1.

13.7.2.2 Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Residual Impact for the Dublin Central Masterplan Site described in Section 13.7.1.2.

13.7.2.3 Cumulative Development

13.7.2.3.1 Construction Stage

The Residual Impact for the Cumulative Development arising from the Construction Stage of the Proposed Development will be the same as the Residual Impact for the Dublin Central Masterplan Site described in Section 13.7.1.3.1.

13.7.2.3.2 Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Residual Impact for the Dublin Central Masterplan Site described in Section 13.7.1.3.1.

13.7.2.4 Worst Case Impact

The Worst-Case Impact for the Proposed Development will be the same as the Worst-Case Impact for the Dublin Central Masterplan described in Section 13.7.1.4

13.8 MONITORING

13.8.1 Dublin Central Masterplan

13.8.1.1 Construction Stage

The project team for Dublin Central will be tasked to monitor the operation of both the *Construction and Waste Management Plan* and the *Construction Traffic Management Plan*. In particular, any local congestion and / or delays to public transport services on O'Connell Street Upper or Parnell Street should be monitored and the cause(s) of addressed.

Any issues identified, congestion or delays arising should be addressed arising in conjunction with DCC Roads and Traffic.

13.8.1.2 Operational Stage

The management team at Dublin Central will be tasked to monitor the operation of the Travel Plan including public transport demand from Dublin Central. Any issues arising should be advised to DCC and the public transport operators.

The management team should also monitor the operation of Parnell Street and advise DCC Roads and Traffic in relation to any operational or safety issues noted.

13.8.1.3 Cumulative Development

13.8.1.3.1 Construction Stage

The Monitoring for the Cumulative Development arising from the Construction Stage will be the same as the Monitoring for the Proposed Development described in Section 13.8.1.1.

13.8.1.3.2 Operational Stage

The Monitoring for the Cumulative Development arising from the Operational Stage will be the same as the Monitoring for the Proposed Development described in Section 13.8.1.2.

13.8.2 Proposed Development – Site 3, 4 & 5

13.8.2.1 Construction Stage

The Monitoring for the Proposed Development arising from the Construction Stage of the Proposed Development will be the same as the Monitoring for the Dublin Central Masterplan described in Section 13.8.1.1.

13.8.2.2 Operational Stage

The Monitoring for the Proposed Development arising from the Operational Stage of the Proposed Development will be the same as the Monitoring for the Dublin Central Masterplan described in Section 13.8.1.2.

13.8.2.3 Cumulative Development

13.8.2.3.1 Construction Stage

The Monitoring for the Cumulative Development arising from the Construction Stage of the Proposed Development will be the same as the Monitoring for the Dublin Central Masterplan described in Section 13.8.1.3.1.

13.8.2.3.2 Operational Stage

The Monitoring for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Monitoring for the Cumulative Development of the Dublin Central Masterplan described in Section 13.8.1.3.2.

13.9 REINSTATEMENT

13.9.1 Dublin Central Masterplan

13.9.1.1 Construction Stage

Following completion of the Construction Stage, the public streets affected by the development including Parnell Street, O'Rahilly Parade, Henry Place will be reinstated by the appointed Contractor in compliance with the current Code of Practice issued by Dublin City Council and any conditions that may be included in the grant of planning permission for the development.

13.9.1.2 Operational Stage

No reinstatement is proposed during the Operational Stage other than the ongoing maintenance of roads, footpaths, buildings, and services.

13.9.1.3 Cumulative Development

13.9.1.3.1 Construction Stage

The Reinstatement for the Cumulative Development arising from the Construction Stage will be the same as the Reinstatement for the Proposed Development described in Section 13.9.1.1.

13.9.1.3.2 Operational Stage

The Reinstatement for the Cumulative Development arising from the Operational Stage will be the same as the Reinstatement for the Proposed Development described in Section 13.9.1.2.

13.9.2 Proposed Development – Site 3, 4 & 5

13.9.2.1 Construction Stage

The Reinstatement for the Proposed Development arising from the Construction Stage of the Proposed Development will be the same as the Reinstatement for the Dublin Central Masterplan described in Section 13.9.1.3.1.

13.9.2.2 Operational Stage

The Reinstatement for the Proposed Development arising from the Operational Stage of the Proposed Development will be the same as the Reinstatement for the Dublin Central Masterplan described in Section 13.9.1.3.2.

13.9.2.3 Cumulative Development

13.9.2.3.1 Construction Stage

The Reinstatement for the Cumulative Development arising from the Construction Stage of the Proposed Development will be the same as the Reinstatement for the Cumulative Development of the Dublin Central Masterplan described in Section 13.9.1.3.1.

13.9.2.3.2 Operational Stage

The Reinstatement for the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Reinstatement for the Cumulative Development of the Dublin Central Masterplan described in Section 13.9.1.3.2.

13.10 DIFFICULTIES ENCOUNTERED

The difficulties encountered during the preparation of this chapter of the EIAR were primarily related to the impact of the nationwide restrictions imposed to limit the spread of Covid-19.

The on-site activities negatively affected by the restrictions after March 2020 included: -

- Surveys of existing streets and traffic management.
- Observations on the operation of the existing transportation network.
- Observations on traffic speeds, potential safety issues and delays.
- Observations on the operation of the existing public transport in the area of the site.
- Traffic, pedestrian, and cycle surveys.
- Survey of local deliveries.

- Consultations with DCC and TII.

As a result of these restrictions, the preparation of Chapter 13.0 included historic surveys and virtual viewing of the site and surrounding streets.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

14 MATERIAL ASSETS (WASTE)

14.1 INTRODUCTION

This chapter of the EIAR comprises an assessment of the likely impact of the Proposed Development on the waste generated from the Proposed Development, as well as identifying proposed mitigation measures to minimise any impacts. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan which will be assessed also.

This Chapter was prepared by Chonaill Bradley of AWN Consulting. Chonaill Bradley is a Senior Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science. He is an Associate Member of the Institute of Waste Management (CIWM). Chonaill has over seven years' experience in the environmental consultancy sector.

A site-specific Construction and Demolition Waste Management Plan (C&D WMP) has been prepared by AWN Consulting Ltd. to deal with waste generation during the demolition, excavation and construction phase of this project (s) and has been included as Appendix 14.1. The C&D WMP was prepared in accordance with the 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government in July 2006. A separate Operational Waste Management Plan (OWMP) has also been prepared for the operational phase of the development (s) and is included as Appendix 14.2 of this chapter. These documents will ensure the sustainable management of wastes arising at the development in accordance with legislative requirements and best practice standards.

14.2 ASSESSMENT METHODOLOGY

The assessment of the impacts of the Proposed Development arising from the consumption of resources and the generation of waste materials, was carried out considering the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in the C&D WMP and in the OWMP provided in Appendix 14.1 and 14.2.

This Chapter is based on the Proposed Development, as described in Chapter 3: Description of Proposed Development and considers the following aspects: -

- Legislative context.
- Construction phase (including demolition, excavation & construction).
- Operational phase.

A desk study was carried out which included the following: -

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland.
- Description of the typical waste materials that will be generated during the construction and operational phases.
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the demolition, construction and operational phases of the Proposed Development have been calculated. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, the operating phase of this development, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the demolition, construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 14.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 6: Land, Soils and Geology. Chapter 6 of the EIAR also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the Proposed Development.

14.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended).

In addition, the Irish government issues policy documents which outline measures aimed to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, "A Resource Opportunity" in 2012. The need to embed climate action in all strands of public policy aligns with the goals of the European Green Deal.

The strategy for the management of waste from the demolition, excavation and construction phase is in line with the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects published in 2006. The guidance document Construction and Demolition Waste Management: A handbook for Contractors and Site Managers was also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation and guidance is taken from industry guidelines, plans and reports including the EMR Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice, 5. The Dublin City Council (DCC) Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018, the EPA National Waste Database Reports 1998 – 2012 and the EPA National Waste Statistics Web Resource.

14.3 RECEIVING ENVIRONMENT

In terms of waste management, the receiving environment is largely defined by Dublin City Council (DCC) as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021.

The waste management plan sets out the following targets for waste management in the region: -

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.
- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of *"70% preparing for reuse, recycling and other recovery of construction and demolition waste"* (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The Waste Action Plan for a Circular Economy continues with this target of keeping the reuse, recycling and other recovery of construction and demolition waste at or above 70%.

The National Waste Statistics update published by the EPA in August 2020 identifies that Ireland's current progress against this C&D waste target is at 77% and our progress against 'Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' is at 51%. Both of these targets are required to be met by 12 December 2020 in accordance with the requirements of the Waste Framework Directive, however the EPA are yet to confirm that these were met.

The Dublin City Council Development Plan 2016 – 2022 also sets policies and objectives for the DCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, DCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the Eastern-Midlands Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

14.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

14.4.1 Dublin Central Masterplan

A full description of the development can be found in Chapter 3: Description of Proposed Development. The characteristics of the development that are relevant in terms of waste management are summarised below.

14.4.1.1 Demolition Stage

There will be a quantity of waste materials generated from the demolition and renovation of some of the existing buildings and hardstanding areas on site, as well as from the excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific C&D WMP in Appendix 14.1. The C&D WMP provides an estimate of the main waste types likely to be generated during the C&D phase of the Proposed Development. The reuse, recycling/recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 14.1.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	2027.9	0	0.0	85	1723.7	15	304.2
Concrete, Bricks, Tiles, Ceramics	11491.4	30	3447.4	65	7469.4	5	574.6
Plasterboard	901.3	30	270.4	60	540.8	10	90.1
Asphalts	225.3	0	0.0	25	56.3	75	169.0
Metals	3379.8	5	169.0	80	2703.9	15	507.0
Slate	1802.6	0	0.0	85	1532.2	15	270.4
Timber	2703.9	10	270.4	60	1622.3	30	811.2
Asbestos	7.0	0	0.0	0	0.0	100	7.0

Table 14.1: Estimated off-site reuse, recycle and disposal rates for demolition waste.

14.4.1.2 Construction Stage

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

In addition soil, stone, silt, sand and clay will require excavation to facilitate the basement and construction of foundations, along with the installation of underground services. The project engineers (Waterman Group) have estimated 163,490m^3 of material will need to be excavated to do so. There is limited chance for reuse of material onsite and it is envisaged that all material, will need to be removed offsite due to the limited opportunities for reuse on site.

These estimates will be refined prior to commencement of construction, or in the event that the Dublin Central Masterplan is amended. If the material that requires removal from site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011). In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous. Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the construction works are presented in the project-specific C&D WMP. The C&D WMP provides an estimate of the main waste types likely to be generated during the C&D phase of the Proposed Development and these are summarised in Table 14.2.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1631.9	10	163.2	80	1305.5	10	163.2
Timber	1384.6	40	553.9	55	761.5	5	69.2
Plasterboard	494.5	30	148.4	60	296.7	10	49.5
Metals	395.6	5	19.8	90	356.0	5	19.8
Concrete	296.7	30	89.0	65	192.9	5	14.8
Other	741.8	20	148.4	60	445.1	20	148.4
Total	**4945.1**		**1122.5**		**3357.7**		**464.8**

Table 14.2: Estimated off-site reuse, recycle and disposal rates for construction waste

In Addition to Table 14.2 the project engineers have estimated that c. 163,490m^3 of material will require excavation. It is envisaged that all of this material will be removed offsite for appropriate reuse, recovery and / or disposal. These estimates will be refined prior to commencement of construction.

14.4.1.3 Operational Stage

As noted in Section 14.1, an OWMP has been prepared for the development and is included as Appendix 14.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the buildings during the operational phase including dry mixed recyclables, organic waste and mixed non-recyclable waste as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the development of the Dublin Central Masterplan for the main waste types based on the AWN WGM is presented in Table 14.3 below and is based on the uses and areas as advised by the project architects in April 2021.

Waste Type	Waste Volume (m^3/week)			
	Residential Units (combined)	Retail and Café / Restaurant Units (combined)	Hotel Units (Combined)	Office Units (Combined)
Organic Waste	1.14	5.28	2.49	2.81
Dry Mixed Recyclables	8.06	27.23	5.08	22.06
Glass	0.22	2.88	3.52	0.51
Mixed Non-Recyclables	4.24	42.09	5.95	26.77
Confidential Paper	-	-	-	4.19
Cardboard (For Baling)	-	55.65	-	21.34
Plastic (For Baling)	-	18.97	-	18.22
Total	**13.66**	**152.10**	**14.55**	**95.90**

Table 14.3: Estimated waste generation for the Proposed Development for the main waste types.

The residents and tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents and tenants. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). All WSA's can be viewed on the plans submitted with the application.

The OWMP seeks to ensure the development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021 and the DCC waste Bye-laws.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the Proposed Development are summarised below.

14.4.2 Proposed Development Site 3, 4 & 5

A full description of the development can be found in Chapter 3: Description of Proposed Development. The characteristics of the development that are relevant in terms of waste management are summarised below.

14.4.2.1 Demolition Stage

There will be a quantity of waste materials generated from the demolition and renovation of the existing buildings and hardstanding areas on site, as well as from the excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific C&D WMP in Appendix 14.1. The C&D WMP provides an estimate of the main waste types likely to be generated during the C&D phase of the Proposed Development. The reuse, recycling / recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 14.4, 14.5 and 14.6

14.4.2.1.1 Site 3

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	361.8	0	0.0	85	307.6	15	54.3
Concrete, Bricks, Tiles, Ceramics	2050.5	30	615.1	65	1332.8	5	102.5
Plasterboard	160.8	30	48.2	60	96.5	10	16.1
Asphalts	40.2	0	0.0	25	10.1	75	30.2
Metals	603.1	5	30.2	80	482.5	15	90.5
Slate	321.6	0	0.0	85	273.4	15	48.2
Timber	482.5	10	48.2	60	289.5	30	144.7
Asbestos	1.0	0	0.0	0	0.0	100	1.0
Total	**4021.5**		**741.8**		**2792.3**		**487.5**

Table 14.4: Estimated off-site reuse, recycle and disposal rates for demolition waste.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

14.4.2.1.2 Site 4

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	244.4	0	0.0	85	207.7	15	36.7
Concrete, Bricks, Tiles, Ceramics	1384.7	30	415.4	65	900.1	5	69.2
Plasterboard	108.6	30	32.6	60	65.2	10	10.9
Asphalts	27.2	0	0.0	25	6.8	75	20.4
Metals	407.3	5	20.4	80	325.8	15	61.1
Slate	217.2	0	0.0	85	184.6	15	32.6
Timber	325.8	10	32.6	60	195.5	30	97.7
Asbestos	1.0	0	0.0	0	0.0	100	1.0
Total	**2716.1**		**500.9**		**1885.7**		**329.5**

Table 14.5: Estimated off-site reuse, recycle and disposal rates for demolition waste.

14.4.2.1.3 Site 5

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	124.9	0	0.0	85	106.1	15	18.7
Concrete, Bricks, Tiles, Ceramics	707.6	30	212.3	65	459.9	5	35.4
Plasterboard	55.5	30	16.6	60	33.3	10	5.5
Asphalts	13.9	0	0.0	25	3.5	75	10.4
Metals	208.1	5	10.4	80	166.5	15	31.2
Slate	111.0	0	0.0	85	94.3	15	16.6
Timber	166.5	10	16.6	60	99.9	30	49.9
Asbestos	1.0	0	0.0	0	0.0	100	1.0
Total	**1387.4**		**256.0**		**963.5**		**167.9**

Table 14.6: Estimated off-site reuse, recycle and disposal rates for demolition waste.

14.4.2.2 Construction Stage

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

In addition soil, stone, silt, sand and clay will require excavation to facilitate the basement and construction of foundations, along with the installation of underground services.

If the material that requires removal from site is deemed to be a waste, removal an reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011).In order to establish the appropriate reuse, recovery and/or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous. Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the construction works are presented in the project-specific C&D WMP. The C&D WMP provides an estimate of the main waste types likely to be generated during the C&D phase of the Proposed Development and these are summarised in Table 14.7, 14.8 & 14.9.

14.4.2.2.1 Site 3

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	308.4	10	30.8	80	246.7	10	30.8
Timber	261.7	40	104.7	55	143.9	5	13.1
Plasterboard	93.5	30	28.0	60	56.1	10	9.3
Metals	74.8	5	3.7	90	67.3	5	3.7
Concrete	56.1	30	16.8	65	36.5	5	2.8
Other	140.2	20	28.0	60	84.1	20	28.0
Total	**934.7**		**212.2**		**634.6**		**87.9**

Table 14.7: Estimated off-site reuse, recycle and disposal rates for construction waste.

In Addition to Table 14.7 the project engineers have estimated that c. 15,165m^3 of material will require excavation. It is envisaged that all of this material will be removed offsite for appropriate reuse, recovery and / or disposal. These estimates will be refined prior to commencement of construction.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

14.4.2.2.2 Site 4

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	62.3	10	6.2	80	49.9	10	6.2
Timber	52.9	40	21.2	55	29.1	5	2.6
Plasterboard	18.9	30	5.7	60	11.3	10	1.9
Metals	15.1	5	0.8	90	13.6	5	0.8
Concrete	11.3	30	3.4	65	7.4	5	0.6
Other	28.3	20	5.7	60	17.0	20	5.7
Total	**188.9**		**42.9**		**128.2**		**17.8**

Table 14.8: Estimated off-site reuse, recycle and disposal rates for construction waste.

In Addition to Table 14.8 the project engineers have estimated that c. 132 m^3 of material will require excavation. It is envisaged that all of this material will be removed offsite for appropriate reuse, recovery and / or disposal. These estimates will be refined prior to commencement of construction.

14.4.2.2.3 Site 5

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	127.4	10	12.7	80	101.9	10	12.7
Timber	108.1	40	43.2	55	59.4	5	5.4
Plasterboard	38.6	30	11.6	60	23.2	10	3.9
Metals	30.9	5	1.5	90	27.8	5	1.5
Concrete	23.2	30	6.9	65	15.1	5	1.2
Other	57.9	20	11.6	60	34.7	20	11.6
Total	**386.0**		**87.6**		**262.1**		**36.3**

Table 14.9: Estimated off-site reuse, recycle and disposal rates for construction waste.

In Addition to Table 14.9 the project engineers have estimated that c. 5,593m^3 of material will require excavation. It is envisaged that all of this material will be removed offsite for appropriate reuse, recovery and / or disposal. These estimates will be refined prior to commencement of construction.

14.4.2.3 Operational Stage

As noted in Section 14.1, an OWMP has been prepared for the development and is included as Appendix 14.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the buildings during the operational phase including dry mixed recyclables, organic waste and mixed non-recyclable waste as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The residents and tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents and tenants. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). All WSA's can be viewed on the plans submitted with the application.

The OWMP seeks to ensure the development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021 and the DCC waste Bye-laws.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the Proposed Development are summarised below.

14.4.2.3.1 Site 3

The total estimated waste generation for the development of the Dublin Central Site 3 for the main waste types based on the AWN WGM is presented in Table 14.10 below and is based on the uses and areas as advised by the project architects in May 2021.

Waste Type	Waste Volume (m^3/week)		
	Residential Units (combined)	Retail and Café / Restaurant Units (combined)	Hotel Unit
Organic Waste	0.98	0.58	1.04
Dry Mixed Recyclables	6.93	3.06	2.00
Glass	0.19	0.32	2.39
Mixed Non-Recyclables	3.64	4.48	2.02
Confidential Paper	-	-	-
Cardboard (For Baling)	-	6.43	-
Plastic (For Baling)	-	2.11	-
Total	**11.74**	**16.97**	**6.41**

Table 14.10: Estimated waste generation for the Proposed Development for the main waste types.

14.4.2.3.2 Site 4

The total estimated waste generation for the development of the Dublin Central Site 4 for the main waste types based on the AWN WGM is presented in Table 14.11 below and is based on the uses and areas as advised by the project architects in May 2021.

Waste Type	Waste Volume (m^3/week)		
	Residential Units (combined)	Retail and Café / Restaurant Units (combined)	Office Units (Combined)
Organic Waste	0.11	0.47	0.02
Dry Mixed Recyclables	0.80	1.83	0.16
Glass	0.02	0.24	0.01
Mixed Non-Recyclables	0.42	4.82	0.20
Confidential Paper	-	-	0.03
Cardboard (For Baling)	-	3.28	0.16
Plastic (For Baling)	-	1.72	0.14
Total	**1.35**	**12.36**	**0.73**

Table 14.11: Estimated waste generation for the Proposed Development for the main waste types.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

14.4.2.3.3 Site 5

The total estimated waste generation for the development of the Dublin Central Site 5 for the main waste types based on the AWN WGM is presented in Table 14.12 below and is based on the uses and areas as advised by the project architects in May 2021.

Waste Type	Waste Volume (m^3/week)	
	Retail and F&B Units (combined)	Office Units (Combined)
Organic Waste	0.20	0.87
Dry Mixed Recyclables	1.29	4.06
Glass	0.11	0.09
Mixed Non-Recyclables	2.73	4.69
Confidential Paper	-	3.27
Cardboard (For Baling)	2.16	3.79
Plastic (For Baling)	0.69	3.70
Total	**4.33**	**20.46**

Table 14.12: Estimated waste generation for the Proposed Development for the main waste types.

14.5 POTENTIAL IMPACTS

14.5.1 Dublin Central Masterplan

14.5.1.1 Construction Stage

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction phase. General housekeeping and packaging will also generate waste materials as well as typical municipal wastes generated by construction employees including food waste. Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The indirect effect of litter issues is the presence of vermin within the development and the surrounding areas. However, in the absence of mitigation, the effect on the local environment is likely to be **short term, significant** and **negative.**

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste and result in indirect negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long term, significant** and **negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and/or disposal as appropriate. There are numerous licensed waste facilities in the Eastern Midlands region which can accept hazardous and non-hazardous waste materials and acceptance of waste from the Proposed Development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of demolition and construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local environment is likely to be **short term, significant** and **negative**.

There is a quantity of excavated material which will need to be excavated to facilitate the Proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 6: Land, Soils & Geology. It is anticipated that c. 163,490m^3 of material will need to be excavated to do so. There is limited chance for reuse of material onsite and it is envisaged that all material, will need to be removed offsite due to the limited opportunities for reuse on site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short term, significant** and **negative**.

14.5.1.2 Operational Stage

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. However, in the absence of mitigation, significant effects are not likely. The effect is likely to be **long term, non-significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas. However, in the absence of mitigation, the effect on the local environment is likely to be **short term**, **significant** and **negative.**

Waste contractors will be required to service the development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local environment is likely to be **long term**, **significant** and **negative**.

14.5.1.3 Do-Nothing Impact

If the Proposed Development was not to go ahead there would be no demolition, construction or operational waste generated at this site. There will would be a **neutral** effect on the environment.

14.5.2 Proposed Development – Site 3, 4 & 5

14.5.2.1 Construction Stage

The Proposed Developments will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction phase. General housekeeping and packaging will also generate waste materials as well as typical municipal wastes generated by construction employees including food waste. Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The indirect effect of litter issues is the presence of vermin within the development and the surrounding areas. However, in the absence of mitigation, the effect on the local environment is likely to be **short term, significant** and **negative**.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste and result in indirect negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long term, significant** and **negative.**

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal as appropriate. There are numerous licensed waste facilities in the Eastern Midlands region which can accept hazardous and non-hazardous waste materials and acceptance of waste from the Proposed Development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of demolition and construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local environment is likely to be **short term, significant** and **negative.**

There is a quantity of excavated material which will need to be excavated to facilitate the Proposed Development.

A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 6: Land, Soil & Geology. It is anticipated that 15,165m^3 excavated material will need to be removed offsite from Site 3, c. 132m^3 from Site 4 and c. 5,593m^3 from Site 5. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short term, significant and negative**.

14.5.2.2 Operational Stage

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. However, in the absence of mitigation, significant effects are not likely. The effect is likely to be **long term, non-significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas. However, in the absence of mitigation, the effect on the local environment is likely to be **short term**, **significant** and **negative**.

Waste contractors will be required to service the development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local environment is likely to be **long term**, **significant** and **negative**.

14.5.2.3 Do-Nothing Impact

If the Proposed Development was not to go ahead there would be no demolition, construction or operational waste generated at this site. There will would be a **neutral** effect on the environment.

14.5.3 Cumulative

14.5.3.1 Construction Stage

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development. Due to the high number of waste contractors in the Dublin region there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, not significant and negative**.

14.5.3.2 Operational Stage

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

14.5.3.3 Do-Nothing Impact

If the Proposed Development was not to go ahead there would be no demolition, construction or operational waste generated at this site. There will would be a **neutral** effect on the environment.

14.6 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

14.6.1 Dublin Central Masterplan

14.6.1.1 Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the requirements of the guidance document issued by the DoEHLG and is included as Appendix 14.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phase of the Proposed Development. Prior to commencement, the contractor(s) will be required to refine / update the C&D WMP or submit an addendum to C&D WMP to DCC to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: -
  - Concrete rubble (including ceramics, tiles and bricks).
  - Plasterboard.
  - Metals.
  - Glass.
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the demolition and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the demolition and construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the EMR Waste Management Plan (2015 – 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

14.6.1.2 Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and abiding by the DCC waste bye-laws.

In addition, the following mitigation measures will be implemented: -

- On-site segregation of all waste materials into appropriate categories including (but not limited to): -
  - Organic waste.
  - Dry Mixed Recyclables.

- Mixed Non-Recyclable Waste.
- Glass.
- Waste electrical and electronic equipment (WEEE).
- Batteries (non-hazardous and hazardous).
- Cooking oil.
- Light bulbs.
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
- Furniture (and from time to time other bulky waste).
- Abandoned bicycles.

- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 – 2021)* and the DCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

14.6.2 Proposed Development – Site 3, 4 & 5

14.6.2.1 Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the requirements of the guidance document issued by the DoEHLG and is included as Appendix 14.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phase of the Proposed Development. Prior to commencement, the contractor(s) will be required to refine / update the C&D WMP or submit an addendum to C&D WMP to DCC to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: -
  - Concrete rubble (including ceramics, tiles and bricks).
  - Plasterboard.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

  - Metals.
  - Glass.
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the demolition and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the demolition and construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the EMR Waste Management Plan (2015 – 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

14.6.2.2 Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and abiding by the DCC waste bye-laws.

In addition, the following mitigation measures will be implemented: -

- On-site segregation of all waste materials into appropriate categories including (but not limited to): -
  - Organic waste.
  - Dry Mixed Recyclables.
  - Mixed Non-Recyclable Waste.
  - Glass.
  - Waste electrical and electronic equipment (WEEE).
  - Batteries (non-hazardous and hazardous).

- Cooking oil.
- Light bulbs.
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
- Furniture (and from time to time other bulky waste).
- Abandoned bicycles.

- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 – 2021)* and the DCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

14.7 RESIDUAL IMPACT

14.7.1 Dublin Central Masterplan

14.7.1.1 Construction Stage

A carefully planned approach to waste management as set out in Section 14.6 and adherence to the C&D WMP during the demolition, excavation and construction phase will ensure that the effect on the environment will be **short-term, imperceptible** and **neutral**.

14.7.1.2 Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 14.6 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term**, **imperceptible** and **neutral**.

14.7.1.3 Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in Section 14.5.

14.7.2 Proposed Development – Site 3, 4 & 5

14.7.2.1 Construction Stage

A carefully planned approach to waste management as set out in Section 14.6 and adherence to the C&D WMP during the demolition, excavation and construction phase will ensure that the effect on the environment will be **short-term**, **imperceptible** and **neutral**.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

14.7.2.2 Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 14.6 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term**, **imperceptible** and **neutral**.

14.7.2.3 Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in Section 14.5.

14.7.3 Cumulative

14.7.3.1 Construction Stage

During the demolition, excavation and construction phase waste management will be carefully managed as set out in Section 14.6 and the C&D WMP. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **short-term, imperceptible** and **neutral**.

14.7.3.2 Operational Stage

During the Operational phase waste management will be carefully managed as set out in Section 14.6 and the OWMP. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral**.

14.7.3.3 Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in Section 14.5.

14.8 MONITORING

14.8.1 Dublin Central Masterplan

The management of waste during the demolition, excavation and construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the building management company and the nominated waste contractor(s).

14.8.1.1 Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the demolition, excavation and construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

14.8.1.2 Operational Stage

During the operational phase, waste generation volumes should be monitored against the predicted additional waste volumes outlined in Table 14.10, 14.11 & 14.12. There may be opportunities to reduce the number of bins, waste collections and equipment required in the WSAs where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

14.8.2 Proposed Development – Site 3, 4 & 5

The management of waste during the demolition, excavation and construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the building management company and the nominated waste contractor(s).

14.8.2.1 Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the demolition, excavation and construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

14.8.2.2 Operational Stage

During the operational phase, waste generation volumes should be monitored against the predicted additional waste volumes outlined in Tables 14.10, 14.11 and 14.2. There may be opportunities to reduce the number of bins, waste collections and equipment required in the WSAs where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

14.9 REINSTATEMENT

14.9.1 Dublin Central Masterplan

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.

14.9.2 Proposed Development – Site 3, 4 & 5

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.

14.10 DIFFICULTIES ENCOUNTERED

There were no difficulties encountered during the production of this chapter of the EIAR.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15 CULTURAL HERITAGE (ARCHITECTURAL)

15.1 Introduction

15.1.1 General

Molloy & Associates were engaged as architectural heritage consultants to assess architectural heritage impacts likely to arise from the proposed development of the Dublin Central Masterplan Area.

The Dublin Central Masterplan Area is divided into six distinct sites intended to be developed by Dublin Central GP Limited, who acquired the Masterplan area in 2016, with a view to redesigning a permitted large-scale redevelopment within a renewed Masterplan notwithstanding an inherited permission to develop the site under DCC Reg. Ref. 2479/08 / An Bord Pleanála Reg. Ref. PL29N.232347.

The development of design proposals for each of the six sites (Sites 1, 2AB, 2C, 3, 4 and 5) within the Dublin Central Masterplan area was based on a Masterplan designed by Acme. The Masterplan area broadly reflects the red line boundary of the permitted development, with some notable deviations; the State ownership of Nos 14-17 (and 18a) Moore Street; the addition of Patrick Conways Public House at No.70 Parnell Street and No.61 O'Connell Street.

The scope of this Chapter focuses principally on Sites 3, 4 and 5, yet broadly considers their development in context with the intended future development of Sites 1, 2AB and 2C.



Figure 15.1.1: Sites 3 (red), 4 (pink) and 5 (green), in context with its urban environment and the Dublin Central Masterplan area.

Sites 3, 4 and 5 are bounded by Henry Street to the south, Moore Lane and Henry Place to the east, Moore Street to the west and O'Rahilly Parade to the north. The mixed-use development of the combined sites proposes the introduction of commercial offices, retail, hotel, residential accommodation, residential support and amenities encompassing selected and conserved retained structures within an improved public realm.

Sites 1 and 2 (2AB / C) in turn are bounded to the north by Parnell Street, to the east by O'Connell Street, to the west by Moore Lane and to the south by O'Connell Street buildings outside the site. These sites are still at design development stage, with planning applications due to be submitted in late Summer 2021.

The delivery of all six sites, together with extensive sections of enclosing public realm in the ownership of the applicant, will realise the all-encompassing ambition of the Masterplan.

This chapter excludes detailed consideration of the intended provision of a MetroLink Station on Sites 2AB and 2C. Statutory assessment of the Station will be submitted by Transport Infrastructure Ireland (TII) separately as part of the application for the Railway Procurement Order application.

15.1.2 Purpose of the Assessment

Chapter 15 of the EIAR qualifies existing inter-relationships between extant fabric and assesses potential impacts in respect of setting and character arising from the combined development of Sites 3, 4 and 5.

It identifies buildings and other features of heritage significance within the Masterplan area as part of the preparation of an overarching dedicated Dublin Central Masterplan Area Conservation Plan. Detailed inventories of each building and plot in Sites 3, 4 and 5 are submitted with their respective planning applications as a baseline for establishing architectural heritage impacts arising from the development of the sites. Correspondingly detailed inventories for building fabric in Sites 1 and 2 will accompany their respective future planning applications.

The Chapter also refers to architectural fabric afforded statutory protection within the environs as a basis for assessment of wider architectural heritage impacts of works peripheral to adjoining protected structures and extending into the public realm.

The assessment also takes into account the partial position of the Masterplan site within a designated Architectural Conservation Area and reviews potential impacts the Masterplan development may present for its character.

15.1.3 Team

This assessment was conducted by Molloy&Associates, collectively authored by the following consultants: -

Archive and Field Research / Recording and Documentation

Rob Goodbody (Sites 1, 3, 4 and 5) *BA(Mod), DipEP, DipABRC, MA, MUBC, MIPI*

Sunni Goodson *BA, Msc Conservation of Historic Buildings, HNC Interior Designer*

Conservation Architects

Maol Íosa Molloy *B.Arch., BSc.Arch., MUBC, Dip.Arb., MRIAI, RIBA, MCI.Arb., Grade 1 Conservation Architect*

Michael O'Boyle *B.Arch., MUBC, MRIAI, Grade 1 Conservation Architect*

Shelley O'Donovan *B.Arch., PGDip., MRIAI, RIBA accredited Conservation Architect, Grade 2 Conservation Architect*

External consultants to team are as follows: -

Historic Urban Landscape Assessment

Dr. John Olley *BEng, PhD*

Forensic Archaeologist

Dr. Jason Bolton *MA, MIAI, PhD*

15.2 Assessment Methodology

15.2.1 General Methodology

The subject chapter in summarising the identification and categorisation of significance of existing buildings/plots within the Masterplan area as expanded in appendices attached to Architectural Heritage Impact Assessments submitted with the planning applications for Sites 3, 4 and 5, describes interactions of the proposed Masterplan development with its receiving architectural heritage environment and comments on potential impacts arising from those interactions.

It follows formats set out in Appendix B of the Architectural Heritage Protection Guidelines for Planning Authorities (Department of Arts, Heritage, and the Gaeltacht, 2011). As part of the preparation of the subject assessment, buildings and open spaces within the Masterplan area were inspected and recorded in the period June 2020-December 2020, observing Covid-19 public health restrictions.

The research approach adopted a robust strategy for building recording and physical investigation to scientifically establish the origin of building fabric insofar as possible. Archival research referencing known architectural, historical and cartographic resources was aligned with measured survey drawings and scans. Detailed land surveys were measured against earlier cartographic records to trace plot developments and inform detailed chronological assessments and inventories specific for each building and plot, which are in turn appended with Architectural Heritage Impact Assessment reports accompanying each planning submission, informing the parameters of the Masterplan development.

The resulting records form a body of work central to an understanding of the value of existing structures on the Masterplan area and how it's reimagining might sit within its important urban context.

A Statement of Significance for each structure, building on baseline documentation, is contained in each application and summarised in Appendix A2 of the Dublin Central Masterplan Area Conservation Plan, see 15.2.2. below.

The chapter includes details of mitigation measures adopted during the design development of the proposed scheme to minimise impacts together with conservation-led recommendations to be adopted in the implementation of the proposed Masterplan development. These measures and recommendations reflecting established good conservation practice are informed by national guidelines and international conservation charters.

15.2.2 Dublin Central Masterplan Area Conservation Plan

In recognition of the cultural and architectural complexity of the Dublin Central Masterplan area, Molloy & Associates following their appointment in May 2020, sought to prepare a Conservation Plan (aligned with the boundaries of the Masterplan area) to set site-specific objectives and recommended policies as a mechanism to frame its appropriate development.

Whilst not having a formal statutory basis, the Conservation Plan identifies specific characteristics of the Masterplan area to an extent that is not addressed in the statutory mechanisms of either the Dublin City Development Plan 2016 – 2022 or O'Connell Street Architectural Conservation Area policies.

As cited above, all buildings and plots within the Masterplan area have been interrogated to inform a detailed appraisal of built fabric, as summarised in Appendix A2 of the Conservation Plan.

The concept of voluntarily commissioning a Conservation Plan for the Masterplan area is an endorsement of a design intention to best reflect the character of the receiving environment in the careful retention of building fabric of interest and in converse facilitate the selection of buildings/ plots that can be sensitively redeveloped, with both conditions merging to generate diverse, but cohesive urbanism.

A Conservation Plan is an internationally recognised methodology used to identify, quantify, and address, complex and sometimes conflicting demands, vulnerabilities and opportunities on buildings and sites of heritage value. In the instance of providing a baseline heritage narrative for the development of the Masterplan design, it was deemed a fitting tool to frame an understanding of heritage complexities particular to the Masterplan area.

In any Conservation Plan, three central issues are explored – What is the significance of the site? What are the vulnerabilities and threats facing the site? What policy recommendations should be adopted to mitigate or address these vulnerabilities and threats?

While an overarching Masterplan concept preceded the preparation of the Dublin Central Masterplan Area Conservation Plan, the introduction of recommendations in the Plan helped refine the Masterplan over the course of wider design team engagement.

The use of the standardised Conservation Plan methodology is thus valid as an impartial mechanism to interrogate conservation issues across the Masterplan area, and was instrumental in the completion of the Masterplan design process, with the resulting policies and recommendations providing a valuable baseline against which impacts of the proposed development can be and have been assessed.

Mindful of the interdependence between the Masterplan and Conservation Plan, Chapter 15 should be read in conjunction with the Dublin Central Masterplan Area Conservation Plan, including its appendices. Assessment of impacts, recommendations and mitigation measures contained in this Chapter, are duly informed by the policies contained in the Plan.

15.2.3 References Consulted

The architectural heritage assessment component of an EIAR examines the character and heritage significance of buildings and other structures within the Masterplan area and in its immediate and wider receiving environs, anticipating potential impacts that the proposed development may present to these structures and places.

Primary sources to ascertain the historic development of the urban environment enclosing the Masterplan area together with the chronological development of each individual plot, with findings in turn determining the significance of all structures include: -

- Dublin Central Masterplan Area Conservation Plan and its appendices (Molloy & Associates Conservation Architects).
- Architectural Heritage Impact Assessment reports for Sites 3, 4 and 5 (Molloy & Associates Conservation Architects)

each of which in turn is based on a review of architectural, engineering and landscape information, and strategies.

Definitive findings determined by relevant design team consultants were reviewed to corroborate architectural heritage-centric research and opinion, with mitigating measures informing the proposed design.

As such, this chapter should also be read in conjunction with related documents identified below, submitted with each planning application and referred to in other chapters of this EIAR: -

- Dublin Central Masterplan Design Statement (Acme Architects).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- EIAR Chapter 12 – Landscape and Visual Impact (ARC Architectural Consultants Limited).
- EIAR Chapter 16 – Cultural Heritage - Archaeology (Courtney Deery Heritage Consultancy Ltd).
- EIAR Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan (Waterman Moylan Consulting Engineers Limited).
- EIAR Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 (Waterman Moylan Consulting Engineers Limited).
- EIAR Appendix 3.3 – Outline Construction & Demolition Management Plan – Site 4 (Waterman Moylan Consulting Engineers Limited).
- EIAR Appendix 3.4 – Outline Construction & Demolition Management Plan – Site 5 (Waterman Moylan Consulting Engineers Limited).

Multiple external sources were consulted but not limited to the following: -

- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out environmental impact assessment (Department of Housing, Planning and Local Government , August 2018).
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000; and the National Inventory of Architectural Heritage.
- Planning and Development Act 2000, as amended.
- Dublin City Development Plan 2016 – 2022.
- Record of Protected Structures (Volume 3 of the Dublin City Development Plan 2016 – 2022).
- Council of Europe Convention for the Protection of the Architectural Heritage of Europe (Granada) 1985, ratified by Ireland in 1991.
- ICOMOS Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas, 2005.
- The Burra Charter, the Australia ICOMOS Charter for Places of Cultural Significance 2013.
- Various historic cartographic sources of the Masterplan area's chronological development.

15.3 Receiving Environment

15.3.1 Dublin Central Masterplan Area

The Dublin Central Masterplan area comprises an expansive (c.2.2 Ha) and complex regeneration project, to be delivered in stages to overcome site and project constraints, the first stage of which is statutory consideration of Sites 3, 4 and 5 of a total of six separate sites. For the purposes of this EIA and as stated above, the development of the remaining Sites 1, 2AB and 2C, whilst mentioned, are not under detailed consideration given that they are still at design stage.

The site-wide cumulative Masterplan has been prepared by Dublin Central GP Limited to set out the overall development vision, encompassing almost entirely of the regeneration three city centre blocks. The area is bounded generally by O'Connell Street Upper and Henry Place to the east, Henry Street to the south, Moore Street to the west and O'Rahilly Parade and Parnell Street to the north. Moore Lane extends south from Parnell Street through the centre of the Masterplan area, as far as its junction with Henry Place.

The Masterplan site is of particular regional and national importance. Its links to the early-eighteenth century urban expansion of the capital city was central to the formation of its distinctive character and indeed the wider city.

The subsequent growth of industrial and retail uses in the introduction of purpose-built shops, markets, factories and associated warehouses all fused with domestic accommodation, encapsulated a vibrant, diverse city in the nineteenth century.

The historic events of 1916 and 1922 centred around this area, with the aftermath of both radically transforming buildings and terraced streetscapes in their subsequent reconstruction.

The architectural and functional importance of O'Connell Street as the national main street and the retail importance of Henry and Moore Streets were pivotal in the emergence and consolidation of commercial activity synonymous with the area's urban and building character. Severely impacted by gradual decline in the last decades of the twentieth century, the area now requires a response to collective and appropriate redevelopment that will balance its urban and historic character with viable uses, amenities and infrastructure.

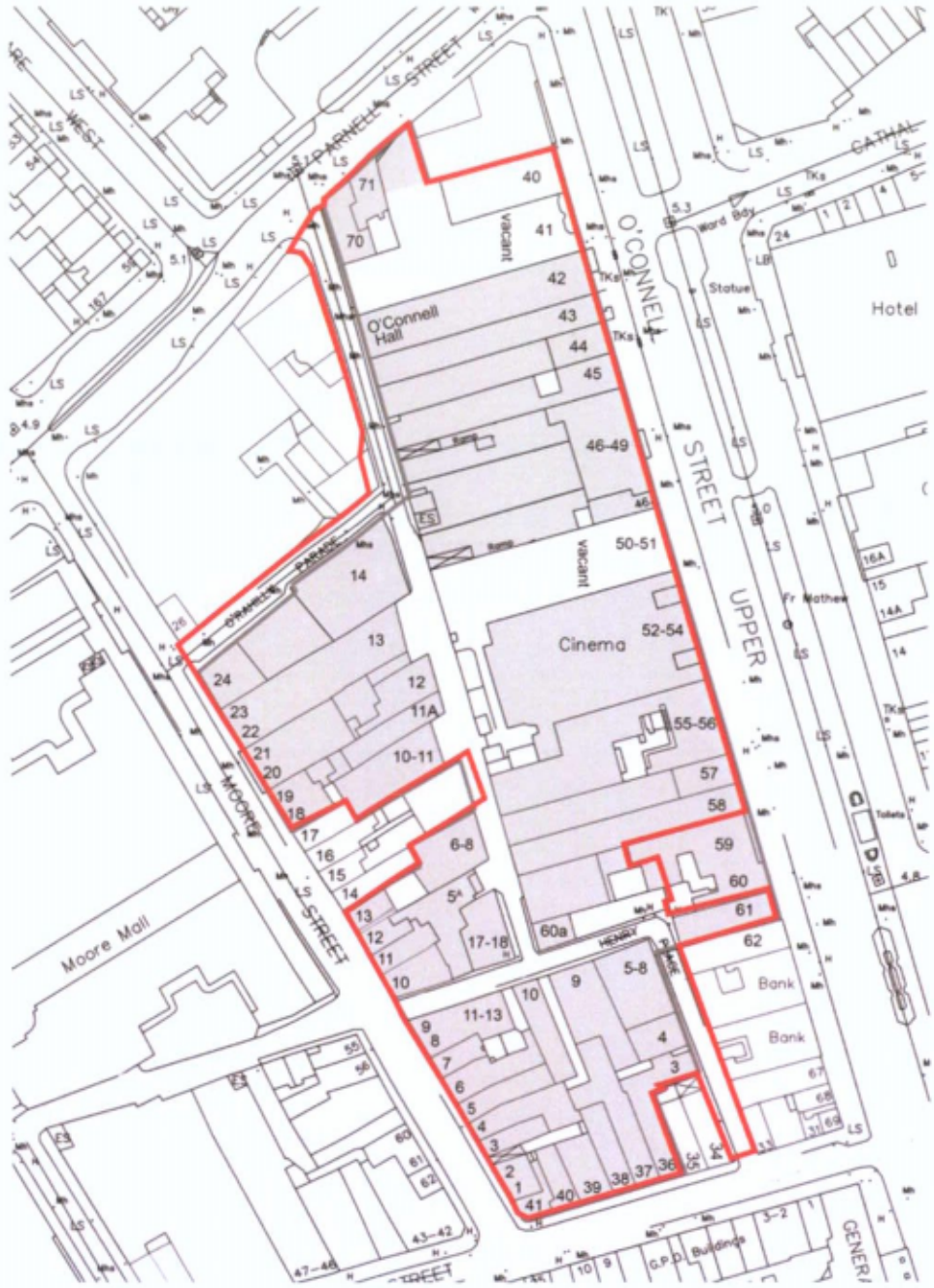

Figure 15.3.1: Masterplan area boundary outlined (red line is for visual demarcation only).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 15.3.2: Aerial photograph of the Masterplan area (red line is for visual demarcation only).

15.3.2 Chronological Development of Sites 3, 4 & 5

Please refer to Appendix A3 of the Dublin Central Masterplan Area Conservation Plan and relevant Architectural Heritage Impact Assessment reports for further detail on the evolution of the enclosing environs and expanded detail on the evolution of each building and its plot.

15.3.2.1 Summary of the Development of the Combined Sites 3,4, And 5 Prior to and Including the 17th Century

During the medieval period the lands around what is now Moore Street and O'Connell Street were parts of the possessions of St. Mary's Abbey. The abbey was located in the Capel Street area and owned a substantial proportion of the lands on the northern side of the River Liffey in Dublin as well as extensive properties elsewhere.

Thomas Phillips's map of the city, prepared in 1685, shows that the development on the northern side of the Liffey spread eastward as far as Liffey Street, with Abbey Street continuing eastward to meet the river. The map was prepared with west at the top and has been turned to orientate northward in the detail reproduced above. The streets seen on the northern side of the river were laid out by Humphrey Jervis in the 1670s.

With the dissolution of the abbey in the sixteenth century the property was correspondingly offered piecemeal to prosperous families loyal to the crown.

Lands to the east of the abbey came into the ownership of the Moore family – probably in the time of Queen Elizabeth, who granted the lands of Millionth Abbey to Sir Edward Moore. Moore's son, Sir Garret Moore, was elevated to the peerage as Baron Moore of Mellifont and subsequently Viscount Moore of Drogheda. Two generations later the third viscount, Henry Moore, was advanced to an earldom, as Earl of Drogheda.



Figure 15.3.3: Detail of Thomas Phillips's map of Dublin, 1685 (British Library).

15.3.2.2 Summary of the Development of the Masterplan Site in the 18th Century

The third Earl of Drogheda, also named Henry, suffered severe losses in the war of 1688-90. It may have been this that spurred the decision to develop the Dublin estates or it may have been seen as an appropriate move given the expansion of the population of the city in the years of peace following that war. Estimates of the population of the city suggest that it rose from 47,000 in 1695 to 75,000 in 1710 and 89,000 in 1715. Whatever the reason, a substantial area was laid out for development in the opening years of the eighteenth century. From 1707 leases were granted of development sites along a grid of newly laid out streets, including Henry Street and Earl Street, as a continuation of Jervis's Mary Street, and an entirely new set of north-south streets to be known as Coles Lane, Moore Street, Prince Eugene Street, Drogheda Street and Marlborough Street. Also included were new east-west streets of modest size such as Melvill's Lane. Most of these names honoured the ground landlord – Henry, Moore, Earl, Drogheda, while Cole was his wife's family name. Marlborough Street and Prince Eugene Street were named in honour of the two greatest military commanders of the day, who together had won a major victory at Blenheim shortly beforehand, in 1704.

Charles Brooking's map, published in 1728, shows the Drogheda estate some twenty years after development had commenced. Brooking drew his map with south at the top and the extract above has been turned to the more conventional position with north at the top. The map suggests that Moore Street had been developed on both sides, as had Henry Street, while a great deal of the northern part of Drogheda Street remained as yet undeveloped and Prince Eugene Street was not depicted. Melvill's Lane is shown parallel to Henry Street to the north, and another street is shown to the south of Great Britain Street, near the top of the extract. This latter street may have been designed as a stable lane and survives in part as O'Rahilly Parade and Findlater Place.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

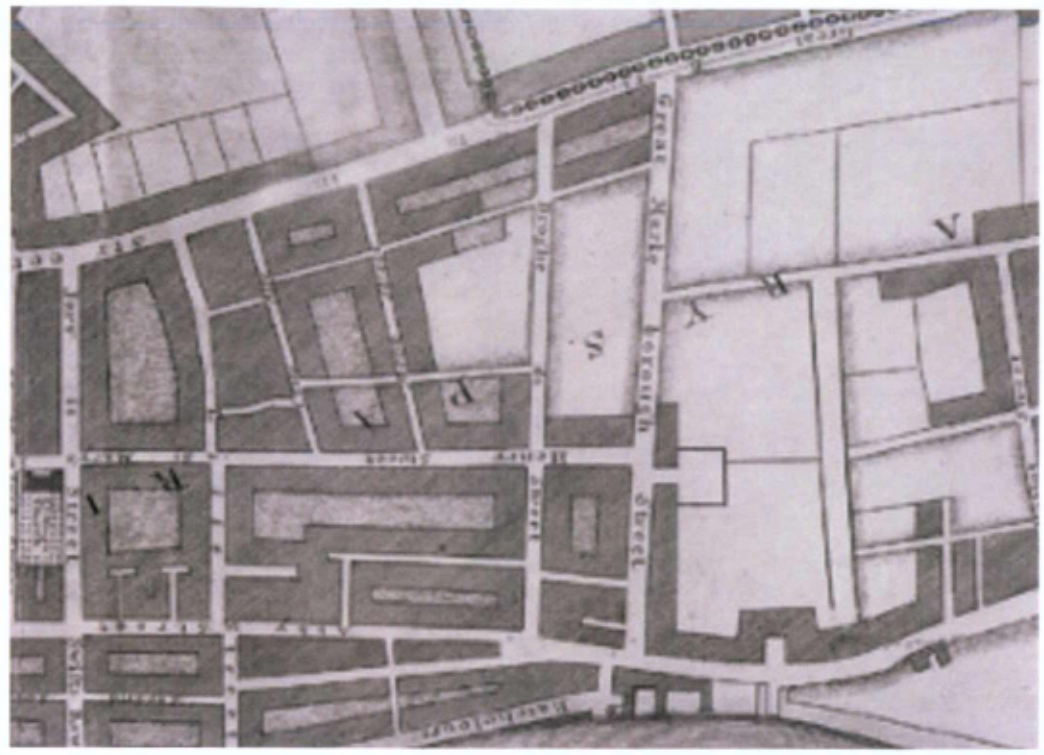

Figure 15.3.4: Detail of Brooking's map of 1728 (RIA).

From the initial impetus for developing the lands in 1707 the Moore family faded from the picture and took it no further. The estate was sold to Luke Gardiner, the most ambitious developer in Dublin at the time. Gardiner had begun his career in the Tara Street area in the early eighteenth century before developing Henrietta Street from the early 1820s. For the next eighty years the Gardiner family developed large swathes of the north city, acquiring additional lands to keep the momentum going. One source states that Luke Gardiner acquired the Drogheda estate on the death of the third Earl in 1714, but it is more likely that it was in 1727, on the death of the fourth Earl. It was from that time that he began to grant leases in the area and it seems unlikely that he had possession of such a large area of land prior to developing Henrietta Street and yet did nothing with it.

While the streets in the Drogheda estate had all been laid out and development had taken place, Gardiner was not content to leave it as it was. His most ambitious project in the estate was to demolish the buildings on the western side of the northern half of the comparatively modest Drogheda Street to increase the width of the street from 14 metres to 47 metres. The work began in the late 1740s and was completed in 1750, when he began to grant leases for building houses along that side. The improved street had carriageways on either side, separated by an enclosed mall for the use of the residents of the street and their servants and guests. At the same time as this development was under way, Gardiner renamed the street Sackville Street, in honour of the Lord Lieutenant, the Duke of Dorset, whose family name it was.

The alterations to Drogheda Street had knock-on effects for the lands to the rear and resulted in alterations to the street pattern to the west of Sackville Street. Prince Eugene Street would now be too close to the rear of the new houses and was closed, except for the southern end, and the grounds of the new houses were extended over it. Instead, a new stable lane was opened up, slightly to the west, running northward from Melvill's Lane to meet Great Britain Street, known today as Parnell Street.



Figure 15.3.5: Detail of Rocque's map of 1756 (Harvard Map Collection).

Rocque's map, published in 1756, shows the layout of the streets in and around the Dublin Central Masterplan Area much as they are today, though in some cases these had only recently been laid out. The western side of Sackville Street was now set back from its original building line, though not all of the sites had yet been built upon. It is notable that the plots at the northern end of Sackville Street extended back to Great Britain Street and there were no buildings fronting that street between Sackville Street and Old Brickfield Lane – which is today's Moore Lane. The buildings on the eastern side of Old Brickfield Lane were not residential and have the appearance of mews buildings associated with the main houses on Sackville Street. As yet no building had taken place on the western side of Old Brickfield Lane. The block surrounded by Off Lane (today's Henry Place), Henry Street and Moore Street was not affected by Gardiner's changes.

15.3.2.3 Summary of the Development of the 'Brickfield'

The brickfield, now occupied by Sites 4 and 5 (and centrally occupied by the National Monument at Nos 14-17 Moore Street) may have been long established by the 18th century as archaeological excavations at Parnell Street and O'Connell Street (O'Donovan 1999, Licence Ref. 98E0357) identified houses dating to the late 17th century. The process of non-mechanised brick making involved digging the brick clay in autumn or winter, tempering the clay, hand-moulding the brick, air drying and then burning them in temporary kilns. In 1771 an Act was passed banning brickmaking within the city. The term 'Old Brick Field ' on Roque's 1756 may suggest that by this stage productions had already ceased on the site. Archaeological excavations commissioned by the then Department of Environment, Heritage and Local Government at Nos.14-17 Moore Street suggest that the brickfield had been opened up as a municipal dump before the houses were build there in the 1770's.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

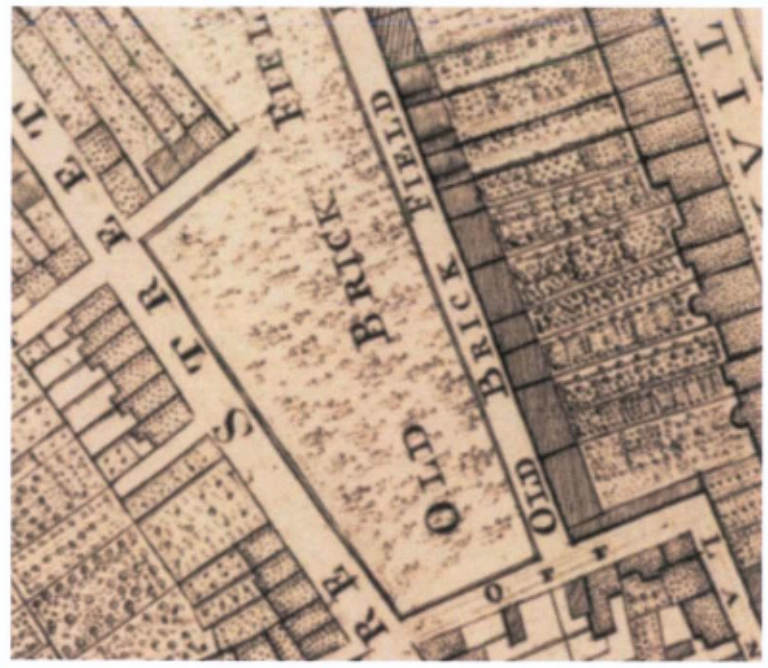

Figure 15.3.6: Detail of Roque's Map 1756, with the approximate boundary of Site 5 outlined.

Bernard Scalé's updated version of Rocque's map, dated 1773, show the development on the site of the former brickfield. The precursor to what is now O'Rahilly Parade, which was a laneway on the 1756 map, has been extended eastwards to Old Brick Field Lane (present day Moore Lane) and is named Sackville Lane. There is a terrace of houses fronting onto Moore Street and also onto the extended Sackville Lane. The stippled hatching on the maps suggest that these buildings were residences, and that the series of building fronting onto Old Brick Field Lane shown hatched in diagonal lines, were warehouses or industrial buildings. The southern boundary of the site aligns with a laneway (yet unnamed) off Old Brick Field Lane which provides access to a series of buildings at what is now the rear of 22-23 Moore Street or 13 Moore Lane.

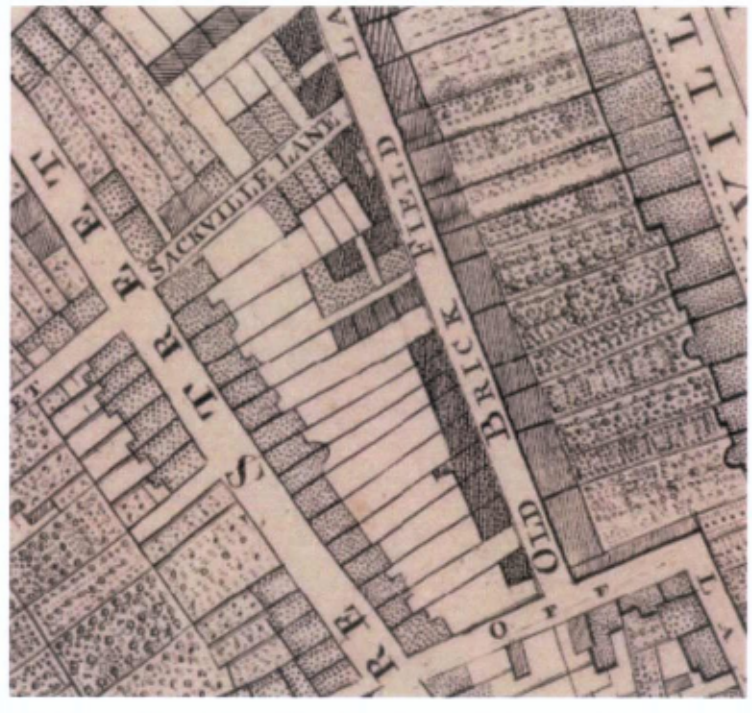

Figure 15.3.7: Detail of Bernard Scale's updated version of Roque's map, dated 1773.

15.3.2.4 Summary of the Development of Sites 4 and 5 in the 19th Century

In the first edition of the Ordnance Survey Map (created 1838 and updated in 1847) the laneway on the southern boundary is labelled Murray's Court. The map depicts the terraced buildings on Moore Street in greater detail and indicates that the buildings at Nos.22-25 Moore Street were a similar typology to the 18th century residences surviving at Nos.14-17 Moore Street With returns to the rear and the suggestion of basements by the depiction of lightwells to the front.

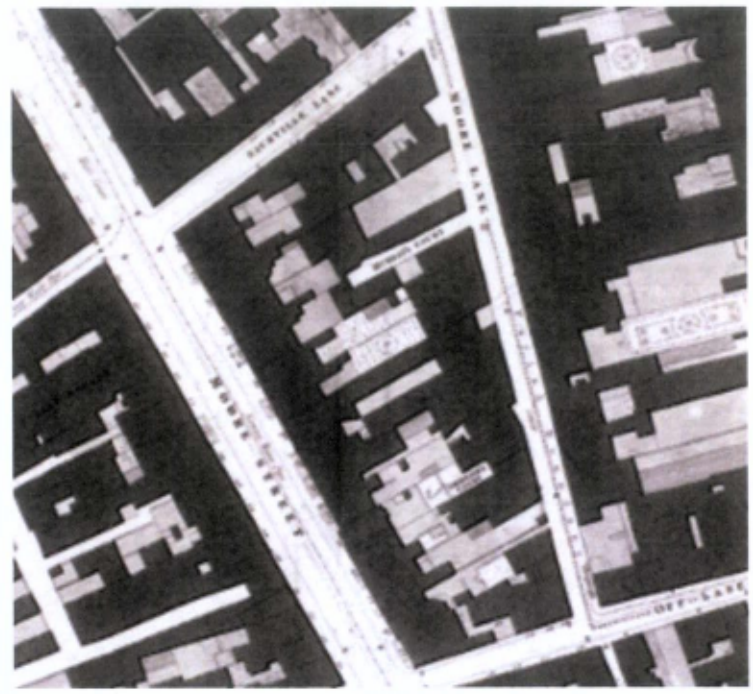

Figure 15.3.8: First edition of the Ordnance Survey Map (created 1838 and updated in 1847).

The Moore Street buildings are unaltered in the 1864 edition. Development to the rear of the sites had intensified to almost entirely cover most plots.

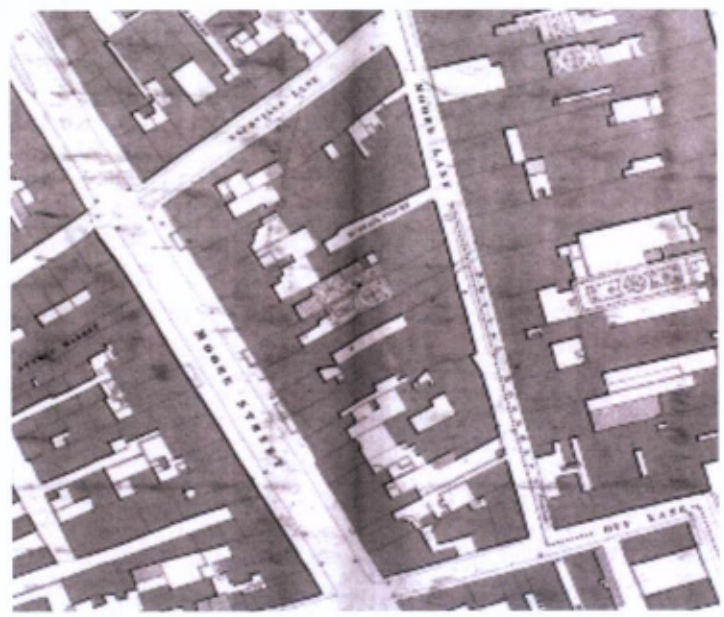

Figure 15.3.9: Second edition of the Ordnance Survey Map (modified in 1864).

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In 1893 Chas E Goad produced a series of maps of Dublin to aid insurance companies in assessing fire risks. The maps identify the individual business and also indicate the building heights, windows and construction materials to provide a rich historical snapshot of the commercial activities in the area at the end of the 19th century. The information on these maps combined with the with property records and early mid-20th century photographs describe the change in occupancy and alterations that occupied the individual building plots during the late 19th century to present.

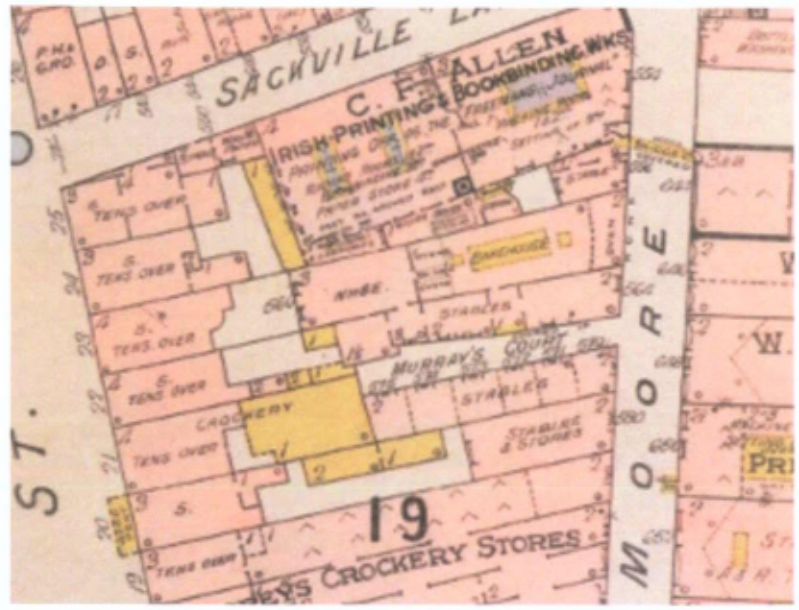

Figure 15.3.10: Extract from Goad's 1893 Insurance Map showing the north end of the block, encompassing Nos.19-25 Moore Lane (British Library).

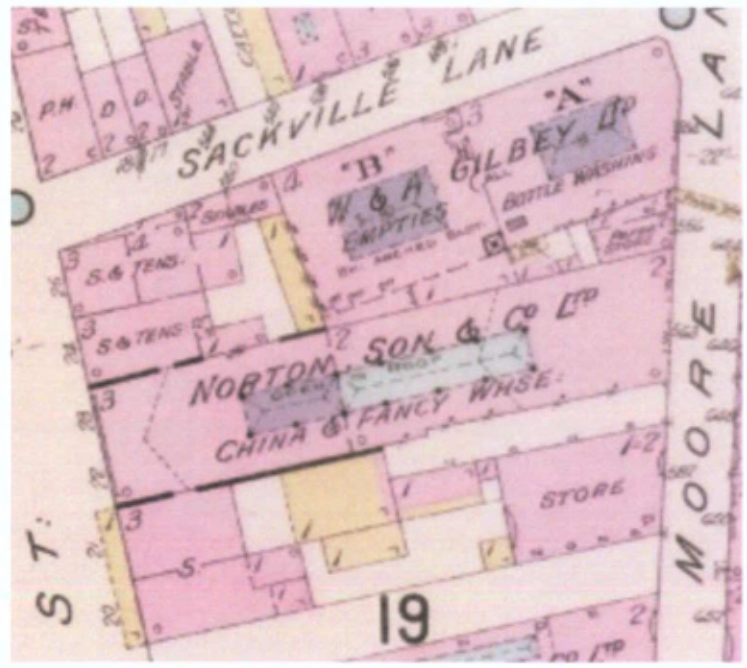

Figure 15.3.11: Similarly positioned extract from Goad's 1926 Insurance Map.

15.3.2.5 Introduction to the Progressive Development of the Combined Sites 3, 4 And 5 up to the 20th Century

Moore Street's character of origin as a vibrant market quarter is legible in the present day only by the extant street market, which in itself has suffered decline in recent years as its enclosing streetscape to the east has become disused, compounded by an inert streetscape enclosing the ILAC Centre to the west.



Figure 15.3.12: An extract from the 1950's Morgan Aerial photos (NLI), showing Sites 4 (in part) and Site 5 , in context with O'Rahilly Parade, Moore Lane and Moore Street.

The success of the market quarter was reliant on its mix of retail and residential, with dwellings above street level giving traders the opportunity to wholly engage with a living/ working community. The early character of O'Rahilly Parade was primarily residential, interspersed with retail and light industrial functions and complimenting the busier character of Moore Street.

In contrast, the early character of Moore Lane was framed by taller 19th century industrial and utilitarian buildings supporting primary businesses on O'Connell Street, but also interdependent with the commercial activity of Moore Street.

Late 20th century development has greatly altered the character of the built environment enclosing the site. The construction of the ILAC Centre opposite the site, and more recently the construction of the Jury's Hotel on O'Rahilly Parade presents a contrasting urban context, in the internalisation of activity behind seemingly inanimate street fronts, belying the original morphological character of retail activity transcending the shopfront and spilling into the street.

The site has changed in composition and form as is evident from the collection of buildings occupying it until the mid-20th century. What once comprised a dense urban block, with a strong urban presence onto its enclosing street networks, is now diminutive and fragmented, with the loss of buildings forming the block keenly experienced.

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The consequence of the undermining of Moore Street's uniquely distinctive market character is far reaching, unravelling the commercial viability of its supporting enclosing laneways of Moore Lane, O'Rahilly Parade and Henry Place.

15.3.2.6 Summary of the Development of Henry Street

Henry Street was laid out at the beginning of the eighteenth century as part of the development of the Drogheda estate and it was named in honour of Henry Moore, Earl of Drogheda. This was a wide street, running eastward from Mary Street, which was on the Jervis estate, to Marlborough Street, which was the outer eastward extent of the development carried out at that time on the Drogheda estate.

The first detailed cartographic representation of the buildings in Henry Street is on John Roque's map of 1756, which shows nine buildings in the block between Henry Place and Moore Street. These were not of equal size, with three small buildings at the eastern end of the block and it seems likely that these were replaced by just two buildings at a later date. The other buildings are more or less consistent with the plot widths that pertained until the early twentieth century, with one building on the site of No.39 being significantly wider than the others. This was later subdivided into two narrower buildings, as were Nos.40 and 41.



Figure 15.3.13: Detail of Roque's Map 1756, with the plots of Nos.36-39 laid out as houses with gardens. (Harvard Map Collection)

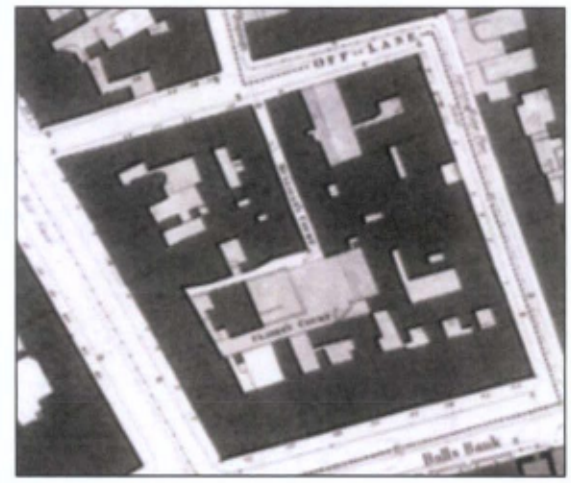

Figure 15.3.14: Ordnance Survey Map 1847 demarking the infilling of plots, demonstrating the commercialization of the street from its domestic origins in the 18th century, in response to the increasing commercial prosperity of this prominent section of Henry Street. (UCD Digital Library with permission OSi)

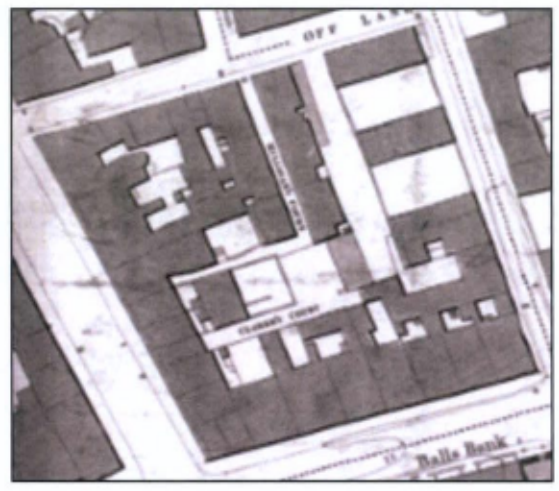

Figure 15.3.15: Ordnance Survey Map 1864, with little change noted to the plot profile of Nos.36-41 Henry Street. (UCD Digital Library with permission OSi)



Figure 15.3.16: Detail of Goad's Fire Insurance Map 1893, showing toplit rear buildings to Nos.37 and 39 Henry Street and retention or rear yards to Nos.36, 38, 39 and the subdivided No.40. (British Library)

15.3.2.7 Summary of the Development of Moore Street

Moore Street is one of the streets that was laid out on the lands belonging to the earls of Drogheda and commemorates the family name, Moore. There is some confusion over the early development of the street arising from the way it is depicted on the first two published maps to show the development of this area. Charles Brooking's map of Dublin, published in 1728, shows both sides of the street fully built up, while John Rocque's map of 1756 shows the eastern side as devoid of buildings between O'Rahilly Parade and Henry Place, with the land labelled "Old Brickfield". The inference is that either a row of buildings was demolished to facilitate the operation of the brick field on one or other of the maps is incorrect.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

It is generally held that Rocque's maps were prepared with a high degree of accuracy and that furthermore having completed the initial edition the map was updated on a number of occasions over the next five years or so to reflect the ongoing development of the city. Brooking's map, on the other hand, is smaller in scale and more generalised than Rocque's and the belief is that Brooking's map did not accurately reflect the state of development in Moore Street. His map shows streets leading off Moore Street on the eastern side that would correspond with O'Rahilly Parade and Henry Place, though these are not named on the map. He did not show Prince Eugene Street, which ran parallel to the present-day Moore Lane, though further to the east.

Rocque's maps show nine buildings along the stretch of Moore Street between Henry Street and Henry Place. Notably, the map shows a laneway to the rear between numbers 3 and 4 Moore Street and another between numbers 4 and 5. The former leads to two buildings at the rear of numbers 3 and 4, while the other goes further back and has the potential to access buildings at the rear of Henry Place and Henry Street. Subsequent pre-Ordnance Survey maps of the area are generally small in scale and provide little information. Campbell's map, dated 1811, however, while not large enough in scale to depict individual buildings, depicts Mulligan's Court running through a right angle between Moore Street and Henry Place and this is the street that was later just the straight laneway leading south from Henry Place and known as Moore Place. The connection through to Moore Street had been discontinued by the late nineteenth century.



Plate 15.3.1: Nos 10-25 Moore Street, as they exist in the present day.



Plate 15.3.2: Moore Street, due south, as it exists in the present-day.

The properties along the eastern side of Moore Street were in various business uses since its early origins. In the 1830s these businesses included local shops such as a grocer, a provision dealer, a huxter and a baker, together with tailors, two publicans and a wine merchant. Other businesses included a chandler, a mattress maker, a school, a stationer and circulating library, a slater and builder, a metal sash maker and glass stainer, a coach owner, a printing office, an upholsterer, a scrivener, an infirmary for cutaneous disorders, an attorney and an architect. By the end of the century there was less variety and apart from one or two exotics such as an umbrella shop and a tripe and cow heel dresser, the range was much more local, with one wine and spirit merchant, one butcher, one fishmonger, one provision dealer, a clothes dealer, three dairies, three greengrocers and no less than eight china dealers. Many, though not all of the shops had living accommodation overhead and some had multiple occupancy in the upper floors, though others were occupied by the proprietors of the shops and sometimes also the shop workers.

During the 1916 Easter Rising the properties at the southern end of the street were destroyed, while those from numbers 8 and 9 northwards survived. This part of Moore Street to the north of Henry Place was the scene of the last 24 hours of so of the Rising.

Early records in relation to the markets in the Moore Street area are sparse, though it appears that there was a market in Moore Street as early as the mid-eighteenth century. Moore Street and its nearby streets became a thriving market area by the mid-nineteenth century, as reflected in street names on the western side of Moore Street depicted on the 1847 Ordnance Survey map. These include Anglesea Market, Masons Market, Norfolk Market, Rotunda Market and Moore Street Market, the latter being a laneway leading off the western side of Moore Street. In addition, market stalls were also to be found in adjacent streets such as Riddles Row, Cole's Lane and Moore Street itself. Many of these markets were still in operation beyond the middle of the twentieth century, though with the advent of supermarkets and the redevelopment of much of the area the surviving markets in Moore Street are now much diminished from their heyday.

15.3.2.8 Summary of the Development of Henry Place

Henry Place was laid out as part of the development of lands belonging to the Earl of Drogheda in the opening years of the eighteenth century. This development included other streets including Henry Street, for which it appears to have served as a stable lane. At the time that it was laid out this street was known as Melvill's Lane and this name persisted until at least the 1730s, subsequently becoming known as Off Lane until being named Henry Place in the early 1870s. The term "off lane" was used as an informal description of a lane that led off a larger thoroughfare and there appears to be no basis for the belief that this lane was named for the "of" in the ground landlord's title, earl of Drogheda. The name did not come into use until long after the earl's death in 1714 and there is no record of it ever being spelt "Of Lane".

Another lane laid out in about 1708 was Prince Eugene Lane, which ran north-south at the rear of Drogheda Street, the precursor of O'Connell Street Upper. With the widening of Drogheda Street to form Sackville Street, Prince Eugene Lane was closed off, apart from its southern end, where it formed the connection between Henry Street and the eastern end of Henry Place. Following the closure of the rest of Prince Eugene Lane this southern section became part of Off Lane and subsequently Henry Place.

It is not clear whether this Melvill's Lane ever led through to the original Drogheda Street and it appears not to have connected to Sackville Street that resulted from Luke Gardiner's widening of Drogheda Street in the mid-eighteenth century.

By at least as early as the 1820s, Henry Place was serving as more than a stable lane and there were houses and businesses in various premises along the street.

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DCC PLAN NO. 2861/21

15.3.2.9 Summary of the Development of Clarke's Court and Mulligan's Lane

Clarke's Court was a small court at the rear of number 3 Moore Street and containing just two buildings. These would probably have been tenement buildings originally, but by the 1840s there was just one tenement. The buildings were also used in conjunction with the adjacent properties in Moore Street. Clarke's Court survives as a gated laneway with access through an opening at the side of number 3 Moore Street.

Mulligan's Lane (also referred to as Mulligan's Court or Moore Place) was first recorded in 1811, as running through a right angle between Moore Street and Henry Place as a straight laneway between Nos 9 and 10 Henry Place leading south from Henry Place. The connection through to Moore Street is suggested through hinterland courtyards leading to Clarke's Court, but seems to have been discontinued by the late nineteenth century.

15.3.2.10 Summary of the Development of Moore Lane

Up to the 1740s, the site now occupied by Moore Lane was part of a brickfield that stretched across to Moore Street. This brickfield may have been opened up following the laying out of this area for development around 1707-1708 and it would have provided the brick clay for many of the early buildings in the vicinity.

Moore Lane was laid out as part of the redevelopment of Drogheda Street by Luke Gardiner in the 1740s. This project involved the widening of the street and the laying out of a mall in the centre, flanked by streets on either side. To achieve this the western side of Drogheda Street was moved back and plots were leased along this new frontage. The original stable lane at the rear of the western side of Drogheda Street, known as Prince Eugene Lane, or Street, was closed as part of this development, apart from its southern end, and Moore Lane was laid out as the new stable lane, further to the west than Prince Eugene Lane. John Rocque's map of Dublin, published in 1756, names this new street Old Brickfield Lane, though this may have been a description rather than an official name and the name Moore Lane was in use at least as early as 1760.

Moore Lane would have served as the stable lane for the eastern side of Moore Street and the western side of O'Connell Street during the eighteenth century, though businesses were creeping into the lane by the late-eighteenth or early-nineteenth century.

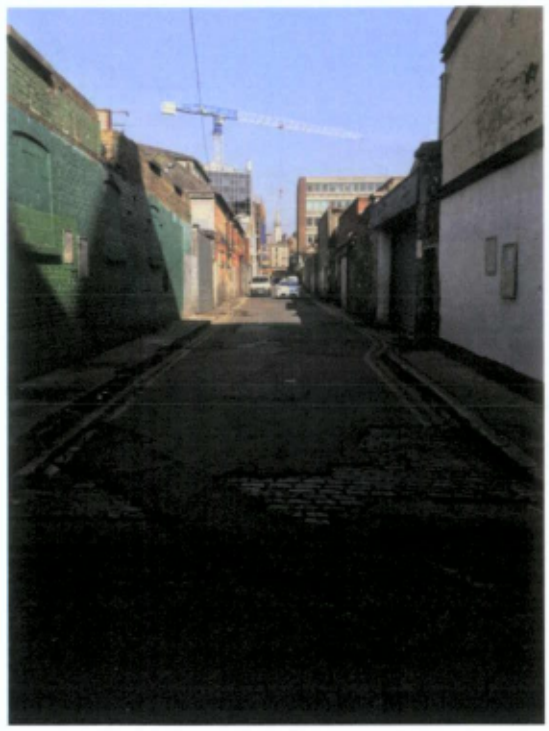


Plate 15.3.3: Present-day Moore Lane, due north.

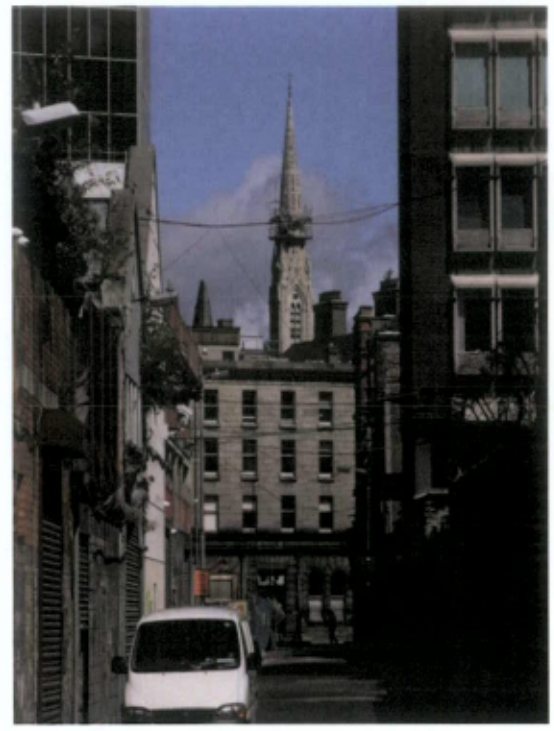


Plate 15.3.4: Present-day Moore Lane, due north towards Parnell Street frames the spire of the Presbyterian Church at the corner of Frederick Street North and Parnell Square East.

15.3.2.11 Summary of the Development of O'Rahilly Parade

The north side of O'Rahilly Parade (formerly Sackville Lane) is predominantly occupied by a hotel. A memorial to The O'Rahilly, who died on Sackville Lane, subsequently renamed O'Rahilly Parade in his honour, is affixed to this building.

The south side is informed by the gable of No.25 Moore Street and an open yard at No.14 Moore Lane.

The street has some evidence of setts and small sections of gutter and kerbstones on the south side. The streetscape is dominated by the tall but blank bulk of the hotel along the north. The vista east along the street is terminated by the carpark within the rear block of Nos.46 to 49 O'Connell Street.



Plate 15.3.5: O'Rahilly Parade, due west towards Moore Street, flanked by the imposing brick wall of the former warehouse at Nos.1-3 O'Rahilly Parade (Military Archives).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Plate 15.3.6: Present-day O'Rahilly Parade due west towards Moore Street.



Plate 15.3.7: Present-day O'Rahilly Parade due east towards Moore Lane.

15.3.2.12 Outline Connection of Site 3 to the 1916 Easter Rising

Please refer to Appendix A4 of the Dublin Central Project Conservation Plan for further detail on the contribution of the site to the urban battlefield of 1916.

Given the wider area's known connections with the 1916 Easter Rising, the relationship between Site 3 as informing the battlefield, is outlined in Appendix A4 of the Conservation Plan. This section focuses on the reconstruction of certain buildings in the aftermath of the battle.

The entire Henry Street frontage within Site 3, including Nos. 36-41 Henry Street, was destroyed in the aftermath of the Easter Rising and rebuilt almost immediately thereafter. Historic photographs capture the extent of damage to the buildings.

The broader political context undoubtedly influenced the generous compensation measures that followed the Rising.

As early as 8th May 1916, traders and property owners who suffered losses formed the Dublin Fire and Property Losses Association to deal with the insurance companies and the government.

In June 1916, the Property Losses (Ireland) Committee (PLIC) was established as it recognised that looting could not be prevented and that buildings had been allowed to burn out because the police and fire brigade had been prevented from intervening. Where loss could be proved, the committee recommended payment of the sum that an insurance company would have allowed had the loss been fully covered by insurance. The claims were divided into two categories; damage to buildings and damage to contents.

Consequential losses were not entertained and businesses eager to resume trading either relocated or erected temporary premises until reconstruction was completed, with Dublin Corporation authorised to approve temporary structures.



Plate 15.3.8: Photograph from the top of Nelson's Pillar showing the destruction of the urban block of Site3 after the 1916 Rising. The terrace on Moore Street is demolished as far as the site of 34 Henry Street where the gable wall survives. The rear walls of Moore Street terrace and three chimneystacks are standing. (Digital Repository of Ireland)

In July 1916 a delegation from Dublin City Corporation met the British Prime Minister seeking financial assistance to rebuild areas of Dublin that had been destroyed during the insurrection. Subsequently, during the summer of 1916 the Dublin Reconstruction (Emergency Provisions) Bill was introduced in Parliament and passed into law in December 1916.

Dublin Corporation had petitioned the government to apply regulations to ensure that the buildings were reinstated at a minimum 'not worse than before' and ideally, 'in consonance of a well devised town planning scheme'. Under the Act the Dublin city architect, C.J McCarthy had control over the character of the buildings and power to impose alterations to the submitted designs in respect of external design, frontage lines and materials although this was open to appeal by the property owners.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The Corporation appointed a Reconstruction Committee, and sought the advice of Raymond Unwin, a prominent English architect and town planner as well as member of the Royal Institute of the Architects of Ireland (RIAI). When their report was issued in July 1917, it included recommendations such as widening North Earl Street, Cole's Lane, Prince's Street and Henry Street on the north side by c 18m and that the rebuilding should accommodate splayed corners at the junction of Moore Street and Henry Street to encourage better traffic flows. Ultimately, the Reconstruction Committee accepted most of the street widening proposal with the exception of Henry Street, although the chamfered corners at the south end of Moore Street were realised. The business owners were concerned that widening Henry Street would make it a less successful shopping street.

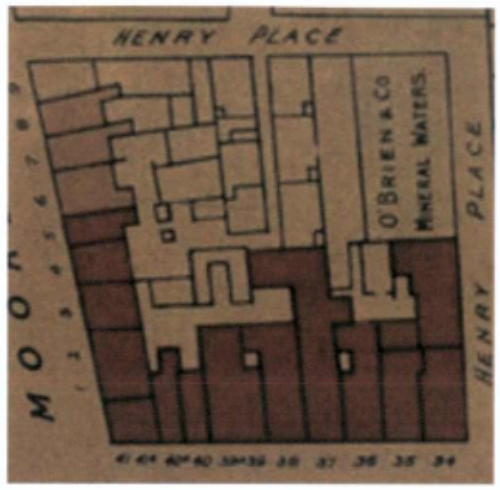


Figure 15.3.17: Detail of 'Plan of the Sackville Street Area destroyed during the disturbances April 1916, issued by the Hibernian Fire and General Insurance. Note the wholescale reporting of destruction to the south side of Site 3's urban block, including Nos.36-41 Henry Street.

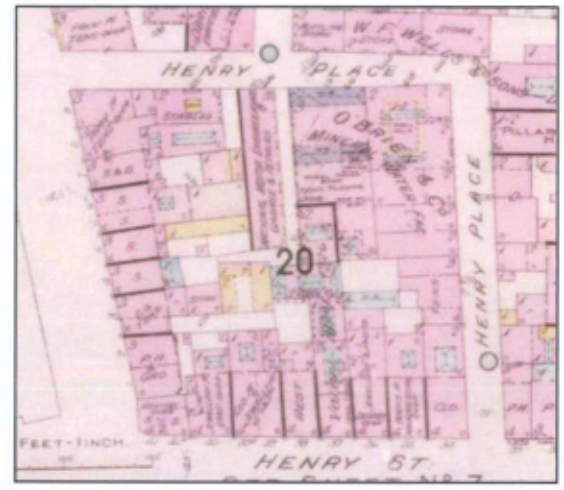


Figure 15.3.18: Detail of Goad's Fire Insurance Map 1926, following the reconstruction of the terrace. Note the definition of party walls denoting the form of the terrace above flat roofed, single storey rear buildings. Note too, the introduction of top lit rear accommodation, to Nos.37, 39 , 40 overcoming the infilling of plots to accommodate greater entrance level accommodation. Also note the permeability of the centre of the block from shared laneways and arched routes through buildings. The rear of No. 36 is served from an arch under No.2a Henry Place. The rear of Nos.37-41 are served from Clarke's Court, through an arch under No.3 Moore Street. (British Library)

The Committee did not impose a uniform design for the new buildings, the intent rather was to blend with the existing surviving fabric. Their report was accompanied by a series of 'do's and don'ts' sketched by Richard Caulfield Orpen (President of the RIAI) which illustrated the merits of a 'coordinated design with unequal fronts' using classical façade elements. The advice was only loosely applied for the most part, not least because the Fire and Property Loss Association strongly opposed any planning regulation that might impinge on rebuilding or add to costs.

Guidelines for appropriate materials were also recommended; granite for the lower floors and brick with stone dressings above which aligned with the classical nuances and somewhat at odds with the technically innovative structures concealed behind them.

The new buildings on Henry Street and Moore Street were constructed in advance of those of O'Connell Street and at a time when the cost of steel was prohibitive. This coupled with an increased concern regarding fire protection influenced the increased use of reinforced concrete technologies.

The buildings on Henry Street were rebuilt relatively quickly. No.41 Henry Street had commenced construction by the end of 1916 and the rest of the terrace was rebuilt quickly thereafter in 1917-1918.

15.3.2.13 Outline Connection of Site 4 to the 1916 Easter Rising

Please refer to Appendix A4 of the Dublin Central Project Conservation Plan for further detail on the contribution of Site 4 to the urban battlefield of 1916.

The site contains a number of structures pre-dating 1916 which endure to the present day as a living document of the urban battlefield of the 1916 Easter Rising. These structures include No.10 Moore Street, No.20-21 Moore Street, the party wall between Nos 12 and 13 Moore Street, Nos 17-18 Henry Place and Nos 6-7 Moore Lane.

Most significantly, it retains its southern corners onto Henry Place, where adjoining Moore Street to the west and Moore Lane to the east, which are known positions featuring in the memories of survivors from that time.

The gable doorway of No.10 Moore Street survives, albeit infilled, as a testimony to those who allegedly evacuated through it (although the true position of the doorway, either in the main house or through a rear outbuilding replaced by No.15 Henry Place is unconfirmed), before tunnelling through party walls, as evident in No.10 and also in the surviving party wall between Nos 12 and 13.

The survival of Nos 20 and 21 Moore Street, now amalgamated, also enhances the testimony of the battlefield. Rear buildings onto Moore Lane at Nos 17-18 Henry Place, 6-7 Moore Lane, frame the lane's contribution to the battle.

That these buildings remained occupied in the aftermath of the Rising, as their occupants recovered, repaired their building fabric and continued with their daily lives- a pattern repeated in the aftermath of the War of Independence in 1922, reflects the site's capacity to enshrine seminal moments in history yet render the extraordinary, in time, ordinary. Later 20th century additions were built quickly and without craft but represent a sustained economic functioning of the site into the 21st century.

The site also encloses the east side of the Moore Street market, which has served to continue the presence of a market quarter in this vicinity since its earliest origins in the 18th century.

Whilst the north western boundary retains its early townhouses at Nos 20-21 Moore Street, the north-eastern boundary has changed in the construction of a tall infill structure at No.10 Moore Lane. The opposing eastern side of Moore Lane (within Site 2AB of the wider Dublin Central Masterplan area) is occupied by a variety of inactive boundary conditions to the rear of Nos 51-60 O'Connell Street, which once represented a tall streetscape with an active frontage. The opposing western side of Moore Street is formed by the late 20th century ILAC Centre, opened in 1981. The southern boundary is aligned with Henry Place, and opposes a blank, inactive streetscape of Nos 10-13 Henry Place and No.9 Moore Street, all within Site 3 of the Dublin Central Masterplan area.

15.3.2.14. Outline Connection of Site 5 to the 1916 Easter Rising

Please refer to Appendix A4 of the Dublin Central Project Conservation Plan for further detail on the contribution of Site 5to the urban battlefield of 1916

The site's connection to the 1916 Easter Rising is historical rather than physical, given the loss of building fabric over the course of the 20th century.

The O'Rahilly led an advance up Moore Street and was fatally injured before dragging himself into a doorway on Sackville Lane, where he later died. The lane was subsequently renamed O'Rahilly Parade in his honour and a memorial is positioned on the wall of the Jury's hotel building opposite Site 5.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Site 5 formed part of the evacuation route taken by the main body of Irish Volunteers post their evacuation from the GPO. The Volunteers initially entered the terrace at No.10 Moore Street on the evening of Friday 28th April 1916, and worked through the night to generate routes through party walls and yards of subsequent buildings as far as Kelly's yard to the rear of No.25 Moore Street adjoining Sackville Lane, where a group gathered behind a gate onto the Lane awaiting an order to advance on the British barricade at the northern end of Moore Street. The Volunteers had by this time spread across the terrace, with a large cohort gathered in the rear yard of Hanlons (present-day 20th century rear extension at Nos. 20-21 Moore Street) bringing messages back and forth between the groups. The order never materialised, as a decision to surrender was taken and instead the Volunteers were led out onto Moore Street and corralled by the British forces. No trace of Kelly's yard recorded in witness testimonies remains.

The only pre 1916 fabric identified on the site is a length of boundary wall on the southern boundary of No.14 Moore Lane. The formerly internal wall within an industrial building at Nos.14-15 Moore Lane and incorporating 1-8 O'Rahilly Parade (Now cited as Nos.1-3 O'Rahilly Parade) was not exposed in 1916 and did not inform the battlefield, but was nonetheless inspected for evidence of conflict with none found.

15.3.3 Receiving Environment – Site 3

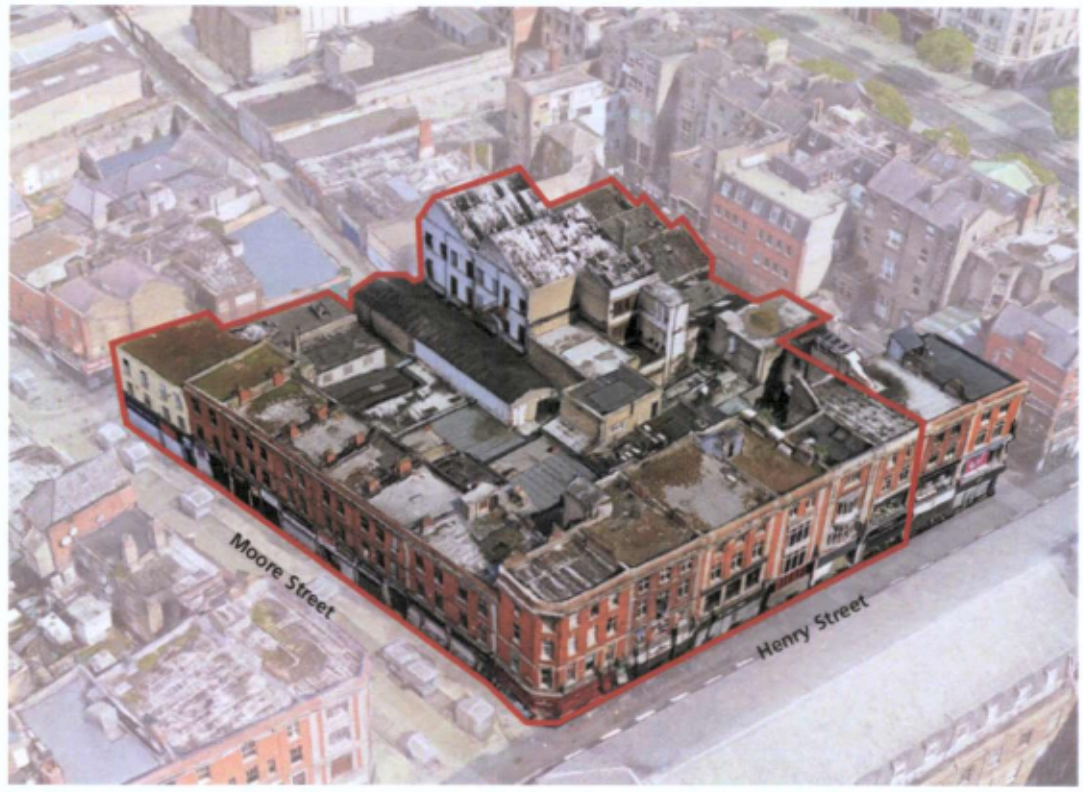


Plate 15.3.9: Approximate outline of Site 3 identified on an aerial view of the site

Site 3 is bounded to the south by Henry Street, to the west by Moore Street, and to the north by Henry Place. It shares a boundary to the south east with Nos.34 and 35 Henry Street. The site encompasses a group of diverse buildings at Nos.36 – 41 Henry Street, Nos.1 – 9 Moore Street, Nos.3 – 13 Henry Place, Dublin 1, ranging in date from the 18th through to the 20th centuries.

Whilst Site 3 is included in the O'Connell Street Architectural Conservation Area, it does not contain any protected structures. Some buildings along Henry Street and Moore Street are included in the National Inventory of Architectural Heritage.

The proposed development within Site 3 seeks to adapt a selection of existing buildings and to demolish others to facilitate its redevelopment as a mixed use scheme with hotel, residential, retail and restaurant uses ranging in height from four to nine stories.

Site 3 is located in an area of considerable historic significance. Its enclosing street patterns can be traced to the Earl of Drogheda who laid out the land in the early 18th Century. The early plots are discernible, although the present built fabric is characterised by terraces of early 20th commercial building reconstructed to replace the buildings destroyed during the 1916 Easter Rising.

The buildings facing onto Henry Street are typically four stories over basement level with a commercial use at entrance and in some cases, first floor levels with high levels of vacancy at upper levels. Part of the eastern boundary abounds No.35 Henry Street, the central building in a group of three, within the reconstructed terrace.

Henry Street, which forms the southern site boundary is a busy pedestrianised shopping street. The opposing southern side of the street comprises the northern wing of the GPO, which was reconstructed in 1926.



Plate 15.3.10: Nos.36-41 Henry Street, outlined in red.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Plate 15.3.11: Nos.1-7 Moore Street, flanked by No.41 Henry Street to the south.

The early 20th century buildings that comprise the Moore Street terrace are similar to those facing onto Henry Street, but at a reduced scale, being three stories over basement, reflecting the hierarchical status of Moore Street relative to Henry Street. At the junction of Moore Street and Henry Place is a pair of much modified late 18th century townhouses at Nos 8-9 Moore Street. The opposing western side of Moore Street is a combination early 20th century reconstructed buildings and earlier 19th century buildings which escaped damage in 1916.

The rear of the site fronting onto Henry Place is characterised by 19th / early 20th century industrial buildings and warehouses. The opposing side of Henry Place is in two parts; to the north is the continuation of the Moore Street Terrace and to the east are mews and outbuildings ancillary to principal buildings on the west side of O'Connell Street.

There development of Site 3 will be facilitated by the localised widening of Moore Lane, involving the demolition of the rear boundary wall on to Moore Lane of properties at Nos.50-51, 52-54 O'Connell Street, Dublin 1.

15.3.4 Receiving Environment – Site 4

Located to the west of the Masterplan area, Site 4 is bounded by Moore Street to the west, Moore Lane to the east, Henry Place to the south and Site 5 to the north.

The site encompasses multiple properties, including Nos.10 – 13 and Nos.18 – 21 Moore Street, No. 5A Moore Lane (also known as Nos.15 – 16 Henry Place), Nos.6 – 7 and Nos.10 – 12 Moore Lane and Nos.17 – 18 Henry Place (also known as Nos.4 – 5 Moore Lane).

Site 4 is positioned immediately north and south of the National Monument at Nos.14-17 Moore Street (protected structures) and the open area to the rear at Nos.8-9 Moore Lane.

Site 4 does not contain any protected structures, or structures included in the NIAH. It is not within the designated boundary of the O'Connell Street Architectural Conservation Area, but given the social and historical significance of the wider site, its development nonetheless adheres with statutory ACA policies and recommendations.

The buildings on Site 4 range in origin from 18th century to mid-20th century, as supported by research. Given the site's important role in the 1916 Easter Rising, Table 15.3.1 below distinguishes between pre- and post-1916 structures.

Structure / Plot to south of National Monument	**Era of Origin**	**Pre / Post 1916**
No. 10 Moore Street and rear structures		
No. 10 Moore Street	18th century	Pre-1916
Nos 15 Henry Place	20th century	Post-1916
No. 5A Moore Lane	20th century	Post-1916
Nos 17-18 Henry Place	19th century	Pre-1916
No. 11 Moore Street	20th century	Post-1916
No. 12 Moore Street	20th century with 18th century party wall with No.13	Post-1916 building constructed to the south of a pre-1916 party wall
No. 13 Moore Street	20th century with 18th century party wall with No.12	Post-1916 building constructed to the north of a pre-1916 party wall
Nos 6-7 Moore Lane	19th century	Pre-1916
Structure/plot to north of National Monument	**Era of origin**	**Pre/ post 1916**
Nos 18 and 19 Moore Street and rear structures		
No. 18 Moore Street	20th century	Post-1916
No. 19 Moore Street		
Nos.10-11 Moore Lane		
Nos 20 and 21 Moore Street and rear structures		
No. 20 Moore Street	18th century	Pre-1916
No. 21 Moore Street		
No. 12 Moore Lane	20th century	Post-1916

Table 15.3.1: Pre- or post 1916 origin of structures within Site 4

The development of Site 4 will be facilitated by the localised widening of Moore Lane, involving the demolition of the rear boundary wall on to Moore Lane of properties at Nos.50-51, 52-54 Upper O'Connell Street, Dublin 1.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.3.5 Receiving Environment – Site 5

Site 5 relates to the proposed plot redevelopment of the amalgamated and reoriented plots of Nos.22–25 Moore Street, No.13 Moore Lane and No.14 Moore Lane (otherwise known as Nos.1–3 O'Rahilly Parade and Nos.14–15 Moore Lane or Nos.1–8 O'Rahilly Parade and Nos.14–15 Moore Lane). For the purposes if this Assessment, No.14 Moore Lane is deemed to incorporate No.15 Moore Lane and Nos.1–3 O'Rahilly Parade.

The site is bounded to the north, east and west by historic street networks. It is bounded to the south by Nos.20-21 Moore Street and Nos.12 Moore Lane, within Site 4 of the Dublin Central Masterplan area.

All buildings within Site 5 are 20th century in origin.

Site 5 is not within the designated boundary of the O'Connell Street Architectural Conservation Area. It does not contain any protected structures, or structures included in the NIAH.

The development of Site 5 will be facilitated by the localised widening of Moore Lane, involving the demolition of the rear boundary wall on to Moore Lane of properties at Nos.50-51, 52-54 Upper O'Connell Street, Dublin 1.

15.3.6 Statutory Mechanisms within and Adjoining the Combined Masterplan Area Boundary

There are a number of structures and upper level facades in the Masterplan site included in the Record of Protected Structures, Volume 4 of the Dublin City Development Plan (2016-2022). However, none of the buildings in the combined Sites 3, 4 and 5 are afforded similar statutory protections.

Although not having a statutory basis, Site 3 contains buildings included in the National Inventory of Architectural Heritage.

Site 4 is dissected by a National Monument, at Nos 14-17 Moore Street extending to Moore Lane. The O'Connell Street Architectural Conservation Area (ACA) encompasses Site 3, the eastern and southern boundaries of the sites 4 and 5 where adjoining Moore Lane and Henry Place, align with the western and northern limits of the ACA.

The urban block is located within the Zone of Archaeological Potential (ZAP) for Dublin City (DU020-018).



	Protected Structure
	Protected Structure (upper floor façade)
	National Monument (14-17 Moore Street)
	O'Connell Street Architectural Conservation Area
	Conservation Area
	Site Boundary

Figure 15.3.19: The Dublin Central Masterplan Area outlined in red (for visual demarcation only), based on Dublin City Development Plan 2016-2022, Map E, The O'Connell Street ACA Map, and an interpretation of the Record of Protected Structures Compiled by Molloy&Associates

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.3.6.1 Structures of Known Architectural Heritage Interest within the Combined Masterplan Site Boundary

Address	RPS Ref.	Description	NIAH Reference and Rating (L= Local) (R=Regional) (N= National)
70 Parnell Street, Dublin 1	6423	Licensed premises	5001056(1R)
71 Parnell Street, Dublin 1	-	-	50010562(R)
42 O'Connell Street Upper, Dublin 1	6022	Commercial premises	50010554 (N) 50010560 (R)
43 O'Connell Street Upper, Dublin 1	6023	Commercial premises, upper floor façades	50010553(R)
44 O'Connell Street Upper, Dublin 1	6024	Commercial premises, upper floor façades	50010552(R)
45 O'Connell Street Upper, Dublin 1	-	-	50010551(R)
52-54 O'Connell Street Upper, Dublin 1	6025	Former Carlton Cinema, upper floor façades	50010543 (R)
56 O'Connell Street Upper, Dublin 1	-	-	50010542(R)
57 O'Connell Street Upper, Dublin 1	6026	Commercial premises, upper floor façades	50010541(R)
58 O'Connell Street Upper, Dublin 1	6027	Commercial premises, upper floor façades	50010540(R)
61 O'Connell Street Upper, Dublin 1	6029	Commercial premises, upper floor façades	50010534(R)
36 Henry Street	-	-	50010495 (R)
37 Henry Street	-	-	50010496 (R)
38 Henry Street	-	-	50010497 (R)
39 Henry Street	-	-	50010498 (R)
40 Henry Street	-	-	50010499 (R)
41 Henry Street	-	-	50010481 (R)
1, 2 Moore Street	-	-	50010482 (R)
3 Moore Street	-	-	50011208 (R)
4 Moore Street	-	-	50011207 (R)
5 Moore Street	-	-	50011206 (R)
6 Moore Street	-	-	50010483 (R)
7 Moore Street	-	-	50010484 (R)
8/9 Moore Street and 11/12 Henry Place	-	-	50060509 (R)

Table 15.3.2: Buildings of known heritage interest (in the RPS and/or NIAH) within the Masterplan site, with protected structures hatched.

15.3.6.2 Structures Of Previously Unknown Architectural Heritage Interest Within The Combined Masterplan Site Boundary, Scheduled To Be Retained, Conserved And Purposefully Re-Used

Address	RPS Ref.	Description	NIAH Reference and Rating
Reading room to rear of No.59 O'Connell St.	-	-	-
No.10 Moore Street	-	-	-
Party wall between Nos.12-13 Moore St.	-	-	-
Nos.20-21 Moore Street	-	-	-
Nos.17-18 Henry Place	-	-	-
Nos 6-7 Moore Lane	-	-	-

Table 15.3.3: Buildings of previously unknown heritage interest (not in RPS and/or NIAH) within the Masterplan site , now scheduled for retention, conservation and adaptive re-use.

15.3.6.3 Structures Of Architectural Heritage Interest in Proximity to The Masterplan Site

Address	RPS Ref.	Description	NIAH Reference and Rating (L= Local) (R=Regional) (N= National)
14 Moore Street, Dublin 1	5282	House: external envelope, internal stairs, stairwells and corner chimney breasts	50010489 (R)
15 Moore Street, Dublin 1	5283	House: external envelope, internal stairs, stairwells and corner chimney breasts	50010490(R)
16 Moore Street, Dublin 1	5284	House	50010491(N)
17 Moore Street, Dublin 1	5285	House: external envelope, internal stairs, stairwells and corner chimney breasts	50010492(R)
Rotunda Hospital: Parnell Square West, Dublin 1	6419	Rotunda Hospital: west wing, excluding ground-floor arcade (for which see Parnell Street); facades of Plunkett Cairns wing (three-storey façade)	50010619-50010622(N)
72-74 Parnell Street, Dublin 1	6424	Licensed premises	50010559(R)
37-38 O'Connell Street Upper, Dublin 1 Dublin 1	6021	Bank: upper floor façade	50010558(R)
59 O'Connell Street Upper, Dublin 1	-	-	50060601(R)
60 O'Connell Street Upper, Dublin 1	6028	Commercial premises, upper floor façades	50010535(R)
62 O'Connell Street Upper, Dublin 1	6030	Commercial premises, upper floor façades	50010533(R)

Address	RPS Ref.	Description	NIAH Reference and Rating (L= Local) (R=Regional) (N= National)
63-64 O'Connell Street Upper, Dublin 1	6031	Commercial premises: upper floor façade	50010532(R)
65-66 O'Connell Street Upper, Dublin 1	6032	Bank	50010531(R)
67 O'Connell Street Upper, Dublin 1	6033	Commercial premises: upper floor façade	50010530(R)
68 O'Connell Street Upper, Dublin 1	6034	Commercial premises: upper floor façade	50010529(R)
69 O'Connell Street Upper, Dublin 1	-	-	50010493(R)
O'Connell Street Lower, Dublin 1	6010	The General Post Office, including GPO Buildings (Nos.1-6) on Henry Street. For 26-30 Henry Street (GPO Buildings) see RPS Ref. 8746-8750.	50010528 (N) 50010500 (R)
O'Connell Street Lower, Dublin 1	6011	1 Two upright bollards and six dome head bollards at GPO kerb line	50010527(R)
7-15 (inc.) Henry Street, Dublin 1	3666	Arnott's: Upper floor facade. First floor cornice detail and shopfront (excluding canopy and vertical sign; including tower and clock feature)	50010470(N)
16 Henry Street, Dublin 1	3667	Upper floor facade	50010471(R)
17 Henry Street, Dublin 1	3669	Upper floor facade	50010472 (R)
18 Henry Street, Dublin 1	3670	Upper floor facade	50010473(R)
19 Henry Street, Dublin 1	3671	Upper floor facade	
20 Henry Street, Dublin 1	3672	Upper floor facade	50010474(R)
21 Henry Street, Dublin 1	3673	Upper floor facade	50010475(R)
22-23 Henry Street, Dublin 1	3674	Upper floor facade	50010476(R)
24 Henry Street, Dublin 1	3675	Upper floor facade	-
25 Henry Street, Dublin 1	3676	Upper floor facade	-
Henry Street, Dublin 1	3677	GPO Arcade. Arcade runs from Henry Street to Prince's Street North.	50010528 (N) 50010500 (R)
26 Henry Street, Dublin 1	8746	1-6 GPO Buildings- see O'Connell Street Lower	
27 Henry Street, Dublin 1	8747		
28 Henry Street, Dublin 1	8748		
29 Henry Street, Dublin 1	8749		
30 Henry Street, Dublin 1	8750		

Address	RPS Ref.	Description	NIAH Reference and Rating (L= Local) (R=Regional) (N= National)
33 Henry Street, Dublin 1	-		50010494 (R)
34 Henry Street, Dublin 1	-		50011205 R
35 Henry Street, Dublin 1	-		50011204 R

Table 15.3.4: Buildings of interest, included in the RPS and / or the NIAH in proximity to Site 4.

15.4 CHARACTERISTICS OF PROPOSED DEVELOPMENT

15.4.1 Dublin Central Masterplan

15.4.1.1 Assessment of Significance

Further to an analysis of documentary and physical evidence, buildings and plots within the Masterplan site have been characterised by Molloy & Associates and a hierarchy of significance attached to each.

Each structure within the Masterplan area has been assigned a level of interest based on findings.

Four classifications of significance are suggested; Of high significance, Of significance, Of moderate significance and Of limited / No significance, defined as follows: -

Of high significance

Structures which are deemed to possess significant interest under one or more of the following categories of interest as defined by the Planning and Development Act 2000; a. Architectural; b. Historical; c. Archaeological; d. Artistic; e. Cultural; f. Scientific; g. Technical; h. Social. The majority of structures within the site that fall into this category date from the 18th century, with fewer buildings of later eras included. Selected buildings assigned this classification are distinguishable from other buildings in the Dublin Central Masterplan area by virtue of their significance under one or more of the above categories of special interest. Some, but not all, are included on the Record of Protected Structures and/or the NIAH.

Of significance

Structures or plots which are regarded as being of interest relative to other buildings in the Dublin Central Masterplan area, but not considered to possess comparable interest to those buildings classified as being 'of high significance'. Some structures in this category are included on the Record of Protected Structures and the NIAH.

Of moderate significance

Structures or plots which, as part of a grouping, are found to contribute to the character of the streetscape but are of limited significance in their own right.

Of limited / No significance

Structures or plots which are considered to be of little or no interest.

Note: It is noted that the level of interest assigned to the structures does not necessarily align with either the Record of Protected Structures or the ratings assigned by the NIAH.

NIAH assessors are not typically afforded the opportunity to inspect the interiors of structures or inaccessible rear building ranges and therefore the assessments are often limited to the examination of external fabric only, which may account for the variation.

All buildings, irrespective of category have been recorded, researched and assessed.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



Figure 15.4.1: Site plan, showing Molloy & Associates assignment of significance.

* Buildings denoted by a red asterisk are described in greater detail in a report within the Architectural Heritage Impact Assessment attached to a planning application for Dublin Central-Sites 3 and 4, Appendix A3.22/ A4.11 *'Assignment of Significance of Certain Upstanding Building Fabric'*.

15.4.1.2 Construction Stage

15.4.1.2.1 Introduction to the Masterplan

The Masterplan seeks to bring a vibrancy to the area by highlighting existing building assets, integrating historic structures and streets while revealing their narratives.

New connections are proposed to increase pedestrian permeability around the site.

The creation of two new civic squares and quality public realm will renew currently disused sites onto Moore Lane.

A diverse mix of uses is intended to create a sustainable development which, fused with retained architectural heritage, intends to enliven the historical significance of the wider area.



Figure 15.4.2: Masterplan street level plan.

15.4.1.2.2 Architectural Heritage Constraints Within and Immediately Adjoining the Masterplan Area

The determination of buildings meriting retention, conservation and adaptive re-use is informed by detailed site and archival investigations, which has interrogated the basis for statutory protection or inclusion in the NIAH in the first instance.

Detailed assessments have identified buildings that were previously not known to possess architectural / other significance and incorporated them within the proposed development. Conversely, it has also identified buildings that were included in the RPS/NIAH, that following a review, are considered to possess moderate significance by comparison.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

The consequence of this work is the inclusion of a greater number of buildings, in addition to the range of protected structures within the site, not having statutory protection, (refer to Table 15.3.3. above) identified as being of a level of significance meriting retention and purposeful re-use as part of the proposed development.

Other buildings, identified as having modest or limited significance, are therefore considered possible to remove without impacting the historic significance of the area. These plots in turn can be developed to appropriately merge with the character of what is retained.

Site	Context	Architectural heritage constraints/ opportunities within the Site	Architectural heritage constraints immediately abounding the Site
Site 1	Aligned with Parnell Street to the north, Moore Lane to the west and O'Connell Street to the east	• 42 O'Connell Street- Protected Structure – conservation and re-use. • O'Connell Hall - Protected Structure – conservation and re-use. • 70 Parnell Street - Protected Structure – conservation and re-use. • 71 Parnell Street- Facade retention.	• 72-74 Parnell Street-- Protected Structure. • 37-38 O'Connell Street Upper- Protected Structure. • 43 O'Connell Street- Protected Façade. • The enclosing ACA .
Site 2 (2AB, & 2C)	Aligned with Site 1 and the protected boundary of No.42 O'Connell Street and O'Connell Hall to the north, Moore Lane to the west, O'Connell Street to the east and No.62 O'Connell Street to the southeast and Henry Place to the southwest	**Site 2AB** • 52-54 O'Connell Street (Carlton)- Upper Façade- Protected Structure - facade retention. • 57 O'Connell Street – Upper Façade- Protected Structure - facade retention. • 58 O'Connell Street facade – Upper Façade- Protected Structure - facade retention. • The Reading Room to the rear of 59 O'Connell Street – conservation and re-use. • 61 O'Connell Street – Upper Façade- Protected Structure. • conservation and re-use of upper floors and basement with entrance level removed. **Site 2C** • 43 O'Connell Street – Upper Façade- Protected Structure - facade retention. • 44 O'Connell Street – Upper Façade- Protected Structure - facade retention. • 45 O'Connell Street- Facade retention.	• No.42 O'Connell Street and O'Connell Hall to rear. • No.62 O'Connell Street. • The enclosing ACA.
Site 3	Aligned with Henry Place to the north and east, Moore Street to west and Henry Street to south	• 8-9 Moore Street- conservation and re-use. • 11-13 Henry Place- conservation and re-use.	• 34 Henry Street. • 35 Henry Street. • The enclosing ACA to south, west, east.

Site	Context	Architectural heritage constraints/ opportunities within the Site	Architectural heritage constraints immediately abounding the Site
		• 36-37 Henry Street- conservation and re-use. • 39-40 Henry Street- Facade retention.	
Site 4	Aligned with Henry Place to the south, Moore Lane to the east, Moore Street to the west and Site 5 to the north. The site is dissected by the National Monument at Nos. 14-17 Moore Street.	• 10 Moore Street - Full retention and refurbishment of main building (excluding later rear extension). • 12-13 Moore Street Party Wall- Full retention and refurbishment. • 20-21 Moore Street - Full retention and refurbishment of main building (excluding later rear extension). • 17-18 Henry Place - Facade retention. • 6-7 Moore Lane - Full retention and refurbishment.	• Nos. 14-17 Moore Street.
Site 5	Aligned with O'Rahilly Parade to the north, Moore Lane to the east, Moore Street to the west and Site 4 to the south	• 14 Moore Lane - taken down and material reused within new buildings in Site 4.	-
Public Realm	Moore Lane, Henry Place and O'Rahilly Parade	• Setts and kerbs recorded, removed, set aside, reworked where necessary and re-laid to an appropriate pattern, supplemented where required.	-

Table 15.4.1: Architectural heritage constraints / opportunities within and abounding the Masterplan site.

15.4.1.3 Building Assessment and Statements of Significance, Together With A Development Rationale For Each Building / Plot Within The Masterplan Site

Please refer to appendices attached to the Architectural Heritage Impact Assessments for Sites 3,4 and 5 submitted with their respective planning applications, for detailed inventories and descriptions of buildings and plots contained within. Similar detailed analyses will accompany the forthcoming planning applications for Sites 1, 2AB and 2C.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Site 1			
Structure	**Assigned significance**	**Brief description**	**Implications of the proposed development**
70 Parnell Street	Of significance	Three-bay, four-storey building on Parnell Street frontage with single-bay side elevation, to the rear of which is a two-storey, three-bay annex facing on to Moore Lane. As part of the reconstruction c.1910 the façade appears to have been rebuilt slightly further out into both streets, probably because the original facades were stepped in a similar way to that seen next door on number 71.	 To be retained, conserved, vertically extended
71 Parnell Street	Of moderate significance	19th century four-storey, two-bay, brick-fronted premises with left-hand section of façade advancing forward of right-hand section, with substantially remodeled interior of limited interest. Brick is laid in English garden wall bond. Windows on upper floors are small-paned timber sliding sashes. Shopfront is of traditional style and is divided unevenly, reflecting the former use as two separate shops.	 Façade to be retained and site developed, vertically extended.
72 Parnell Street	Of limited significance/ of no significance	Part of mid-20th century Royal Dublin Hotel, c 1960s. No historic fabric seen within building. The building connects to a plot at Nos 40-41 O'Connell Street.	 To be demolished and site developed

40-41 O'Connell Street	Of limited significance/ of no significance	Vacant site running from O'Connell Street to Moore Lane and formerly the site of the Royal Dublin Hotel. A spur from this site runs northward to No.72 Parnell Street where a small element of the hotel survives.	 Site to be developed
42 O'Connell Street Upper, Dublin 1	Of high significance	*Architectural, historical, artistic significance* Three-bay, four-storey over basement mid-18th century house with brick front and parapet. Top floor windows are three-over-three sashes, second floor are six-over-six and ground and first floor are nine-over-six. The front door is flanked by one-over-one sash windows and the door and windows are encased in a limestone surround with a pediment supported on Doric columns from which a frieze extends over the windows and is supported on the outer margins by pilasters. A basement area has a low plinth wall of granite on which are later wrought-iron railings. The interior plan form survives largely intact, with some features such as the original staircase and a first-floor rococo ceiling. Through much of the house the plaster has been stripped from the walls and ceilings and some reproduction plaster is found at ground-floor level.	 To be conserved
O'Connell Hall	Of high significance	*Architectural, historical, artistic significance* 19th century Hall with decorative coffered ceiling. Detached structure with independent access off Moore Lane. Linked to main house by a series of later structures.	 To be conserved

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Linking structures	Of significance	19th century two storey link building with lantern rooflight connecting No.42 O'Connell Street with O'Connell Hall.	 To be demolished and garden reinstated
Site 2			
Structure	**Assigned significance**	**Brief description**	**Proposed development rationale**
43 O'Connell Street Upper, Dublin 1	Of significance	Four-bay, five-storey over basement building dating from the 1920s. Façade of Portland stone is flanked by ionic pilasters and modelling of façade includes swags between first and second floor and a modillion cornice above the third floor. The parapet bears the date 1925.The basement area to the front has a wrought-iron balustrade on a cut-granite plinth wall. The windows are uPVC casements. The upper-level interior has a staircase with ornamental square-section balusters and a hardwood handrail. The rooms are simple, with plain run cornices and some surviving cast-iron chimneypieces. Early basements survive from the 18th century.	 Façade to be retained and site developed, vertically extended.
44 O'Connell Street Upper, Dublin	Of significance	Three-bay, four-storey building with granite ashlar façade with plain granite parapet and with modillion cornice and plain frieze in Portland stone between second and third floors. The windows are three-over-six sashes on the top floor and six-over-six at first- and second-floor levels. The ground floor is faced with channeled granite ashlar. Early basements survive from the 18th century.	 Façade to be retained and site developed, vertically extended.

45 O'Connell Street Upper, Dublin 1	Of significance	Three-bay, four-storey building with granite ashlar façade with plain granite parapet and with modillion cornice and plain frieze in Portland stone between second and third floors. Designed by the renowned architect, Harold Leask. The windows are three-over-six sashes on the top floor and six-over-six at first- and second-floor levels. The ground floor is faced with channeled granite ashlar. Internally, the building is an architectural and technical exemplar of its early 20th century origin. The building has a substantial, intricately designed two storey return, which corresponds in form with interlinking lightwells at No.44 adjacent. Early basements survive from the 18th century.	 Façade to be retained and site developed, vertically extended.
46-49 O'Connell Street Upper, Dublin 1	Of significance	Five-storey office building erected in the early 1970s on top of 18th century basement fabric, which survives under the entrance level building and car park. Façade of precast concrete panels is broken up into five units, each with four bays, reflecting the rhythm and proportions of the typical Georgian Dublin street, though using 20th-century materials and techniques. Each window frame projects from the façade with plain glazing and with ventilation grilles beneath, below which is a sloped panel. At ground floor level are five shop units. This building is T-shaped, with a full-height return projecting from the center of the rear façade, rising from a podium that fills the balance of the site, allowing for two levels of parking.	 To be demolished and site developed

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

50-51 O'Connell Street Upper, Dublin 1	Boundary walls of moderate significance; vacant site of limited/ no significance	Vacant site. The party walls running to the rear are of brick and stone and are of early date. In the southern wall holes mark the probable former locations of beams, while in the northern wall there are two niches recessed into the boundary wall towards the rear of the site.	 Flanking walls to be demolished and site to be developed
52-54 O'Connell Street Upper, Dublin 1 **The former Carlton cinema**	Front bay of significance, with buildings to rear of moderate significance	The site is occupied by the former Carlton cinema and two ground floor shops. The ground floor façade has a projecting canopy over the central cinema entrance flanked by shop fronts, all closed behind roller shutters. The upper façade is loosely based on Art Deco, with a central section with vertical glazing panels separated by giant order pilasters with stylised ionic capitals and with rounded arrises, the assemblage terminating at each end with paired columns of similar order supporting frieze and cornice above which are tripod bowls of light. Internally the original cinema auditorium has been divided to provide three screens, while a former restaurant is converted to provide a fourth screen. The building is plain and faced with sand and cement, except the rear, which is faced with buff-coloured brick laid in English garden wall bond.	 Façade to be retained, building to be demolished and site developed. Façade to be modified and vertically extended.
55-56 O'Connell Street Upper, Dublin 1	Of moderate significance	The building on this site occupies two original house plots, with a five-bay, four-storey building with dormer attic. The shopfront runs the full width of the site with doorways at either end and has a broad fascia of Portland stone. The upper floor façade is of red brick, laid in English garden wall bond and has a Portland stone string course at third-floor sill level and a projecting cornice of Portland stone below the red-brick parapet. The windows are framed with Portland stone, with small casements in the outer bays and three broad windows in the central bays, each floor separated by a panel adorned with a roundel and swag. The outer bays break	 To be demolished and site developed

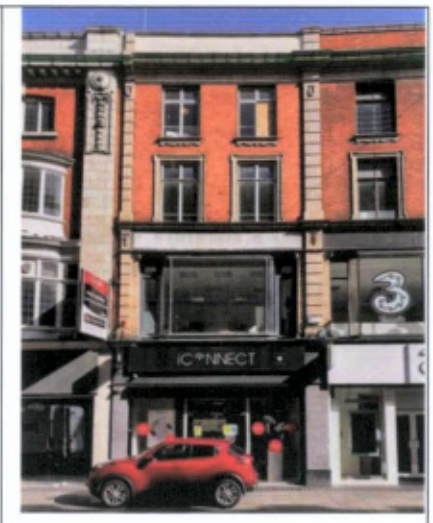
		forward slightly from the main façade.	
57 O'Connell Street Upper, Dublin 1	Of significance	Four-storey, three-bay building faced with red brick laid in English garden wall bond on the upper floors. The shopfront is of granite ashlar bearing the incised name "A & R Thwaites & Co" on the fascia. The original fluted granite columns supporting the fascia are now missing. At first-floor level there are three paired and mullioned windows, each sash having one-over-four configuration and the whole being framed in granite ashlar. On the upper floors the windows are framed with granite ashlar and there are three-over-six sashes on the top floor and six-over-six on the second floor. The parapet is of granite and has a wrought-iron railing. There are decorative elements of carved granite on the façade.	 Façade to be retained and site developed, vertically extended.
58 O'Connell Street Upper, Dublin 1	Of significance	Four-storey, three-bay building faced with red brick laid in Flemish bond, above which is a dormer attic storey. The shopfront is a replacement, though with surviving moulded granite sill course above. The windows are framed with cut granite and are single-pane timber sliding sashes. Between first- and second-floor windows there is a bracketed cornice above the central window above which is a shield bearing the monograph JGC for J & G Campbell, above which is a swag, while to left and right are granite panels bearing rosettes. A granite cornice projects above the top-floor windows, above which is a brick blocking course. In the interior some elements of the 1920s building remain, including a light well faced with glazed brick, some simple cornices, some cast-iron chimneypieces, simple window surrounds and a staircase with a heavy balustrade with turned balusters and a broad handrail. At lower ground floor level there are extensive brick vaults surviving from 1873 when they were built for a wine and spirit merchant.	 Façade to be retained and site developed, vertically extended.

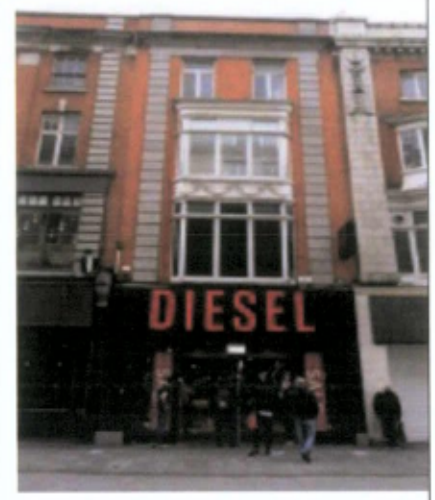
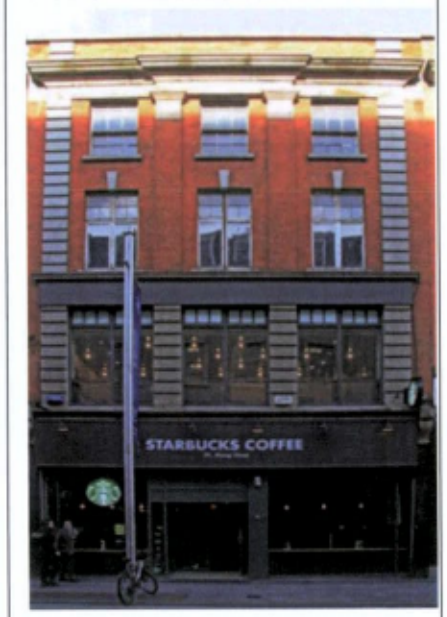
DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Regency annex to rear return of No.59 O'Connell Street Upper, Dublin 1	Of significance	Annex constructed possibly as part of the expanding complex of social buildings attached to the Sackville Club. It is a modest two storey structure with rendered walls, windows to the east and a pitched roof. Extensive works have occurred internally.	 To be demolished and site developed
Reading room to rear of No.59 O'Connell Street Upper, Dublin 1	Reading room and kitchens of high significance Car port of moderate significance	*Architectural significance* The extensive top-lit reading room attached to the Sackville Street Club has a modillion cornice, large roof lights and a large oval roof light, now filled in. It is reconstructed above surviving earlier kitchens. Its early 20th century car port onto Moore Lane is of moderate significance.	 To be conserved
60 A O'Connell Street Upper, Dublin 1	Of moderate significance	No.60A, on the corner of Moore Lane and Henry Place is a calp stone structure, as evident from breaches in its cement render, indicating an 18th century structure formerly attached with No.60. Internally, the building appears to have been much modified, with contemporary linings concealing original surfaces. It has a flat roof, 20th century in origin. It formed the north-eastern corner of the 1916 battlefield and survives from this time.	 To be demolished and site developed as a pocket square

61 O'Connell Street Upper, Dublin 1	Of high significance	*Architectural, historical significance* Four-storey, two-bay building with red-brick upper façade. The shopfront is modern. The brickwork has a newer section above sill level on the third floor, indicating reconstruction and the dentil brickwork beneath the copings are part of this later work. The brickwork on first and second floors appears to be handmade and given the proportions of the building it is likely that the façade is a survival from an earlier period. The windows have moulded architraves and have pediments at first-floor level and cornices on the second floor. The sills are skimmed with sand and cement and appear to be of granite and lime washed beneath. Internally the building has been comprehensively refurbished leaving little earlier fabric, though some windows are small-paned and hornless and could be of early date. The roof form is early, albeit modified, with surviving chimney stacks of early origin and bearing scars of a 60deg.roof pitch aligned with that of No.62 adjacent.	 Entrance level to be removed to accommodate pedestrian connection to Henry Place. Remainder of building to be retained and extended.
Site 3			
Structure	**Assigned significance**	**Brief description**	**Proposed development rationale**
36 Henry Street	Of significance	Four-storey, two-bay, centre-terrace building that is the left-hand building of a group of three that originally had identical fronts. This block was destroyed in the 1916 Rising and the three buildings were erected in 1917. The ground-floor shopfront is recent. The upper façade is framed by rusticated faience pilasters with decorative swags. At first-floor level the pilasters are	The upper floors of the building are to be adapted for use as a hotel with retail uses at basement, entrance and first floor level. The works will include construction of single storey vertical extension and lateral extension to the rear. Lower levels (Basement to Level 1 inclusive) will be demolished in part to align with the rear wall of the upper floors (Level 2 and 3).

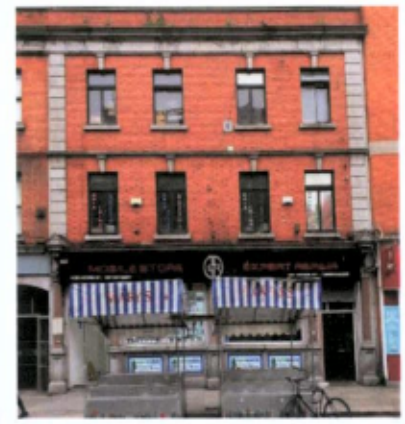
DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

		supplemented by nested ionic pilasters above which is a broad frieze and a cornice of faience. Across the first-floor façade is a display window with a large central pane flanked by slender turned glazing bars, beyond which the glass curves to the rear toward recessed casements. The upper floors have uPVC casement windows set in shouldered architraves of faience. The façade is topped by a frieze and cornice of faience beneath a plain parapet. The interior is relatively plain, though it retains a number of original chimneypieces and a staircase with turned balusters and newels, with a broad handrail.	
37 Henry Street	Of significance	Four-storey, two-bay building with upper floors faced with red brick set in Flemish bond. The façade is framed with faience pilasters of giant order, though these are set in from the margins of the façade. The pilasters support a modillion cornice, with a faience-faced parapet above. The shopfront is modern, though the faience framing remains. A large oriel bow window at first floor level is surmounted by a less ornate version on the second floor, above which is a mullioned timber casement window on the top floor, all windows having leaded lights. The interior has been subdivided and false ceilings inserted. Some original plain cornices and window and door architraves survive. A small winding concrete stairway leads up from the first floor from near the front of the building and has a wrought-iron balustrade with timber handrail. The stair is lit by a small leaded light with coloured glass that is the	The upper floors of the building are to be adapted for use as a hotel with retail uses at basement and entrance level. The works will include construction of single storey vertical extension and lateral extension to the rear. Lower levels (Basement to Level 1 inclusive) will be demolished in part to align with the rear wall of the upper floors (Level 2 and 3). 

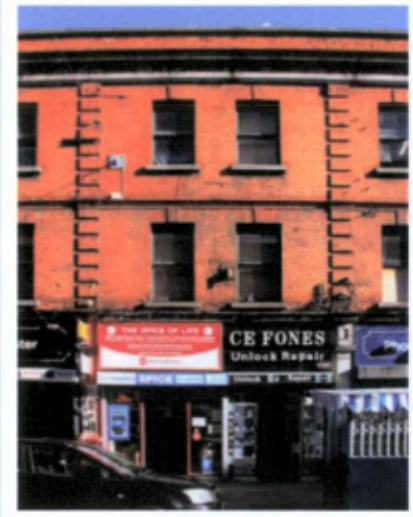
		top corner light of the oriel window.	
38 Henry Street	Of significance	Four-storey, two-bay building with upper floors faced with red brick set in Flemish bond. The façade is framed with parallel rusticated quoins, though these are set in from the margins of the façade. The quoins support a frieze and cornice, with a parapet above. The quoins, frieze and parapet are executed in limestone. The shopfront is modern. A two-storey oriel window rises through the first and second floors, above which is a pair of timber casement windows on the top floor. The interior retains features such as plain cornices, window and door architraves and closed-string staircase with turned balusters and newels. On an upper floor is a hearth large enough to accommodate a stove, with a segmental arch and chimneybreast faced with glazed brick.	Building to be demolished to accommodate the new passageway. 
39 Henry Street	Of significance	Three-bay, four-storey building with upper façade faced with red brick laid in Flemish bond. Shopfront is modern, though retaining polished stone and brackets at either side. Upper façade has rusticated quoins, though set in from the corners. These are repeated as divisions at first-floor level, above which are brick pilasters with Portland stone capitals, above which is Portland stone frieze and cornice, the central section of which breaks forward. The first-floor windows are large casements and above is a frieze and small cornice. At second-floor level the windows are timber casements with small-paned top lights, while on the third floor are six-over-six sashes. Internally, the fit-out at basement, ground and first floor levels is modern, and	The Henry Street façade will be retained with building fabric to rear demolished and plot vertically extended. 

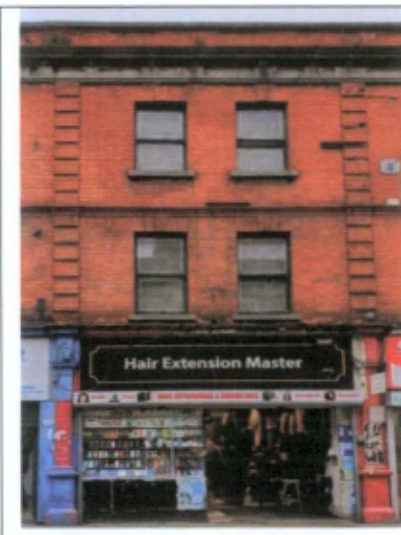
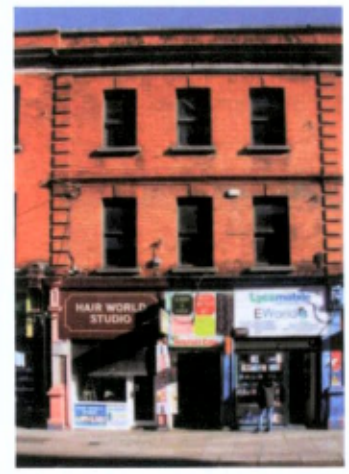
DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

		no early features are visible. An original staircase with turned balusters and newels runs to the floors above, where some original architraves and cast-iron chimneypieces survive, while there are no cornices. The subdivision of the upper floors, particularly at third-floor level, suggests that this area may have been open plan originally.	
40 Henry Street	Of significance	Four-storey, three-bay, centre-terrace building with red-brick façade laid in Flemish bond. Shopfront is modern but retains pilasters to each side and small cornice above. First-floor windows are blocked up and are mullioned and transomed timber casements. Above them is granite frieze and cornice. Second- and third-floor windows are timber casements. Sills are of granite with decorative aprons below and at third-floor level these continue as a granite sill course. Above the third-floor windows is a granite frieze and cornice, with brick parapet above. The interior has been subdivided at first-floor level the original egg and dart cornices survive, as do several cast-iron chimneypieces on each floor. On the top floor is a cast-iron kitchen stove. The staircase on the upper floors has turned balusters and newels, with a broad handrail.	The Henry Street façade will be retained with building fabric to rear demolished and plot vertically extended. 
41 Henry Street	Of moderate significance	Four-storey corner building with three bays onto Henry Street, one on Moore Street and a bay on the corner chamfer. The façade is of brick, laid in Flemish bond. The windows are single-pane sliding sashes, those at first-floor level having a granite frame surmounted by a frieze and cornice with a granite string course running through frieze level. On the second floor the	Building to be demolished and site redeveloped

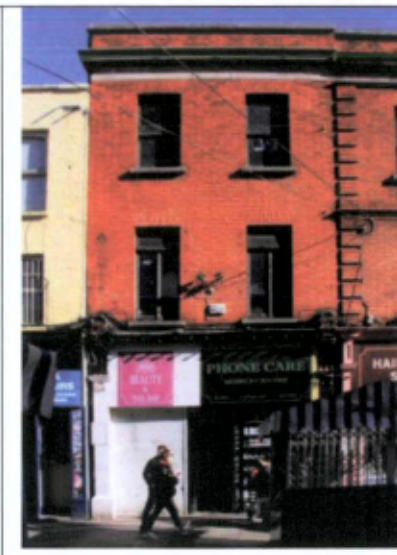
		windows have granite sills and gauged brick heads with granite keystones. The margins of the windows have brick roll mouldings. The top floor windows are similar, though smaller and a granite frieze runs through at window head level, above which is a granite cornice and brick parapet. The shopfront is modern. The ground floor shop and the basement have been fitted out and lined and no original features are seen. On the first floor there is simple coved cornicing. The window and door architraves survive and the staircase with square-section newels.	
1, 2 Moore Street	Of moderate significance	Three-storey, four-bay, brick-fronted building with limestone quoins, frieze and cornice framing facade. Limestone and granite shopfront to ground floor. Brick is laid in Flemish bond. Shopfront is of traditional style and is divided unevenly, reflecting the former use as two separate shops. Windows on upper floors are a mix of historic and replacement timber casement windows. Constructed in 1917, this was one of seven structures rebuilt by architect Francis Bergin after the 1916 Rising. Interior relatively plain and in poor condition. Original stair balustrade survives in part, though part replaced. Some cast-iron chimneypieces. Simple window linings and door architraves.	Building to be demolished and site redeveloped 
3 Moore Street	Of moderate significance, with Clarke's Court and arch of significance	Three-storey, three-bay brick-fronted vacant building with brick soldier quoins to left-hand side, limestone frieze and cornice. Replacement timber shopfront to ground floor with carved limestone pilasters supporting cornice over integrated, segmental-headed carriage archway, surmounted by limestone quoins and keystone. There	Building to be demolished and site redeveloped

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

		are replacement timber sash and casement windows to the upper floors. Constructed in 1917, this was one of seven structures rebuilt by architect Francis Bergin after the 1916 Rising. Lower flight of staircase replaced, upper flights retain turned balusters and newels with broad handrails. Simple linings to windows.	
4 Moore Street	Of moderate significance	Three-storey, two-bay brick-fronted premises with red brick facade laid in Flemish bond and flanked by matching brick soldier quoins. Replacement shop front to ground floor. The facade is surmounted by a limestone frieze and cornice. The windows to the upper floors are timber sashes probably dating to the building's reconstruction in 1917 by Francis Bergin, after the destruction of the 1916 Rising. Original staircase survives in part, with turned balusters and newels and broad handrail. Few other early features visible. Significant cracking in party wall adjacent to staircase.	Building to be demolished and site redeveloped 
5 Moore Street	Of moderate significance	Three-storey, two-bay brick-fronted premises with red brick facade laid in Flemish bond and flanked by matching brick soldier quoins. Replacement shop front to ground floor. The facade is surmounted by a limestone frieze and cornice. The windows to the upper floors are replacement timber casement windows. The building was reconstructed in 1917 by Francis Bergin, after the destruction of the 1916 Rising. The interior is in poor condition, with structural cracking, but retains much of the original staircase with turned	Building to be demolished and site redeveloped

		balusters and newels. Some cast-iron chimneypieces remain.	
6 Moore Street	Of moderate significance	Three-storey, three-bay brick-fronted building with red brick facade laid in Flemish bond and flanked by matching brick soldier quoins. The facade is surmounted by a limestone frieze and cornice. The windows to the upper floors are timber sashes likely dating to the building's reconstruction in 1917 by Francis Bergin, after the destruction of the 1916 Rising. At ground floor level, the replacement shopfront is surrounded by limestone Doric pilasters on raised plinths, surmounted by a matching cornice. Upper floors are in poor condition, though retain some cast-iron chimneypieces and the upper part of the stairs with turned balusters and newels. Plaster is missing from some walls on upper floor showing construction to be part brick and part mass concrete. This is likely to be similar construction to numbers 1 to 5.	Building to be demolished and site redeveloped 
7 Moore Street	Of significance	Three-storey, two-bay brick-fronted premises with red brick facade laid in Flemish bond, surmounted by a limestone frieze and cornice. The windows to the second floor are single-pane timber sliding sash windows, and the windows to the first floor are timber casements.	Building to be demolished and site redeveloped

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

		The building maintains an original shopfront comprised of rendered piers on plinths surmounted by fluted timber console brackets supporting a timber cornice and matching fascia. There are timber sashes likely dating to the building's reconstruction after the 1916 Rising. The interior on the upper floors retains little original material.	
8-9 Moore Street	Of high significance	*Architectural, historical significance* Three-storey, four-bay brick-fronted building facing Moore Street with north elevation to Henry Place. Painted brick facade laid in Flemish bond to front and English garden wall bond to north elevation, granite coping. The square-headed window opes to the upper floors are replacement timber casements. The ground floor shopfront has been replaced but retains rendered quoins to the north-west corner. The building fronting Moore Street may date from the 18th century and is connected through to the building at 11-13 Henry Place. Extent of surviving fabric to be determined.	Building to be conserved and adapted for residential use. The works will include construction of single storey vertical extension. 
11-13 Henry Place *To rear of 8/9 Moore Street*	Of significance	Exterior of No.11/13 Henry Place is 19th century in origin, a former warehouse in buff coloured and red brick. Interior has been replaced in the late 20th century and forms the rear part of shop at 9 Moore Street. Its walls are faced with modern shop fittings. Rear/ side extension to Nos 11-13 is of limited interest.	Building to be adapted for residential use. The works will include construction of single storey vertical extension connection to new buildings to the rear. Later, non -original extension to rear (south) will be demolished.

			
3 Henry Place	Of limited/ no significance	Concrete-framed three-storey building with grey concrete brick façade. Ground floor has glass block window while on upper floors clerestory windows span the width of the façade. Interior is plain and unadorned.	Building to be demolished and site redeveloped 
4 Henry Place	Of moderate significance	Two-storey sawtooth roof profile, purpose built early 20th Century commercial premises divided into two units. Double-pile hipped corrugated roof. Each unit has large window at first-floor level, that to the right having small panes and that to the left boarded up. The façade is of buff-coloured brick laid in English garden wall bond on the upper level and rendered and painted on the lower level.	Building to be demolished and site redeveloped 
5-8 Henry Place * Building denoted in Fig.15.4.1. by a red asterisk - described in greater detail in a report within the Architectural Heritage Impact Assessment attached to	Of moderate significance	Large commercial building with three-part north-light roof. Upper façade is of pink brick laid in English garden wall bond, while the ground-floor façade is rendered and painted. Window arrangement is irregular on both floors. The lower floor windows have bars and are closed with concrete blockwork, while the east-facing upper floor windows are boarded. The north-facing upper floor	Building to be demolished and site redeveloped 

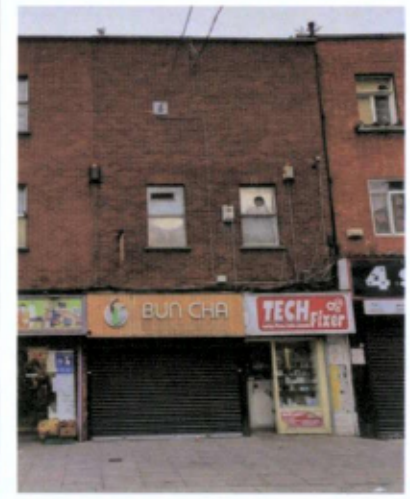
DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

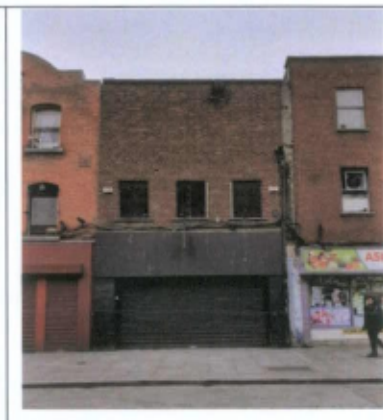
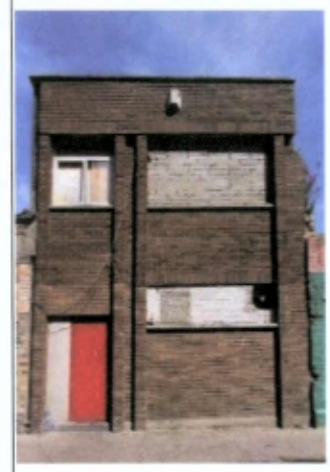
a planning application for Dublin Central-Site 3 , Appendix A3.22 *'Assignment of Significance of Certain Upstanding Building Fabric'.*		windows are steel sashes with small panes. Historic component surviving to entrance level external walls, with walls from first floor level upward, all interiors and roof dating from two stages of development commencing in the mid-20th century.	
9 Henry Place	Of moderate significance	Substantial three-storey, four-bay concrete-framed industrial building built as a factory in the 1930s. Shuttered vehicular entrance and shuttered doorway at ground-floor level over which are clerestory lights. Façade is rendered with projecting buttresses at centre and margins of façade. Part of the previous building survives as a calp limestone party wall on the eastern side. North light roof with two large bays over main building and smaller partial third bay at rear with slate on southern slope and northern lights blocked with corrugated steel. To rear of main building is a two-storey annex faced with buff-coloured brick in English garden wall bond. Internal concrete framing is exposed, with square-section piers supporting concrete beams and concrete floors. Stone party wall to east is visible. Infill between framing is generally of brick laid to English garden wall bond, though with some concrete blockwork	Building to be demolished and site redeveloped 
10 Henry Place * Building denoted in Fig.15.4.1 by a red asterisk - described in	**Site** of significance Building fabric of limited significance Rear surviving 19th century walls,	No.10 Henry Place in its current form is amalgamated with rear plots of Nos.4 and 5 Moore Place/ Mulligan's Court. The rear (south), part of west/ east flanking walls of No.4 Moore Place survive. The address No.10 Henry Place now describes the three	Building to be demolished and site redeveloped

greater detail in a report within the Architectural Heritage Impact Assessment attached to a planning application for Dublin Central-Site 3, Appendix A3.22; *'Assignment of Significance of Certain Upstanding Building Fabric'.*	formerly No.4 Moore Place/ Mulligan's Court of moderate significance	amalgamated plots that bear no relationship with the original configuration of No.10 Henry Place. The building is a two-storey gable-fronted structure with rendered façade ruled, lined and painted. Two doors at ground-floor level and large blocked window at first floor. Roof has been replaced and raised. Brick visible in western side elevation. Interior is open plan on both floors except for an insulated cool room at the rear of the ground floor. Brickwork is visible in places on internal faces of wall. Investigations have proven that No.10 Henry Place was reconstructed post-1916. As above, sections of 19th century walls survive to No.4 Moore Place, to the rear of the amalgamated building and have no bearing on the historical significance of the No.10 Henry Place plot	

Site 4			
Structure	**Assigned significance**	**Brief description**	**Proposed development rationale**
10 Moore Street * Building denoted in Fig.15.4.1 by a red asterisk - described in greater detail in a report within the Architectural Heritage Impact Assessment attached to a planning application for Dublin Central-Site 4, Appendix A4.11 *'Assignment of*	Of high significance Rear attached buildings are of limited/ no significance	*Architectural, historical significance* Three-storey-over-basement, two-bay brick-fronted premises facing Moore Street with south elevation to Henry Place. Red brick facade laid in Flemish bond to front and yellow brick English garden wall bond to south elevation, granite coping. The square-headed window opes to the upper floors are replacement timber casements. The ground floor shopfront has been replaced. Brick frontages suggest a late-19th or early 20th century date and the building was substantially upgraded in 1950. However, there is evidence internally	Main house to be adapted for use as apartments over retail. 

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Significance of Certain Upstanding Building Fabric'.		that early fabric survives within the building.	
11 Moore Street	Of limited/ no significance	Two-storey-over-basement, two-bay brick-fronted building. Red brick facade laid in stretcher bond. Flat roof. Modern shop front to ground floor. Facade is largely blind with two aluminum casement windows to first floor level and high parapet above. Built 1960 for KC Confectionery with extensive bakery premises at rear stretching to Moore Lane and Henry Place. No evidence of earlier fabric.	Building to be demolished and site redeveloped 
12 Moore Street	Building of limited/ no significance Party wall with No.13 of high significance	Three-storey, two-bay brick-fronted premises. Red brick facade laid in stretcher bond. Flat roof. Modern shop front to ground floor. Aluminum casement windows to upper floors. Built c.1960 as a grocery and subsumed into the adjacent KC Confectionery building in the early 1970s. A surviving party wall shared with No.13 Moore Street is 18th century in origin but visible only from within No.13. No evidence of early fabric survives elsewhere.	Building to be demolished and site redeveloped The party wall to be retained. 
13 Moore Street	Building of limited/ no significance Party wall with No.12 of high significance	Two-storey, two-bay brick fronted building with flat roof. Red brick facade laid in English garden wall bond surmounted by granite coping. Blind facade to second floor and blind windows to first floor. Modern shop front to ground floor level.	Building to be demolished and site redeveloped The party wall to be retained.

		The building was rebuilt in the 1960s for the Kylemore Bakery. A surviving party wall shared with No.12 Moore Street is 18th century in origin and presents with two possible creep holes.	
15 Henry Place and 5A Moore Lane	Of limited/ no significance	The rear of 10-11 Moore Street has a spur which turns to face onto Henry Place and is similar to the Moore lane frontage. The two appear to the street as two-storey, two-bay, brick-fronted buildings.	Building to be demolished and site redeveloped  
17-18 Henry Place * Building denoted in Fig.15.4.1 by a red asterisk - described in greater detail in a report within the Architectural Heritage	Of moderate significance	Four-storey warehouse built in the late 19th century at the same time as numbers 11-13 on the opposite side of the street, for the same client and with a similar design. Now single-storey and brick fronted with the brick laid in English garden wall bond and painted. The original first-floor sills remain at parapet level. Three windows and a	East and south walls retained with remainder demolished. Building to be adapted for use as a two storey building with apartments over retail.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Impact Assessment attached to a planning application for Dublin Central-Site 4, Appendix A4.11 *'Assignment of Significance of Certain Upstanding Building Fabric'*.		door onto Moore Lane are blocked up. A shuttered vehicular entrance on the southern elevation spans the width of one original vehicular entrance and a window and the upper parts of the two arches remain, the larger having a ceramic keystone similar to that on number 11-13. Two other windows remain unblocked on this elevation. The roof is flat. This building survives the 1916 battlefield and informs the corner addressing the former White Building plot.	
6-7 Moore Lane	Of high significance	*Architectural, technical, industrial significance* Two-storey building running along the western side of Moore Lane, the northern part of which, at number 9 Moore Lane, is unroofed and not within the present site. The lower part of the façade is a limestone wall, its coping running through as the heads of the doorways and the sills of clerestory windows. On the upper floor is an array of slit windows, rising from a cut-granite sill course. The interior is divided into two interconnected units, the left-hand bay was formerly a cooperage and the right-hand bay was a wine store.	Building to be conserved and adapted for use as office over retail. 
18 Moore Street **&** **10-11 Moore Lane to rear**	Of limited/ no significance	Two-storey, two-bay brick fronted building, with curved roof and red brick chimney stack to north. Red brick facade laid in English garden wall bond surmounted by granite coping. Blind windows to first floor. Modern shop front to ground floor level. This building is divided into two longitudinally to provide a buffer between the National Monument and the remainder of the site, as permitted for redevelopment in 2008, with the southern half owned by the state as part of the National Monument.	Building group to be demolished to make way for arch and public square 

		The northern section is part of the application site. The curved roof is based on Belfast trusses, divided between the two ownerships. This roof is likely to date from the post-1916 reconstruction of the building as the plot was deemed in ruins in 1917.	
Nos 20-21 Moore Street * Building denoted in Fig.15.4.1 by a red asterisk - described in greater detail in a report within the Architectural Heritage Impact Assessment attached to a planning application for Dublin Central-Site 4, Appendix A4.11 *'Assignment of Significance of Certain Upstanding Building Fabric'.*	Of high significance	Nos.20-21 Moore Street are 18th century in origin with later interventions. Whilst extensively modified, with many early features lost, their early building forms are still legible, rendering a credible assignment of architectural significance as two buildings within an 18th century terrace.	Main houses to be adapted for use as apartments over retail. Rear structures at 12 Moore Lane to be demolished to make way for public square 
Site 5			
Structure	**Assigned significance**	**Brief description**	**Proposed development rationale**
22-23 Moore Street, **13 Moore Lane to rear**	Of limited/ no significance	Three-storey, five-bay brick and glass-fronted building. Each bay projects forward from the plane of the facade, with timber casement windows further dividing each pier. Built c.1965 as a bingo hall, this structure retains a modern shopfront at ground floor level and is an architectural outlier within the historic streetscape.	Building to be demolished and site redeveloped 

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

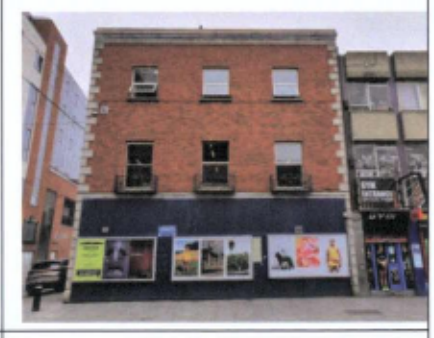
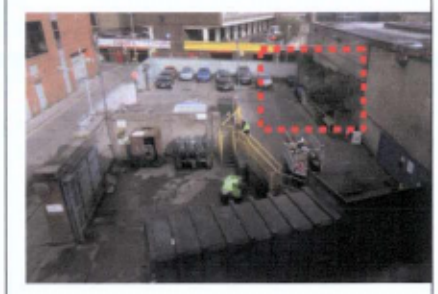
		The building extends back to Moore Lane and is a concrete structure with no evidence of earlier fabric visible.	
24-25 Moore Street	Of limited/ no significance	Building constructed in 2003, of no particular interest.	Building to be demolished and site redeveloped 
14 Moore Lane (incorporating Nos.1-3 O'Rahilly Parade, No.15 Moore Lane)	Vacancy of limited/ no significance Boundary wall to south of moderate significance	Council depot, not within site, but accessed to get view of boundary wall of No.13. At eastern end wall is high and of calp limestone rubble, raised in height with brick. Further west wall is of old red brick, extensively patched with concrete blockwork.	Surviving wall to be demolished and plot developed 

Table 15.4.2: Building assessment and statements of significance, together with a development rationale for each building/ plot within the Masterplan site

15.4.1.4 Operational Stage

As the wider Masterplan, encompassing Sites 1, 2AB and 2C, has not yet progressed into a planning application, it is not possible to comment on its characteristics at this time.



Plate 15.4.1: Proposed pedestrian link between O'Connell Street and Moore Lane.

15.4.2 Characteristics of the Proposed Development Of Site 3

Please refer to relevant Architectural Heritage Impact Assessment reports for further detail on the evolution of the enclosing environs and expanded detail on the evolution of each building and its plot.

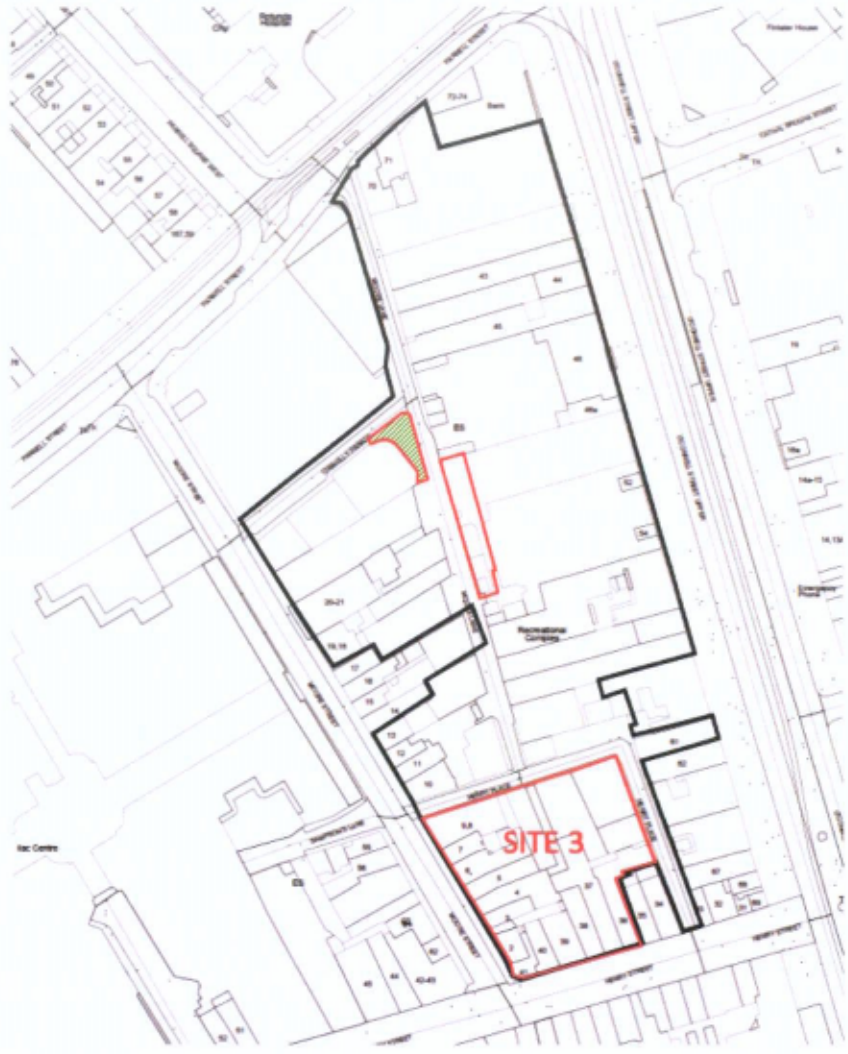


Figure 15.4.3: Planning boundary of Site 3 outlined in red, with the Dublin Central Masterplan site outlined in black.

15.4.2.1 Introduction

The Site 3 development seeks to adapt a selection of existing buildings and to demolish others to facilitate its redevelopment as a mixed use scheme with hotel, residential, retail and restaurant uses ranging in height from four to nine stories.

This section examines the characteristics of Site 3, summarising an assessment of significance assigned to each building within the grouping (expanded in further detail in Architectural Heritage Impact Assessment- Site 3), the process of which is outlined below.

15.4.2.2 Assignment of Significance for the Subject Building Range within Site 3

Please refer to 15.4.1.1. Assessment of Significance, above, for an explanation on definition and assignment of significance of buildings in Site 3.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

None of the structures within Site 3 have been previously identified within statutory records as being of significance. Extensive recent archival and site analysis has nonetheless determined the existence of a range of structures on the site that are of a level of significance deemed by the Applicant to require sensitive retention, conservation and meaningful re-use within the site's proposed redevelopment.



Figure 15.4.4: Ratings assigned to each structure within Site 3 (as per 15.4.1.1. above).

Note: please refer to Architectural Heritage Impact Assessment- Dublin Central-Site 3', Appendix A3.22 'Assignment of Significance of Certain Upstanding Building Fabric' for expanded detail on buildings denoted with an asterisk.

15.4.2.3 Construction Stage

15.4.2.3.1 Demolition Strategy

The Site 3 development includes the provision of a new passageway linking Henry Street to Moore Lane, the provision of a mixed use development, the demolition and part-demolition of a number of buildings, and the adaptation of existing buildings for alternative use as outlined in Table 15.4.2. above.

Demolition, excavation and enabling works methodologies are described in detail in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 3.



Plate 15.4.2: Proposed 'Passageway' connection on the site of No.38 Henry Street.

15.4.2.3.2 Retention and Conservation Strategy

Each structure to be retained is subject to differing approaches. A detailed schedule of proposed general and conservation works proposed for retained structures is expanded in Section 6 of the Architectural Heritage Impact Assessment attached with the planning application for Site 3, and summarised below.

No.36 Henry Street

No.36 Henry Street will be adapted and modified, with connections on multiple levels to the proposed new hotel to the rear, with a single storey extension over. The ground floor and first floor will remain in retail use and the upper floors (level 2 and 3) will be adapted for use as hotel guestrooms. All retained fabric will be subject to conservation.

No.37 Henry Street

No.37 Henry Street will be adapted and modified, with connections on all levels to the proposed new hotel to the rear, with a single storey extension over. The ground floor will remain in retail use and the upper floors (levels 1, 2 and 3) will be adapted for use as hotel guestrooms. All retained fabric will be subject to conservation.

No.8-9 Moore Street and 11-13 Henry Place

It is proposed to remove later rear extensions and interior fabric of no architectural interest and to modify and vertically extend these interconnected structures for residential use. All retained fabric will be subject to conservation.

Façade Retention- Nos 39 and 40 Henry Street

It is proposed to remove all fabric to the rear of the facades of Nos 39 and 40 Henry Street. It is proposed to construct a new structure to the rear and above the parapet line, as part of a retail, residential and hotel building. It is proposed to carry out conservation works to the retained facades.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.4.2.3.3 Development Strategy

The characteristics of the proposed Site 3 development intend to merge retained fabric purposefully with new building forms. The proposed development is generally higher in scale to what exists on the site, with new forms stepping down to meet existing, and generating height where at a distance from existing buildings.

15.4.2.4 Operational Stage

15.4.2.4.1 General Characteristics

For the purposes of this EIAR assessment, the scheme's contribution to its enclosing Architectural Conservation Area and retained structures will become most evident at operational stage.

Appendix 12.1 of Chapter 12 of this EIAR, contains verified views of the scheme from enclosing street networks.

The tallest element of the scheme, the hotel block, is contained in the north-eastern corner of Site 3, at the bend on Henry Place. It is positioned as such to reduce impacts from the ACA, and to introduce active frontage in a quiet laneway. The process of executing verified views accurately demonstrates predicted interactions between the existing urban context and the proposed development. In the instance of Site 3, it is a powerful tool used to gauge the tolerability and level of impacts (please refer to 15.5 below).

At present, Site 3 is subject to considerable vacancy and dereliction (refer to Fig. 15.5.2. below). Whilst its Henry Street and Moore Street retail units are active, upper and basement levels are not purposefully used. Its building fabric onto Henry Place presents inactive frontages with corresponding antisocial consequences for the adjoining public realm. The overall composition at present undermines the wider urban character.

The proposed Site 3 development , in purposefully retaining and re-using key buildings of architectural heritage significance and fusing them with new structures, will introduce a diversity that is required to sustain the area economically, a benefit that will reverberate to areas of dereliction and underuse beyond this site.

15.4.2.4.2 O'Connell Street

Verified views taken from O'Connell Street towards the development site confirm its visibility above extant parapets on O'Connell Street at certain points only, the impacts of which are explored in Section 15.5. View C of Appendix 12.1, taken at the Spire due north, demonstrates the extent to which the upper stories of the hotel will be visible from within the ACA, as visible to the rear of roofscapes of Nos 63-67 O'Connell Street, seemingly blending with expressed pediments and parapets.

View D demonstrates the proposed context of the upper stories of the hotel with the GPO, and confirms a changed roofscape when viewed from the south, due north. The opposing view from the north of O'Connell Street due south is likely to present a diminished vista, with the upper floors blending with the urban landscape.

Alternative views due north from O'Connell Street, Views E at Abbey Street and View F from O'Connell Bridge for instance, present an indistinguishable change in the urban landscape.

Whilst the main hotel building is imperceptible above the O'Connell Street parapets in View S1, taken from the junction of Cathedral Street with O'Connell Street, due west, the study demonstrates the hotel's upper floors as rising above the parapets of Nos. 61-63 O'Connell Street. A similar view, S, taken from the middle of Cathedral Street due west shows the development in relief, as a backdrop to the O'Connell Street terrace.

Its Moore Street elevation will correspond with the character of the existing terrace, but to a greater scale. The design intends to emulate the rhythm of the streetscape, reflecting plot widths and variances, continues the use of brick to build on the established material character of the area, and introduces common shop front typologies to unify the identity of the block.

15.4.2.4.3 Henry Street and Environs

The scheme's Henry Place elevations will alter the composition of both lengths of the lane to the west and south. The tall element of the hotel block is not visible along Henry Street due east or west. The most significant change arises from the introduction of a taller corner feature, which is found to approximate with the existing condition, as demonstrated in View N of Appendix 12.1.

15.4.2.4.4. Moore Street

Verified view M of the development from the junction of Moore Street and Henry Street due north presents an imperceptible change to the streetscape, benefitted by the favourable orientation of Moore Street where increased height is not impactful. The character of the street is therefore largely maintained.

The change in building form and height is more evident in the opposing View L, taken due south at the Parnell Street end of Moore Street, where the mass of the Site 3 is present within the streetscape.

15.4.3 Characteristics of the Proposed Development of Site 4

Please refer to relevant Architectural Heritage Impact Assessment reports for further detail on the evolution of the enclosing environs and expanded detail on the evolution of each building and its plot.

15.4.3.1 Introduction

The proposed development generally comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses, in two parts located north and south of the Nos.14 – 17 Moore Street (National Monument / Protected Structures). Building height ranges from 1 – 3 storeys, including retained independent single storey basements. The scheme also provides part of the proposed new public square and an archway onto the new square.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

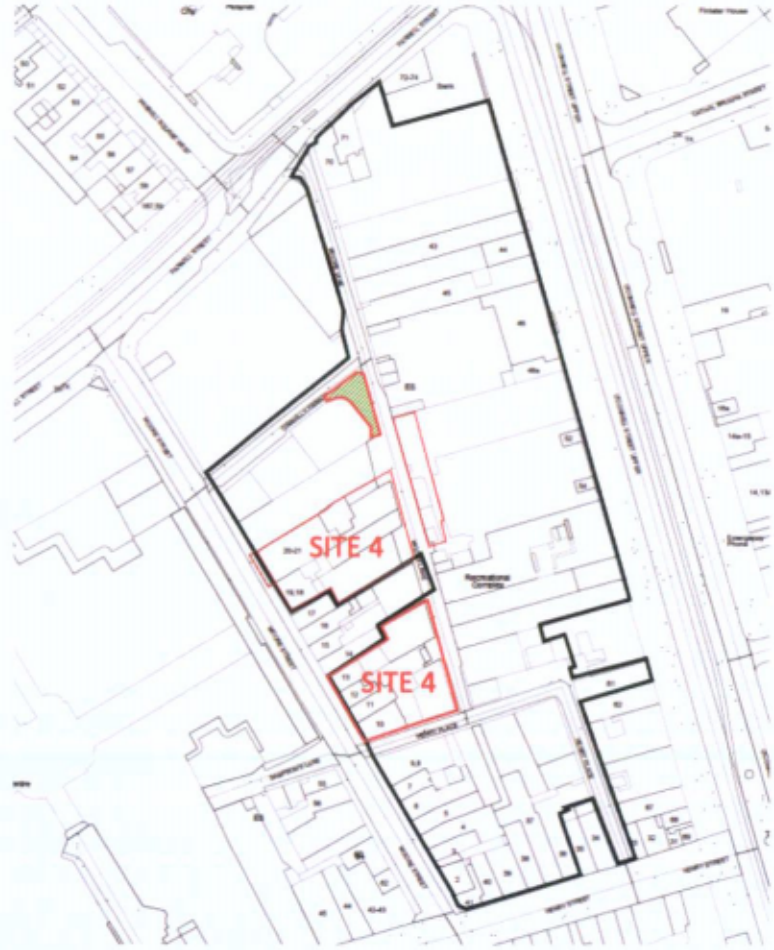


Figure 15.4.5: Site 4 outlined in red in context with the Dublin Central Masterplan Area.

15.4.3.2 Assignment of Significance for the Subject Building Range Within Site 4

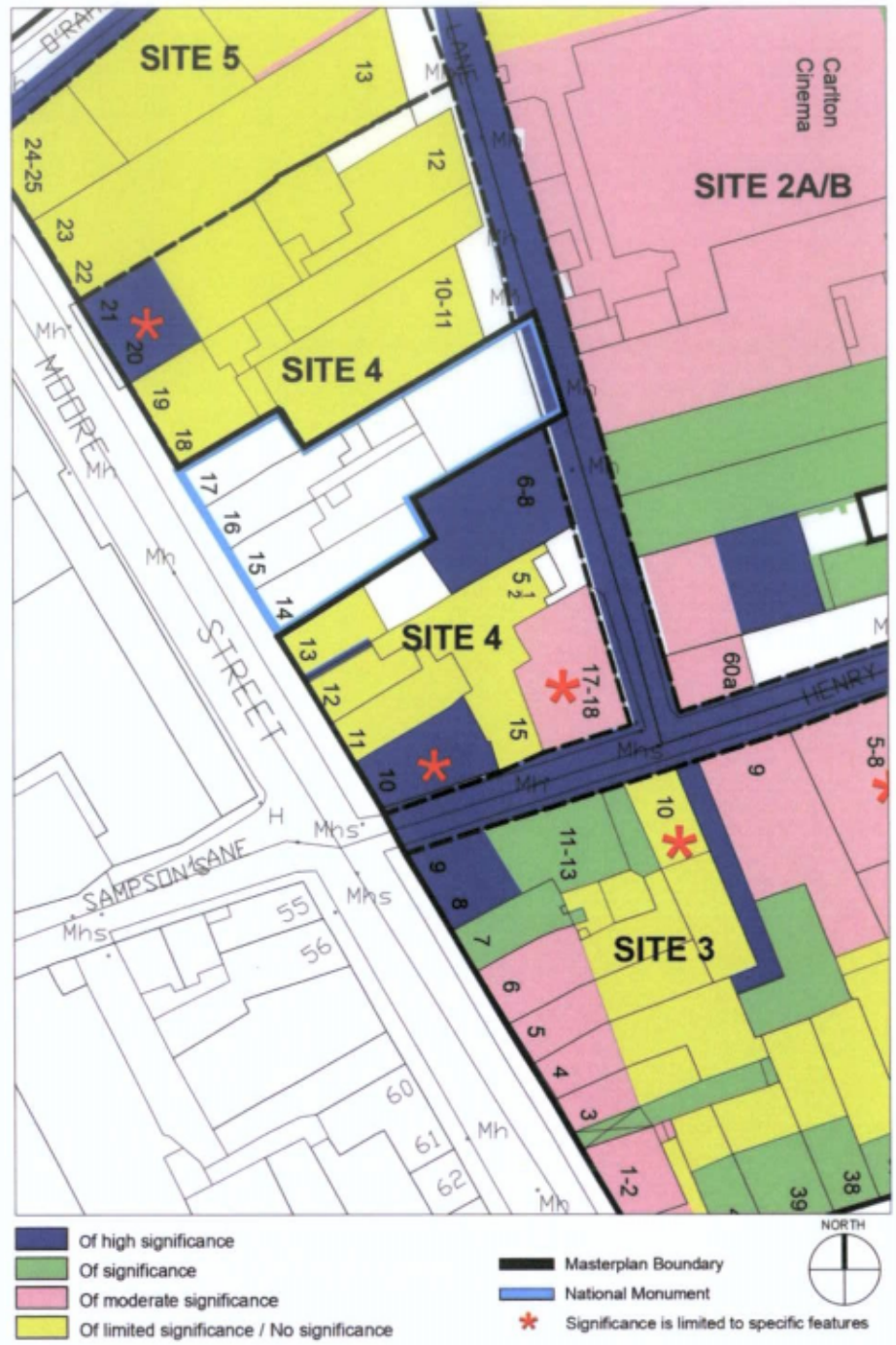


Figure 15.4.6: Ratings assigned to each structure within Site 4,(as per 15.4.1.1. above).

Note: please refer to Architectural Heritage Impact Assessment- Dublin Central-Site 4', Appendix A4.11 'Assignment of Significance of Certain Upstanding Building Fabric' for expanded detail on buildings denoted with an asterisk.

DC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.4.3.3 Construction Stage

15.4.3.3.1 Demolition Strategy

The proposed works include the provision of a new street linking Moore Street to Moore Lane via a new public square, the provision of a mixed use development, the careful retention and adaptation of certain buildings and demolition and part-demolition of others, as identified in Table 15.4.2. above.

Demolition, excavation and enabling works methodologies are described in detail in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 4.

15.4.3.3.2 Retention and Conservation Strategy

No.10 Moore Street

It is proposed to retain the historic portion of No.10 Moore Street, removing rear 20th century extensions of limited interest, provide a retail unit at street level and residential apartments at upper levels. The building will be subject to an expansive range of conservation works.

Nos.20-21 Moore Street

Nos.20/21 will be adapted and modified, removing rear 20th century extensions of limited interest, with café at entrance level and residential units above. The building will be subject to an expansive range of conservation works.

Nos.17-18 Henry Place

The building at the junction of Henry Place and Moore Lane is little more than a shell at present. The late 19th century warehouse was originally constructed as a two and three-story building and later truncated to a single-story structure due to concerns about its stability. It is proposed to retain the original sections of east and south enclosing external walls only and to insert a new structure within, with retail use at street level and residential use at first floor level.

Nos.6-7 Moore Lane

There are extensive original features surviving in this building, which is generally in sound condition, including exposed rubble walls, a barrel vaulted ceiling in the basement and robust king post trusses supporting the pitched roofs create a characterful space, considered suitable for adaptation for a restaurant / bar use at entrance and basement level, with open-plan offices on the first floor level.

Party Wall between Nos.12 and 13 Moore Street

An opening at entrance level and an opening at first floor level were discovered in recent works. The infill fabric of both is not of significance, but the openings are of immense significance. It is proposed to respect both elements equally, to both sides, given their interdependence, and chalk out an area at least 150mm beyond the outer edges of each opening. The openings will be brushed down prior to their encasement with a viewing screen comprised of fire rated glass. Wall fabric adjacent will then be consolidated as described in 6.5 below, in order to protect the integrity of the structure.

15.4.3.3.3 Development Strategy

The characteristics of the proposed development intend to merge retained fabric purposefully with new building forms. The proposed development is generally within the scale of original forms which exist or existed on the site historically.

The proposed introduction of permeability reflects a tradition of routes through the site, lost over time in the amalgamation of building plots and infilling of voids.

15.4.3.4 Operational Stage

15.4.3.4.1 General Characteristics

For the purposes of this heritage impact assessment, the scheme's contribution to its urban environment, in particular the significance of Moore Street and its environs will become most evident at operational stage.

At present, Site 4 is subject to considerable vacancy and dereliction to a greater extent than Site 3 above. Buildings extensively present inactive street frontages with an overall impression of urban decay.

15.4.3.4.2 The Enclosing Street Networks of Moore Street, Henry Place And Moore Lane and Their Connection to A Public Square

The proposed development of Site 4, in purposefully retaining and re-using key buildings of architectural heritage significance and fusing them with new structures, will introduce a diversity that is required to sustain the area economically, a benefit that will reverberate to areas of dereliction and underuse beyond this site.

The materials for new development on Site 4 include brick, metal claddings and reclaimed elements. The choice of brick for new buildings and the arch on Moore Street is appropriate given the commonality of use of various sizes and tones of brick on the street, contributing to an enriched visual composition. View L of Appendix 12.1 of this EIAR demonstrates efforts at tonally fusing new brick to the variances of the given palette, a process that can be confirmed prior to commencement in the presentation of a suite of samples to inform material compatibility with the protected terrace at Nos 14-17 Moore Street.

The predominately brick, stone and metal contributes to an expression of the solidity of building forms on this site, and will over time, merge new and historic components within a blended streetscape.

The proposed introduction of a public square as a central component of the scheme will attract visitors to the area, which combined with the proposed generation of a residential community, will reintroduce a vibrancy that has been lost over time.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021



Figures 15.4.7- 15.4.10: General images of the operational stage of the Site 4 development.

15.4.4 Characteristics of the proposed development of Site 5

Please refer to relevant Architectural Heritage Impact Assessment reports for further detail on the evolution of the enclosing environs and expanded detail on the evolution of each building and its plot.

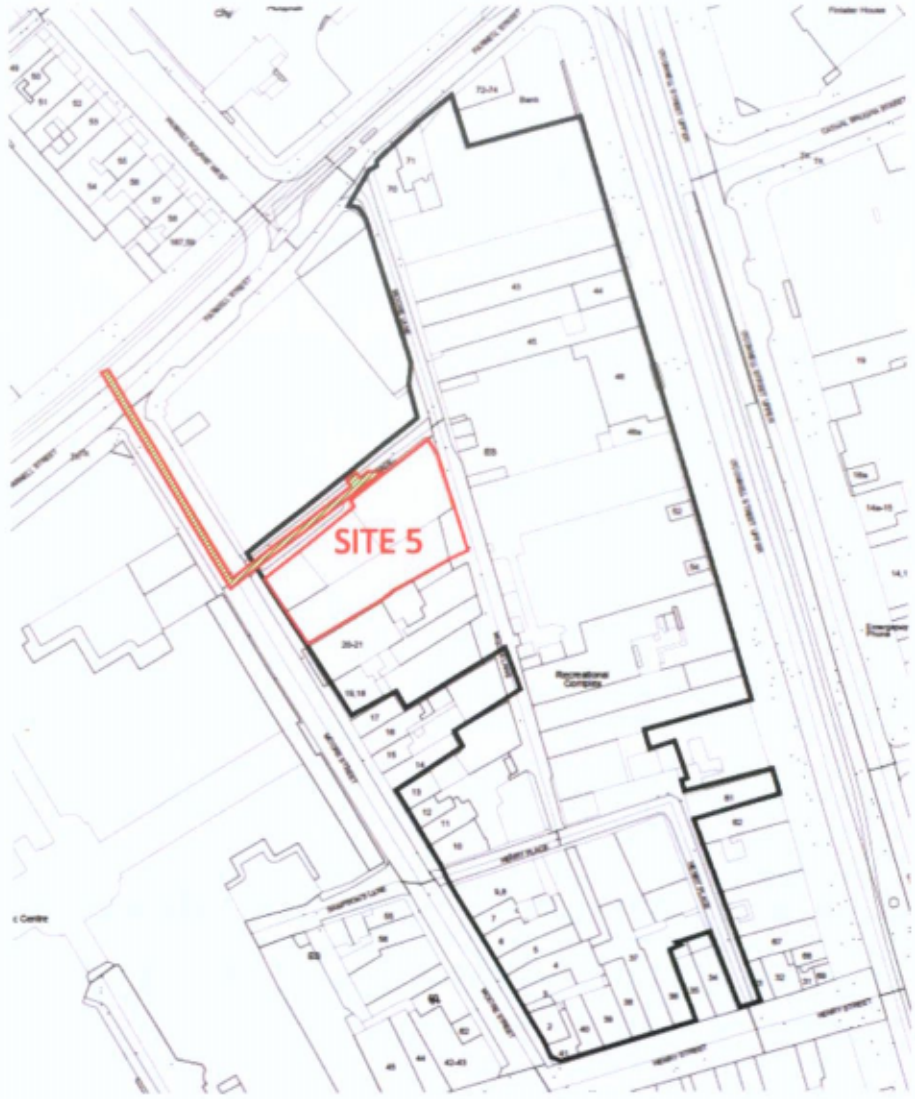


Figure 15.4.11: Boundary of Site 5 outlined in red, Dublin Central Masterplan Site outlined in black.

15.4.4.1 Introduction

The proposed development generally comprises a mixed-use scheme accommodating office and café / restaurant uses in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement, providing part of the new public square; engaging with Moore Street to the west and the public square to the south. The building steps up in height from three stories onto Moore Street to six storeys onto Moore Lane. The Moore Street elevation in turn is broken up to read as separate buildings, commencing at three stories and stepping up to four stories to turn the corner onto O'Rahilly Parade and culminate the Moore Street terrace.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.4.4.2 Assignment of Significance for the Subject Plot and Buildings Within Site 5

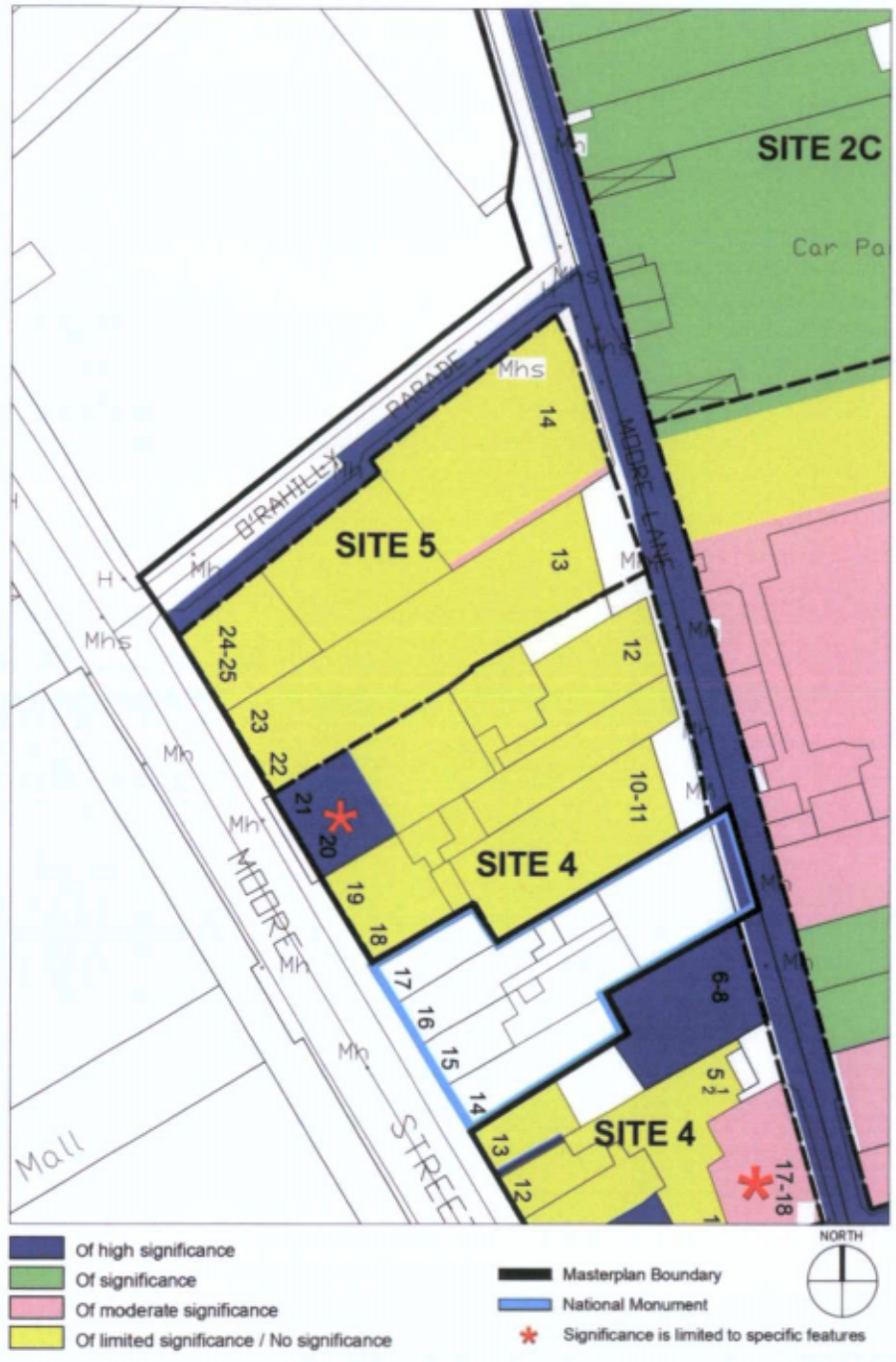


Figure 15.4.12: Ratings assigned to each structure within Site 5, (as per 15.4.1.1. above).

15.4.4.3 Construction Stage

The proposed development of Site 5 seeks to demolish all structures on the site, excavating a portion of the site adjacent to O'Rahilly Parade.

The demolition process will require consideration of the retained 18th century structure at Nos.20 and 21 Moore Street. The manner in which the party wall within No.22 is constructed is not known as it is presently concealed behind additional linings, requiring a range of investigations to be carried out prior to commencement of the development to ensure accurate demolition and enabling works strategies reflecting party wall conditions.

The characteristics of this stage of the works is outlined in detail in a suite of demolition, excavation and enabling works methodologies described in detail in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 5.

15.4.4.4 Operational Stage

The characteristics of the proposed development of Site 5 at operational stage are envisaged as culminating the northern end of the terraced development and providing an enclosure to its proposed public square. A range of diminishing verified views have been taken of the site, from the junction of Parnell Street with Moore Street (View k- Appendix 3.1) and View L.

Both viewpoints demonstrate the stepping up in scale of the proposed development, from three to four stories, as the block meets O'Rahilly Parade. The views also show the consistency in materiality of the proposed development with the brick-faced terrace of the east side of Moore Street, blending with the National Monument buildings to unify the composition.

An attempt at articulating expressed pediments of gable-fronted buildings synonymous with the National Monument also succeeds in a modulating parapet treatment referencing the original character of the street.

15.5 Potential Impacts

15.5.1 Dublin Central Masterplan

15.5.1.1 Construction Stage

15.5.1.1.1 Introduction

The detailed physical and archival assessment of building fabric, determining, insofar as possible, the existence in the first instance, and then the position of historic fabric of note, has provided a comprehensive baseline from which to generate an informed architectural heritage impact assessment.

Whilst it is acknowledged that the Dublin City Development Plan 2016-2022 together with the O'Connell Street Architectural Conservation Area (where directly applicable to Sites 1, 2AB, 2C, 3; and indirectly applicable to Sites 4 and 5) policies and objectives form the statutory basis of an assessment of architectural heritage impact, the remit of their application is widened to encompass an advancement in the understanding of the architectural heritage significance of the Masterplan area and its building fabric, as it has evolved over the course of site and archival investigations in recent months.

The final design of the Masterplan is preceded by the Applicant's adoption of the Dublin Central Masterplan Area Conservation Plan, which sets out a range of policies and recommendations intended to mitigate impacts in the execution of the Masterplan.

The Conservation Plan absorbs the spirit of statutory recommendations and expands them to reflect the known urban and cultural significance of the site.

15.5.1.1.2 Potential Impacts for the Masterplan Area's Inherent Architectural Heritage

Whilst the Masterplan area contains a number of vacant plots, most plots are occupied with buildings of varying significance, condition and completeness. It is proposed to develop all buildings and plots, together with sections of enclosing public realm within the Masterplan area.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Purposeful Retention and Re-use

A process has been carried out as part of the baseline Masterplan strategy to identity building fabric meriting retention, enhancement and in certain circumstances, remodelling to ensure their wholescale, purposeful integration within a reimagined urban environment.

The Masterplan acknowledges that some but not all retained structures are afforded statutory protection, but has approached the redevelopment of selected fabric as if protected.

Demolition

The proposed development arises in removal of building fabric across the site. The rationale for removal of extant buildings within Sites 3, 4 and 5 is outlined in detail in the Architectural Heritage Impact Assessments for each respective planning application.

The extent of removal of building fabric within Sites 1 and 2 in following a similar rationale, will be set out in the presentation of Architectural Heritage Impact Assessments in forthcoming planning applications for these sites.

What is accepted is the principle of removal of substantive sections of the section of O'Connell Street West within the Masterplan site, in line with what is permitted under DCC Reg. Ref. 2479/08/ An Bord Pleanála Reg. Ref. PL29N.232347.

Site 2 further supports corresponding demolition in the positioning of the MetroLink Enabling Works and Site 2 'oversite' proposals within the combined plots of Nos.43- 58 O'Connell Street, and part of the rear of No.59 O'Connell Street, extending west from their O'Connell Street facades, where retained, to Moore Lane. The construction of these two interrelated Site 2 elements within the urban block of O'Connell Street West will present a singular impact in the sequential excavation to a greater extent than what was envisaged by the permitted development. However, the permitted strategy for the protection of upstanding building fabric within the plot of No.42 O'Connell Street to the north of the site and No.59 O'Connell Street to the south of the site remains unchanged.

An improved departure from the permitted scheme is the retention for the most part of No.59 O'Connell Street, to include the careful conservation and presentation of a reading room to the west, together with the retention of 60 O'Connell Street, both of which (in separate ownership) were intended to be demolished under the original planning scheme (DCC Reg. Ref. 2479/08).

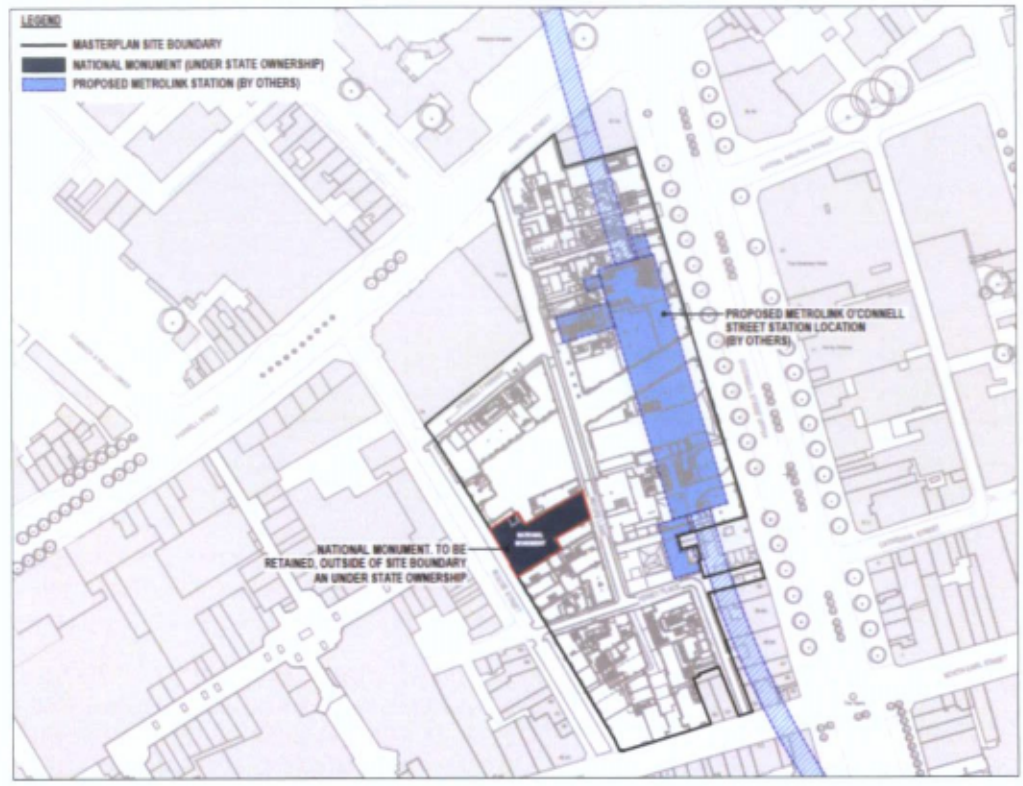


Figure 15.5.1: Location of the Metrolink Station within the Masterplan area.

The Table 15.5.1. below describes construction and operational stage impacts anticipated as arising to all buildings and plots within the Masterplan site from the redevelopment, irrespective of their statutory protection but highlights protected fabric to distinguish between both conditions.

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
Site 1		
70 Parnell Street	It is intended to retain and purposefully re-use this building, presenting a positive impact for the building fabric and the ACA. The design detail for the development of this building has not yet been finalized, with a wider impact assessment therefore found to be premature.	Operational stage impacts will be fully addressed when the design is finalised, but it is anticipated that the purposeful reuse of this building will enhance the setting of protected structures in the vicinity, notably the opposing Rotunda grouping.
71 Parnell Street	It is intended to demolish all fabric behind the façade of this building. As the fabric has been much altered, impacts are not considered especially adverse.	Operational stage impacts will be fully addressed when the design is finalised, however, no material change is considered as arising from the retention of the streetscape condition, albeit with a vertical extension above.
72 Parnell Street and 40-41 O'Connell Street	It is intended to remove extant building fabric of limited significance and develop the plot. The proposed development encloses two protected structures outside the development site; 72-74 Parnell Street (RPS 6424/ NIAH 50010559(R)) and 37-38 O'Connell Street Upper (RPS 6021/ NIAH 50010558(R)).	Operational stage impacts will be fully addressed when the design is finalised, but it is anticipated that the proposed redevelopment will address the long term negative interaction of this property with the ACA and its neighbouring protected structures, in the provision of well crafted buildings, respectful of scale and materiality.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
	An immeasurably positive impact will arise from the redevelopment of an unattractive building onto Parnell Street, and a vacant plot, cumulatively undermining the ACA. The proposed development will take into account protective measures to safeguard the adjoining protected structures to ensure that no damage arises to them during the construction process. (Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies)	
42 O'Connell Street Upper and O'Connell Hall	It is intended to retain and purposefully re-use these buildings, presenting a positive impact for the building fabric and the ACA. As the design is not developed, wider impacts are not yet known.	Operational stage impacts will be fully addressed when the design is finalised, but the proposed intention of conservation and purposeful re-use of this nationally important building of rarity will enhance the spectrum of understanding of the original grandeur of O'Connell Street, and contribute positively to the ACA.
Site 2		
43 O'Connell Street Upper	It is intended to demolish all fabric behind the protected façade. The development will arise in the permanent loss of an 18th century townhouse basement, together with the loss of a 20th century building of significance. The proposal will temporarily remove lateral support from the south, to the shared boundary with the protected No. 42 and O'Connell Hall adjacent. It will also arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed gable (No.42) and façade (No.43) protection strategies.	Operational stage impacts will be fully addressed when the design is finalised.
44 O'Connell Street Upper	It is intended to demolish all fabric behind the protected façade. The development will arise in the permanent loss of an 18th century townhouse basement, together with the loss of a 20th century building of significance. The development will arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.
45 O'Connell Street Upper	It is intended to demolish all fabric behind this retained façade. The development will arise in the permanent loss of an 18th century townhouse basement, together	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
	with the loss of a 20th century building of significance. The development will arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	
46-49 O'Connell Street Upper	It is intended to demolish this building and redevelop its plot, part of which will be subsumed by the proposed link between O'Connell Street and Moore Lane.	Operational stage impacts will be fully addressed when the design is finalised, but it is anticipated that the proposed street connections will positively enhance the quality of the public realm of the northern section of O'Connell Street and its wider ACA, and address long-term challenges with absence of pedestrian permeability to the core to the west of the ACA.
50-51 O'Connell Street Upper	It is intended to demolish flanking early walls and develop the plot, a portion of which will be subsumed by the proposed link between O'Connell Street and Moore Lane.	Operational stage impacts will be fully addressed when the design is finalised. It is accepted however, that the vacancy of this plot undermines the semblance of a continuous terrace at O'Connell Street West. Whilst presenting a 'gap' in approximately the same position as the proposed new pedestrian lane, it offers none of the benefits of urban connectivity accompanying permeability. Operational stage impacts of the development of a structure replacing one which was long removed from the streetscape will give the retained protected façade of Nos 52-52 to the southern boundary, a welcome urban context. The additional benefit offered by this site of securing, in part, necessary and purposeful connectivity is also welcomed as positively contributing to an enriched urban character. Both proposed conditions are considered beneficial and positive. The loss of flanking historic walls is regrettable, but balanced by the gains brought by the development. The inherited loss of historic buildings giving context to these flanking boundaries is what is regretted most, as the scars evident on both walls are indicative of their inherent architectural quality. Without context, the meaningful retention of these walls is considered to present little heritage gain.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
52-54 O'Connell Street Upper	It is intended to demolish all fabric behind the protected façade, with the loss of 20th century fabric of significance. The development will arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	Operational stage impacts will be fully addressed when the design is finalised, but it is anticipated that what is most important about this building, its interaction with the ACA, will bring about a welcome benefit for both the memory of this structure and revive its civic interaction with its immediate urban environment.
55-56 O'Connell Street Upper	Notwithstanding the inclusion of this building in the NIAH, it is, on detailed inspection, found to possess modest significance. Its loss to enable the construction of a new building is not considered adverse.	Operational stage impacts of the replacement building will be fully addressed when the design is finalised, but the principle of replacement with a high quality purpose-built alternative will ensure active functioning and as a consequence, wider benefits for the enclosing urban environment.
57 O'Connell Street Upper	It is intended to demolish all fabric behind this retained façade. The development will arise in the permanent loss of an 18th century townhouse basement, 18th and 19th century fabric to the rear, together with the loss of a 20th century building of significance. The development will arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.
58 O'Connell Street Upper	It is intended to demolish all fabric behind this retained façade. The development will arise in the permanent loss of an 18th century townhouse basement, 18th and 19th century fabric to the rear, together with the loss of a 20th century building of significance. The development will arise in the required protection of the retained façade during the construction phase. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.
Regency Annex, 59 O'Connell Street Upper	It is intended to demolish this 19th century building to accommodate the necessary infrastructural provision of a fire escape stairwell from the MetroLink Station.	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.
Reading Room, 59 O'Connell Street Upper	This importance of this structure was not known until recent research uncovered its significance. Its purposeful retention and re-use is immensely positive. The detail of its structural treatment in context with adjacent MEW works is at design stage. The development will arise in	Operational stage impacts will be fully addressed when the design is finalised, but it is anticipated that the re-introduction of a unique building form will enrich the architectural diversity of Moore Lane.

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
	the required protection of this building and its basement during the construction phase, as ground to the north and east is excavated to provide for the MEW. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for general detail on proposed protection strategies.	
Car port, 59 O'Connell Street Upper	This 19th/ early 20th century extension is modest, but interesting. Notwithstanding, it is considered less significant than its adjacent Reading Room and its removal is required to facilitate the favourable presentation of the Reading Room.	The proposed open space provided by the removed car port will benefit the legibility of the Reading Room.
61 O'Connell Street Upper	It is intended to retain, extend and purposefully re-use this building, accommodating a public route at street level connecting O'Connell Street with Henry Place. The retention of fabric behind the protected façade is welcomed as presenting a positive impact for this important building, together with enhancing the quantum of 18th century buildings enriching the ACA. As the design is not developed, wider impacts are not yet known.	Operational stage impacts will be addressed in forthcoming statutory submissions, when the design approach is finalised.
Site 3		
36 Henry Street	In summary, this building is retained with rear structures removed to accommodate a rear hotel extension. The retention of the building is considered to present a positive impact for an enhanced understanding of the contribution of post-1916 structures of quality within the ACA. Wider impacts are expanded below.	Operational stage impacts are summarised in 15.5.2.2. below.
37 Henry Street	In summary, this building is retained with rear structures removed to accommodate a rear hotel extension. The retention of the building is considered to present a positive impact for an enhanced understanding of the contribution of post-1916 structures of quality within the ACA. Wider impacts are expanded below.	
38 Henry Street	It is intended to remove this structure to accommodate a proposed north-south street connecting Henry Street with Moore Lane. The development will arise in the permanent loss of a 20th century building of significance. Wider impacts are expanded below.	
39 Henry Street	It is intended to demolish all fabric behind this retained façade. Whilst the retained façade is welcomed as informing the ACA, and generating a streetscape of quality	

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
	post 1916 buildings, the development will arise in the permanent loss of a 20th century building of significance. Wider impacts are expanded below.	
40 Henry Street	It is intended to demolish all fabric behind this retained façade. Whilst the retained façade is welcomed as informing the ACA, and generating a streetscape of quality post 1916 buildings, the development will arise in the permanent loss of a 20th century building of significance. Wider impacts are expanded below.	
41 Henry Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	Operational impacts for the proposed replacement structure are considered as presenting a strong presence within the ACA, at this pivotal junction between Henry and Moore Streets, as evidenced by Verified View M, appendix 12.1
1, 2 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	Operational stage impacts for the replacement of this terrace are broadly summarised in 15.5.2.2. below, as evidenced by Verified View M, appendix 12.1
3 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	
4 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	
5 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	
6 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	
7 Moore Street	It is intended to remove this structure to facilitate the development. Wider impacts are expanded below.	
8/9 Moore Street and 11/12 Henry Place	It is intended to conserve and re-occupy this building, with vertical extensions requiring structural inputs. Impacts are summarized below.	Operational stage impacts for the retained, conserved, presented and purposefully occupied 18th century houses are considered inherently positive, for the building group itself, its enclosing ACA and the setting of the National Monument, forming a wider composition shared with the conserved Nos 10, 20 and 21 Moore Street. The conserved grouping at Nos 11/12 Henry Place will also share a differing but interrelated narrative with the retained Nos 17-18 Henry Place, Nos 6-7 Moore Lane and the Reading Room at the rear of No.59 O'Connell Street onto Moore Lane.

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
Site 4		
10 Moore Street	The proposed re-use of the building is considered to present a positive impact, with few material changes internally or externally.	Operational stage impacts for the retained, conserved, presented and purposefully occupied building is considered inherently positive, for the building itself, its neighbouring ACA and the setting of the National Monument, forming a wider composition shared with the conserved Nos 8-9, 20 and 21 Moore Street.
11 Moore Street	No adverse impact is predicted as arising from the redevelopment of this site.	Operational impacts for the removal and replacement of these buildings, and retention and presentation of the party wall between Nos 12 and 13 Moore Street are summarised in 15.5.3.2. below.
12 Moore Street	No adverse impact is predicted as arising from the redevelopment of this site, with the protection of the shared party wall with No.13 forming a central construction strategy.	
13 Moore Street	No adverse impact is predicted as arising from the redevelopment of this site, with the protection of the shared party wall with No.12 forming a central construction strategy. All demolition and reconstruction strategies will be subject to a forthcoming Ministerial consent process, which will rely on expanded detail for assessment of physical impacts.	
15 Henry Place and 5A Moore Lane	No adverse impact is predicted as arising from the redevelopment of this site.	
17-18 Henry Place	The proposed re-use of the building is considered to present a positive impact.	These differing but historically and contextually connected, conserved buildings will share an urban connection with Nos 11-13 Henry Place and the Reading Room at the rear of No.59 O'Connell Street, renewing the early character of Moore Lane as they co-existed in the 19th century.
6-7 Moore Lane	The proposed re-use of the building is considered to present a positive impact. All works to the shared boundary with the National Monument at Nos 8-9 Moore Lane are identified and will also be subject to a forthcoming Ministerial consent process, which will rely on expanded detail for assessment of physical impacts.	
18 Moore Street & 10-11 Moore Lane to rear	No adverse impact is predicted as arising from the redevelopment of this site. The redevelopment will include the construction of a buffer building to the National Monument at No.17 Moore Street, referred to as 18a, or the 'Sliver' building. The remainder of the Moore Street façade will serve as a mechanism of the delivery of the arch. The remainder will be absorbed with the proposed public square. All demolition and reconstruction strategies will also be subject to a forthcoming Ministerial consent process, which will rely on expanded detail for assessment of physical impacts.	Operational impacts for the removal of these buildings and their proposed replacement with a cultural building attached to the National Monument at No.18a Moore Street, with an arch connecting No.18a with No.20 Moore Street, and the remainder of the plot given over to a proposed public square are summarised in 15.5.3.2. below.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	Potential Impact at Construction Stage	Potential Impact at Operational Stage
Nos 20-21 Moore Street	The proposed re-use of the building is considered to present a positive impact and will arise in few compositional changes internally and externally.	Operational stage impacts for the retained, conserved, presented and purposefully occupied building is considered inherently positive, for the building itself, its neighbouring ACA and the setting of the National Monument, forming a wider composition shared with the conserved Nos 8-9, 10 Moore Street.
Site 5		
22-23 Moore Street, 13 Moore Lane to rear	No adverse impact is predicted as arising from the redevelopment of this site.	Operational impacts are summarised in 15.5.4.2. below.
24-25 Moore Street	No adverse impact is predicted as arising from the redevelopment of this site.	
14 Moore Lane (incorporating Nos.1-3 O'Rahilly Parade, No.15 Moore Lane)	No adverse impact is predicted as arising from the redevelopment of this site.	

Table 15.5.1: Potential impact for buildings within the Masterplan site included in the RPS or NIAH, with protected structures hatched

15.5.1.1.3 Potential Impacts for the Masterplan Area's Immediately Adjacent Architectural Heritage

The Masterplan area shares boundaries with the following protected structures: -

- 72-74 Parnell Street.
- 37-38 O'Connell Street.
- No.60 O'Connell Street.
- No.62 O'Connell Street.
- Nos.14-17 Moore Street.

Given the site wide sensitivity of the Masterplan, impacts for all abounding protected structures are described in Table 15.5.2. below, with other impacts attached to Sites 3, 4 and 5 in separate sections, 15.5.2- 15.5.4 below.

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
72-74 Parnell Street, Dublin 1	6424	50010559 (R)	**Site 1** The proposed design of Site 1, where abutting	**Site 1** The proposed design of Site 1, where abutting

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
37-38 O'Connell Street Upper, Dublin 1	6021	50010558 (R)	these protected structures is not yet complete, with associated construction stage impacts not yet known. **Sites 2AB, 2C** The design of Site 2, in particular proposed excavations for the MEW, will observe strict construction management procedures to minimise likely indirect impacts associated with the demolition and excavation construction stages. Construction traffic will be routed away from the buildings and is not likely to present an impact. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies. **Site 3** Site 3 is positioned at a considerable distance from these structures and its construction is unlikely to present any impact. **Site 4** Site 4 is positioned at a considerable distance from these structures and its construction is unlikely to present any impact. **Site** 5 Site 5 is positioned at a distance from these structures and its construction is unlikely to present any impact.	these protected structures is not yet complete, with associated operational impacts not yet known. **Sites 2AB, 2C** The proposed design of Sites 2AB,2C, is not yet complete, with associated operational impacts not yet known. **Site 3** Site 3 is positioned at a considerable distance from these structures and it is unlikely to present an operational stage impact. **Site 4** Site 4 is positioned at a distance from these structures and it is unlikely to present an operational stage impact. **Site** 5 Site 5 is positioned at a distance from these structures and it is unlikely to present an operational stage impact.
60 O'Connell Street Upper, Dublin 1	6028	50010535 (R)	**Site 1** Site 1 is positioned at a distance from this protected façade, and not being viewed in context,	**Site 1** Site 1 is positioned at a considerable distance from this structure and is unlikely to present an

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
			is unlikely to present an impact. **Sites 2AB, 2C** The design of Site 2, in particular proposed excavations for the MEW within the footprint of the Regency Annex to No.59 O'Connell Street will observe strict construction management procedures to minimise likely indirect impacts associated with the demolition and excavation construction stages. Construction traffic will present an impact for the rear, western boundary wall of this structure, with every effort taken to coordinate and manage same to mitigate risk of damage to historic buildings to the rear of the protected façade. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies. **Site 3** The construction of Site 3 is likely to arise in direct impacts for this structure, at demolition, excavation and construction stage owing to its proximity to the west of the development site. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Place boundary of	operational stage impact. **Sites 2AB, 2C** The proposed design of Sites 2AB,2C, is not yet complete, with associated operational impacts not yet known. **Site 3** Whilst the façade of No.60 is included in the RPS, the building is within an ACA. m Outward vistas from rear upper rooms are presently directed towards Site 4, but will have an oblique view of Site 3. The change in the character of the outward vista is not considered especially adverse given the diversity of city-wider building and roofscape forms visible from these windows. **Site 4** Site 4, being lower than this structure and is unlikely to present an operational stage impact. In converse, on completion, the refurbishment of historic buildings within Site 4 will greatly improve the quality of the Moore Lane streetscape, and by extension benefit No.60 to the rear. **Site** 5 Site 5 is positioned at a considerable distance from this structure and is unlikely to present an operational stage impact.

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
			this structure, further neutralizing impacts. **Site 4** Site 4 is positioned at a distance from this structure and its construction is unlikely to present any impact. **Site 5** Site 5 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact.	
62 O'Connell Street	6030	50010533 (R)	**Site 1** Site 1 is positioned at a distance from this protected façade, and not being viewed in context, is unlikely to present an impact. **Sites 2AB, 2C** The design of Site 2, in particular proposed excavations for the MEW, will observe strict construction management procedures to minimise likely indirect impacts associated with the demolition and excavation construction stages. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies. The proposed development to the rear garden of No.61 adjacent is not yet designed, and impacts yet unknown. Construction traffic will be routed away from the Henry Place boundary of this structure, further neutralizing impacts. **Site 3** The construction of Site 3 is likely to arise in direct impacts for this structure,	**Site 1** Site 1 is positioned at a considerable distance from this structure and is unlikely to present an operational stage impact. **Sites 2AB, 2C** The proposed design of Sites 2AB,2C, is not yet complete, with associated operational impacts associated with construction at the shared boundary not yet known. **Site 3** The proposed development will be visible from upper-level rear rooms within these buildings and will alter an outward vista across the roofscape. **Site 4** Site 4, being predominately lower than this structure and is unlikely to present an operational stage impact. **Site 5** Site 5 is positioned at a considerable distance from this structure and is unlikely to present an operational stage impact.

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
			at demolition, excavation and construction stage owing to its proximity to the west of the development site. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Place boundary of this structure, further neutralizing impacts. **Site 4** Site 4 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact. **Site 5** Site 5 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact.	DCC PLAN NO.2861/21 RECEIVED: 01/06/2021
14 Moore Street, Dublin 1	5282	50010489 (R)	**Site 1** Site 1 is positioned at a distance from these structures. As the design is not yet complete, associated impacts not yet known. **Sites 2AB, 2C** The structural approach to the development of the MEW has progressed to ensure that construction impacts are minimised. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies associated with the delivery of the MEW on the opposing side of Moore Lane.	**Site 1** Site 1 is positioned at a considerable distance from these structures and is unlikely to present an operational stage impact. **Sites 2AB, 2C** The proposed design of Sites 2AB,2C, is not yet complete, with associated operational impacts not yet known. **Site 3** The proposed development will be visible from upper-level rear rooms within these buildings and will alter an outward vista across the roofscape. The proposed development does not impact on the setting of
15 Moore Street, Dublin 1	5283	50010490 (R)		
16 Moore Street, Dublin 1	5284	50010491 (N)		
17 Moore Street, Dublin 1	5285	50010492 (R)		

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
			Site 3 Direct physical impacts for the integrity of the National Monument are not envisaged due to the distance of Site 3 from the protected building range. Notwithstanding its distance, observance of vibration limits cited in Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies, which will be observed at construction stage to minimise impacts. **Site 4** A particularly sensitive approach to the development of Site 4 has evolved over the course of the design process, to ensure that physical impacts are minimised where sharing boundaries with the National Monument. Physical impacts for the integrity of the National Monument are anticipated and mitigated against, but will be further interrogated within a forthcoming Ministerial Consent process. Please refer to Appendix 3.3 – Outline Construction & Demolition Management Plan – Site 4 for preliminary detail on the approach to proposed protection strategies. **Site 5** Direct physical impacts for the integrity of the National Monument are not envisaged due to the distance of Site 5 from the protected building range. Notwithstanding	the National Monument and supports the delivery of a commemorative trail. **Site 4** The design stage of Site 4 arose in the adoption of sensitivity to ensure that the setting of the monument is respected, where infilling terraced plots to the southwest of the monument at No.13 Moore Street. Associated visual impacts are considered present, but not especially adverse. The proposed development will alter the setting of the National Monument through the proposed introduction of a new pedestrian link to the north of No.17 Moore Street. The provision of the new civic square and functional replacement of No.18a Moore Street supports the delivery of the operational amenity of the National Monument. Impacts arising from all physical interactions with the Monument, including the detailed design of No.18a will be considered under a forthcoming Ministerial Consent process, which will follow the submission of the planning application for Site 4. **Site 5** The proposed development is found to enhance the setting of the National Monument in continuing the character of the Moore Street terrace to the north of the proposed

DEC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential Impact at Construction Stage	Potential Impact at Operational Stage
			its distance, observance of vibration limits cited in Appendix 3.4 – Outline Construction & Demolition Management Plan – Site 5 for detail on proposed protection strategies.	arch, and in sharing the provision of a new civic square.

Table 15.5.2: Potential impact for buildings sharing boundaries with the Masterplan site included in the RPS

15.5.1.1.4 Potential Impacts for the Masterplan Area's Wider Architectural Heritage

The Masterplan site is in proximity to a range of protected structures, with associated operational stage impacts to these distant structures cited in Table 15.5.3. below, on the basis that construction stage impacts will be negligible.

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact
Rotunda Hospital: Parnell Square West, Dublin 1	6419	50010619- 50010622 (N)	**Site 1** The proposed design of Site 1, where opposing these protected structures is not yet complete, with associated impacts not yet known. **Sites 2AB, 2C** The design of Site 2, in particular proposed excavations for the MEW, is unlikely, owing to separation and the requirement to protect closer protected buildings, will observe strict construction management procedures to minimise likely indirect impacts associated with the demolition and excavation construction stages. The protection measures in place to protect immediately abutting protected buildings will enhance the protection of this building range. Construction traffic will be routed away from the buildings and is not likely to present an impact. **Site 3** Site 3 is positioned at a considerable distance from these structures and its construction is unlikely to present any impact. **Site 4**

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact
			Site 4 is positioned at a considerable distance from these structures and its construction is unlikely to present any impact. **Site 5** Site 5 is positioned at a distance from these structures and its construction is unlikely to present any impact.
63-64 O'Connell Street Upper, Dublin 1	6031	50010532 (R)	**Site 1** Site 1 is positioned at a distance from these protected façades, and not being viewed in context, is unlikely to present an impact. **Sites 2AB, 2C** The design of Site 2, in particular proposed excavations for the MEW, will observe strict construction management procedures to minimise likely indirect impacts associated with the demolition and excavation construction stages. Please refer to Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies. Construction traffic will be routed away from the rear Henry Place boundaries of these structures, further neutralizing impacts. Owing to orientation, these structures will not be impacted by overshadowing. **Site 3** The construction of Site 3 is likely to arise in direct impacts for these structures, at demolition, excavation and construction stage owing to their proximity to the west of the development site onto Henry Place. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Place boundary of this structure, further neutralizing impacts. **Site 4** Site 4 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact.
65-66 O'Connell Street Upper, Dublin 1	6032	50010531 (R)	
67 O'Connell Street Upper, Dublin 1	6033	50010530 (R)	
68 O'Connell Street Upper, Dublin 1	6034	50010529 (R)	

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact
			Site 5 Site 5 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact.
The GPO, O'Connell Street Lower, Dublin 1,	6010	50010528 (N) 50010500 (R)	**Site 1** Site 1 is positioned at a distance from this important protected structure, and not being viewed in context, is unlikely to present an impact. **Sites 2AB, 2C** The design of Site 2, including proposed excavations for the MEW, is unlikely, due to distance, to arise in physical impacts. The proposed development within Site 2AB, 2C, is not yet designed, and impacts cannot as a consequence be measured. Construction traffic is not envisaged to impact this protected structure at construction stage. **Site 3** The construction of Site 3 is likely to arise in a direct impact for these structures, at demolition, excavation and construction stage owing to their proximity to the north of the development site onto Henry Street. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Street Place further neutralising impacts. Following completion of the development, the upper stories of the hotel will be perceived in context with the GPO due north and south along O'Connell Street. View D of Appendix 12.1 demonstrates the proposed context with the GPO, due north, which is not immediately perceived due to screening from adjoining buildings. The two will likely be perceived in context when looking directly at the GPO from the opposing side of O'Connell Street, due west. However, as the hotel block is positioned behind the O'Connell Street west terrace, the immediacy of the impact is lessened.

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact
			Site 4 Site 4 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact. **Site 5** Site 5 is positioned at a considerable distance from this structure and its construction is unlikely to present any impact.
7-15 (inc.) Arnott's., Henry Street, Dublin 1	3666	50010470 (N)	Owing to its distance from the development, negligible impacts are anticipated as arising to this structure either at construction or operation stage.
16 Henry Street, Dublin 1	3667	50010471 (R)	**Site 1** Site 1 is positioned at a distance from Henry Street and will not present an impact. **Sites 2AB, 2C** Site 2 is positioned at a distance from Henry Street and will not present an impact. **Site 3** The construction of Site 3 is likely to arise in an impact for these structures, at demolition, excavation and construction stage owing to their proximity to the north of the development site onto Henry Street. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Street Place further neutralizing impacts. **Site 4** Site 4 is positioned at a distance from Henry Street and will not present an impact. **Site 5** Site 5 is positioned at a distance from Henry Street and will not present an impact.
17 Henry Street, Dublin 1	3669	50010472 (R)	
18 Henry Street, Dublin 1	3670	50010473 (R)	
19 Henry Street, Dublin 1	3671	-	
20 Henry Street, Dublin 1	3672	50010474 (R)	
21 Henry Street, Dublin 1	3673	50010475 (R)	
22-23 Henry Street, Dublin 1	3674	50010476 (R)	
24 Henry Street, Dublin 1	3675	-	
25 Henry Street, Dublin 1	3676	-	
Henry Street, Dublin 1 (GPO Arcade)	3677	50010500 (R)	
26 Henry Street, Dublin 1	8746	-	
27 Henry Street, Dublin 1	8747	-	
28 Henry Street, Dublin 1	8748	-	
29 Henry Street, Dublin 1	8749	-	
30 Henry Street, Dublin 1	8750	-	

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Address	RPS Ref.	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact
33 Henry Street, Dublin 1	-	50010494 (R)	
34 Henry Street, Dublin 1	-	50011205 (R)	

Table 15.5.3: Potential impact for wider architectural heritage.

15.5.1.1.5 Potential Impacts for the Masterplan Areas' Immediately Adjacent Non-Protected Neighbouring Buildings

The Masterplan area shares boundaries with the following non-protected structures: -

- No.34 Henry Street.
- No.35 Henry Street.

Address	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact at construction stage	Potential impact at operational stage
34 Henry Street, Dublin 1	50011205 (R)	**Site 1** No impact envisaged due to distance. **Sites 2AB, 2C** No impact envisaged due to distance. **Site 3** Physical impacts associated with the demolition, excavation and construction stages are envisaged and mitigated against in a suite of documents attached to Waterman Moylan's Construction Management Plan. **Site 4** No impact envisaged due to distance. **Site 5** No impact envisaged due to distance.	**Site 1** No impact envisaged due to distance. **Sites 2AB, 2C** No impact envisaged due to distance. **Site 3** The new hotel will be constructed against the rear façade of 36 Henry Street and interconnected on every level. Notwithstanding the present condition of the building, in which all windows in the rear of Nos 34 and 35 are blocked up, the proposed hotel development to the rear has been designed to minimise the impacts and is set back from the shared boundary to minimise impact and not to diminish/impinge on its future amenity, if rear openings are reinstated. Presently and consequentially the proposed development to the rear will have no impact on the interior. **Site 4**
35 Henry Street, Dublin 1	50011204 (R)		

Address	NIAH Reference and Rating (L=Local) (R=Regional) (N=National)	Potential impact at construction stage	Potential impact at operational stage
			No impact envisaged due to distance. **Site 5** No impact envisaged due to distance.

Table 15.5.4: Potential impact for adjacent non-protected architectural heritage

15.5.1.1.6 Potential Impacts for the ACA

The Masterplan site is within the O'Connell Street Architectural Conservation Area. Considerations of impacts for the character of the ACA and the development's observance of general statutory mechanisms are examined below. As construction stage impacts are likely temporary, operational stage impacts are primarily described in Tables 15.5.5. and 15.5.6 below, the latter table of which considers the opinion in Table 12.1 Table of Landscape and Visual Effects of Chapter 12 of the EIAR in context with the site's receiving architectural heritage environment.

Site	Visual Impact	Physical Impact	Morphological Impact
1	The proposed design of Site 1 is not yet complete, with associated operational impacts not yet known.	The proposed design of Site 1 is not yet complete, with associated physical impacts arising from its construction not yet known.	The proposed design of Site 1 is not yet complete, with associated morphological impacts not yet known.
2AB, 2C	The proposed design of Sites 2AB,2C, is not yet complete, with associated operational impacts not yet known.	The proposed design of Site 2 in general is not yet complete, with associated physical impacts arising from its construction not yet known. Outline protection strategies are anticipated and mitigated in Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan for detail on proposed protection strategies.	The proposed design of Sites 2AB,2C, is not yet complete, with associated morphological impacts not yet known.
3	Please refer to 15.5.2.2.2. below	The construction of Site 3 is likely to arise in an impact for the ACA at construction stage, given the level of disruption likely to arise in the construction process. Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail on proposed protection strategies. Construction traffic will be routed away from the Henry Street Place further neutralizing impacts.	The proposed development retains plot legibility onto Henry Street in the creation of a street retaining the plot width of No.38 , together with the facades of Nos 39, 40- giving the semblance onto the ACA of retention of streetscape character. The unification of vertical extensions above retained facades within the ACA will, to an extent, dilute efforts at morphological continuity. Notwithstanding this fact, the visual cohesion of the Henry Street terrace from the street

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Site	Visual Impact	Physical Impact	Morphological Impact
			will be similar to what exists at present. The proposed redevelopment of the west side of the ACA in the reimagining of the Moore Street terrace will introduce a new morphological language. Attempts have been made to emulate plot rhythms in the generation of a vertical emphasis- a measure which succeeds in reducing the mass of the replacement structure within the ACA. The character of the east side of Henry Place, a back lane within the ACA will be altered considerably by the proposed development. However, it is argued that in selecting the north eastern corner of this urban block to embed the scheme's greatest height, its impacts are lessened. The fact remains that Henry Place, central to the ACA, has evolved from a bustling industrial quarter into an antisocial back street due to an absence of active frontages- a condition that will be remedied by the proposed development.
4	Site 4 is positioned to the west of the ACA, in an urban block that has been treated for the purposes of the forthcoming planning application as an extension of the ACA, with all policies and objectives for appropriate development within the ACA duly observed.	No physical impact is envisaged as arising from the formally protected ACA from the development of Site 4.	The design of Site 4 has inherently adopted a morphology respectful of existing plots and building typologies adjacent. The proposed development is stitched seamlessly into the given urban character, will positive enhancement of consolidated terraces and frontages arising.
5	Site 5 is positioned to the west of the ACA, and being within the scale of existing buildings to the northwest of the ACA, will not introduce a compounding visual impact.	Physical impacts for the ACA are confined to the removal of rear boundaries of Nos 51-54 O'Connell Street. As these boundaries were in themselves replaced in the 20th century, no material impact will arise. No other physical impact for the ACA is envisaged as arising from the development.	Site 5 comprised a tall building group, ranging in height from 3 storeys over basement onto Moore Street, to three and four stories onto O'Rahilly Parade and Moore Lane. The proposed development is not considered to introduce a new morphological character to the site, adversely impactful for the ACA to the east onto Moore Lane.

Site	Visual Impact	Physical Impact	Morphological Impact
Urban Realm **New Streets and public squares**	It is proposed to introduce a range of streets and laneways connecting peripheral streets of O'Connell Street, Henry Street and Moore Street with the site's core laneways of Moore Lane, Henry Place and O'Rahilly Parade. A new public plaza at Sites 4 and 5, and pocket square at Site 2AB will provide required rest space central to the new networks. It is held that the ACA has suffered due to lack of permeability. In principal, the proposed perforations are welcomed as being positive. The proposed introduction of connections is considered to bring with it a renewed vitality to the area, which in turn will enhance the visual amenity of the ACA.	The proposed perforation at O'Connell Street occurs in a currently open site, straddled with Nos 46-49 O'Connell Street- which is neither a protected structure nor included in the NIAH. The proposed introduction of a link at this point in O'Connell Street is broadly welcomed as opening up the ACA for wider engagement within an enhanced, active public realm provided by the new public plaza to the west. Loss of building fabric of significance will occur in the removal of No.38 Henry Street to accommodate a north-south route from Henry Street to Moore Lane. The loss is countered by the required permeability of this urban block within the ACA, which has suffered incremental decline in the 20th century removal of back lanes and courts. The removal of Nos 18 and 19 Moore Street, whilst outside the ACA, is being treated as an intervention to a notional extension of the ACA. these buildings are not considered to possess architectural merit, and their loss, providing cross connections with Moore Lane and O'Connell Street beyond, will offer an immeasurable enhancement of Moore Street.	The proposed introduction of streets and squares will be accompanied by radical morphological change. The impact of that change is measured against the alternative scenario of no intervention to an ACA that is suffering due to absence of investment on account of sustained under functioning. Economically, the proposed public realm design is considered to provide a catalyst for positive regeneration of the ACA, which is needed to halt the continuing process of urban decay.
Urban realm **Historic Street Surfaces**	It is proposed to retain and re-use historic setts and kerbs within a redesigned paving strategy. The existing fabric, much of which is concealed under tarmacadam and likely already disturbed in the installation of public services will be carefully recorded as existing prior to lifting. A detailed strategy for the execution of dismantling, storage and reinstatement, will be agreed with Dublin City Council prior to commencement.	The proposed removal and reinstatement of historic paving materials are not considered to present an adverse physical impact for the character of the public realm within the ACA.	No morphological impact is envisaged as arising from the site wide proposal to execute development of the enclosing public realm within the Masterplan area.

Table 15.5.5: Potential impact for the O'Connell Street Architectural Conservation Area

Architectural heritage impacts for the wider urban environs, including the O'Connell Street Architectural Conservation Area are summarised in Table 15.5.6. below, referencing opinions set out in Table 12.1 of Landscape and Visual Effects- Chapter 12 of this EIAR.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Viewpoint	Distance	Extent of Effects cited in Table 12.1, Chapter 12 of the EIA	Architectural Heritage Impact
A. O'Connell Street at Cathal Brugha Street	40m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
B. Cathal Brugha Street near O'Connell Street	60m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
C. O'Connell Street at the Spire • Looking North	80m	Slight to Moderate	**Site 3** The uppermost parapet of the hotel block will be visible above extant parapets, but will not arise in a significant change of character in the ACA, mitigating impacts. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
C1. O'Connell Street at the Spire • Looking West	80m	Moderate	**Site 3** The retained facades and vertical extensions above will be visible, together with the suggestion of a street at the plot of No.38. The upper floors of the hotel block are imperceptible. The change to the character of the ACA from this viewpoint is considered neutral. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
D. O'Connell Street at the GPO	120m	Slight to Moderate	Upper floors of the hotel block are visible in the context of the streetscape and the GPO. However, owing to the recessed position of the block, the block is read as being in the background and does not compete with the prominence of the GPO portico, or the terraced character of the west of O'Connell Street, where in view. Overall, the impact is considered moderate. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
E. O'Connell Street at Abbey Street	200m	None to Imperceptible	**Site 3**

			The uppermost parapet of the hotel block will be barely visible above extant parapets, and will not arise in a change of character in the ACA, eliminating impact. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
F. O'Connell Bridge	360m	Imperceptible	**Site 3** The uppermost parapet of the hotel block will be visible above extant parapets, but will not arise in a significant change of character in the ACA, mitigating impacts. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
G. Cavendish Row	120m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
H. Parnell Square East	210m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
I. Parnell Square North	270m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
J. Parnell Square North West	280m	Imperceptible to Slight	**Site 3** Site 3 is barely visible above extant rooftops from this location and due to its lack of prominence will not present an impact. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
K. Parnell Street at Moore Street	75m	Moderate	**Site 3** The view south from Parnell Street towards Site 3 indicates an altered form from the existing composition. The increase in height of the Moore Street terrace changes the visual connection from the vantage point with the GPO, but does not remove it, as the GPO buildings' legibility as culminating the southern end of Moore Street remains unchanged. It is held that the expressed southern attic story gable treatment of the residential block will in time be planted and screened, softening perceived impacts. On the whole, the change in this vista is noted. However, given the dominance of more recent developments to the east side of Moore Street, the

			proposed development does not dramatically alter the character of the view. DCC PLAN NO.2861/21 RECEIVED: 01/06/2021 **Site 4** Site 4 is visible from this location but merges successfully with the Moore Street East streetscape and is considered to present an overall positive impact. **Site 5** Site 5 is visible, and changes the perception of the Moore Street East terrace in its increase in height to the northern end. However, the transitional change from predominately 3 to 4 stories is not considered adverse. The arch reads as part of the terrace and is not discernible from this viewpoint, achieving the intention of uniting the terrace whilst providing lateral connections to the proposed public realm.
L. Moore Street near Parnell Street	30m	Moderate	**Site 3** The view of Site 3 transitioning south down Moore Street will bring its form into greater focus. Whilst the lower elevational stages merge collectively with the terraced, predominantly brick faced streetscape, the upper set-back attic stories are visible. The character of the development at this juncture is deemed to merge to a greater extent with late 20th Century and more recent developments on Moore Street and is not considered out of place. The overall impact however is considered to be moderate. **Site 4** Site 4 is visible from this viewpoint and is found to successfully blend unobtrusively with its given terraced composition of Nos 10, 14-17, 20-21 Moore Street. the overall impression is an immeasurable improvement on the existing composition, and is both beneficial and positive. **Site 5** The relative increase in height of Site 5 from its existing scale is unnoticeable in the streetscape, and presents no impact. The change in profile of elevations, in adopting a modulated form emulating historic gable fronted buildings and deferring to the inherited character of the National Monument buildings is characterful and enriching for the streetscape. The result is an overall artistic improvement on the existing, deemed to enhance the setting of the monument and generally bringing a positive impact to the townscape.
M. Henry Street at Moore Street	10m	Moderate to Significant	**Site 3** This view demonstrates the departure in scale of the proposed terrace from the existing. Contrary to the opinion of the LVIA consultants, the particular vantage point is considered to be neutrally impacted. The orientation of Moore Street is especially beneficial where introducing height, as at certain times of the day the height of flanking terraces is not noticed in the public realm. Daylight over the course of the day changes the character of Moore Street as

			it becomes overshadowed by its buildings, a condition that will not significantly change in the execution of the proposed development. **Site 4** Site 4 is absorbed by its terraced context but wholly improves, on account of the inevitable vibrancy of its upper level windows as viewed from this vantage point, the existing sense of visual dereliction emanating from Moore Street through to Henry Street. The scheme is neutrally received in its environment, but is generally positive. **Site 5** The Site 5 development merges seamlessly with its terraced composition and presents a largely neutral impact.
N. Henry Street south of Moore Street	50m	Moderate to Significant	**Site 3** Whilst deviating from the heights of the existing terraces on Henry Street as it turns the corner onto Moore Street, the height of Site 3 does not significantly deviate from the perceived heights of buildings to the south side of Henry Street and is considered thus to introduce a moderate change in the ACA. The increased height on the south side of the street will not impinge on the daylight quality of Henry Street. The renewed splayed corner treatment similarly does not deviate substantially from the existing condition. In assessing the various changes, they on balance are deemed to present a moderate impact. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
O. Henry Street at Liffey Street	200m	Slight	**Site 3** Site 3 is barely discernible in the streetscape, and in merging successfully with the character of Henry Street from this viewpoint will present no impact. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
P. Mary Street	400m	None to Imperceptible	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
Q. Parnell Street at Dominick Street	130m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.
R. Sean McDermott Street at Gardiner Street	400m	None	**Sites 3, 4, 5** The combined sites are not visible from this location and will not present an impact.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

S. Centre of Cathedral Street	90m	Moderate	**Site 3** Please refer to 7.7.2.5.2. Anticipated impact for the urban character of Cathedral Street, above, which describes the most prominent view of the upper floors of the hotel within the wider urban realm. In light of that assessment, it is held that Cathedral Street is a secondary street within the ACA. It is accepted that its visual culmination by O'Connell Street west will be altered by the proposed development, but that change in being experienced from this vantage point solely within the ACA is not considered to present a detriment for the wider character of the ACA. On that basis, the opinion of the LVIA consultants of a 'moderate impact' arising is concurred with. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.
S1. Cathedral Street at O'Connell Street	50m	Moderate to Significant	
T. Marlborough Street at North Earl Street	240m	Slight to Moderate	**Site 3** Site 3 is not discernible within the streetscape from this location and will not present an impact. **Site 4** Site 4 is not visible from this location and will not present an impact. **Site 5** Site 5 is not visible from this location and will not present an impact.

Table 15.5.6: Summary of impacts for the enclosing environs (including the ACA) as described in Table 12.1 of Landscape and Visual Effects of Chapter 12 of the EIAR

15.5.1.2 Do-Nothing Impact

For the purpose of this assessment, it is assumed that the existing permitted development is not carried out and the combined sites' character remains unchanged.

Should no development proceed within the Dublin Central Masterplan area, this extensive city centre site would remain as it currently exists. Whilst no impact would arise from an absence of development, the converse scenario of continued decline would present a more tangible long term impact in the incremental decline of protected fabric, and now-known fabric of architectural significance.

Part 4 of the Dublin Central Masterplan Area Conservation Plan cites a range of risks and vulnerabilities that are found to actively undermine both building fabric of significance within the Masterplan site and the public realm enclosing same fabric of significance, the consequences of which extend beyond the boundaries of the site and contribute to urban decay in the wider vicinity.

It notes that the level of vacancy, estimated as being in the region of 60% of the floor space of existing buildings across the Dublin Central Masterplan Area, together with economic decline on this strategically important site has created a justifiable sense that a single major intervention is the only way to reverse its fortunes. The amalgamation of ownership, as existing, creates an opportunity for a paradigm shift for this underperforming part of the city (that many regard as the only way forward) but carries the risk that a single overarching design approach may fail to respond to the granular character of the site. The analysis concludes that there is a need to strike a balance between

appropriate level of demolition necessary to provide a real catalyst with the retention of the most significant buildings and representative examples of key building types.

A 'do nothing' scenario should not therefore continue to be tolerated within the Masterplan site.



Figure 15.5.2: Indicative land use/ vacancy/ under-use within the Masterplan site

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.5.2 Potential Impacts Associated with the Development of Site 3

15.5.2.1 Construction Stage

15.5.2.1.1 Demolition Stage

Potential impacts arising from the demolition, excavation and enabling works stage of constructing Site 3 are anticipated and mitigated against, in detail, in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 3. (Please refer to Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3 for detail)

The greatest element of impact associated with the development of Site 3 is in the first stage of the works; the permitted demolition of building fabric, with an accompanying rationale for the careful securing of retained fabric to ensure that it endures the construction process and can be conserved as intended.

Albeit temporary in nature, a risk is presented to the character of the Architectural Conservation Area- temporarily during the demolition and construction stage. No permanent impacts for the ACA are envisaged as arising.

Potential impacts associated with the proposed excavation of part of the site to provide for a basement level is to an extent countered by the realistic possibility that extensive basements, presently covered over or inaccessible, exist on the site. Where known basements exist, it is assumed that they are 18th century in origin, relined structurally in the reconstruction of many of the buildings in the aftermath of the 1916 Easter Rising conflict. These known existing basements are intended to be infilled in order to protect upstanding fabric adjacent.

Demolitions are accompanied by extensive protection strategies, (refer to Appendices 3.1, 3.2, 3.3 and 3.4 attached to the EIAR) to mitigate against foreseeable risks otherwise of damage to building fabric identified as meriting retention, conservation and purposeful re-use.

15.5.2.1.2 Construction

Potential risks associated with the construction stage of Site 3 are confined to structural risks only, which have been anticipated and countered in Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan and Appendix 3.2 – Outline Construction & Demolition Management Plan – Site 3. The protection of both retained structures within the development site, and those immediately adjoining, in separate ownership at Nos 34 and 35 Henry Street will be considered at all stages of the construction process, as described in Table 15.5.4. above. It is not anticipated that protected structures and historic buildings in the wider vicinity will suffer direct impacts from the construction phase, as described in Table 5.5.5. above.

15.5.2.1.3 Renewal and Integration of Retained Fabric within the Development

Potential risks attached to the execution of conservation and general works to complete the renewal of retained buildings are minimal.

15.5.2.2 Operational Stage

15.5.2.2.1 Retained Buildings within the Site

Potential risks attached to the execution of conservation and general works to complete the renewal of retained buildings are minimal.

15.5.2.2.2 Potential Operational Stage Impacts for the ACA

Please refer to Table 15.5.6 Summary of impacts for the enclosing environs (including the ACA) as described in Table 12.1 Table of Landscape and Visual Effects of Chapter 12 of the EIAR above for an analysis of wider urban impacts, including those affecting the ACA.

Specific architectural heritage impacts for the ACA in the vicinity of Site 3 are predicted as follows: -

Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area policy document
Policy
'New developments should respect the established scale of the existing built fabric - including height, massing, proportions and plot width. Proposals for large scale or 'mega-structural' developments will not be favorably considered, and any such proposals should be broken down into smaller, more comprehensible and human scale developments. This can be achieved in part through the provision of multiple uses and access points at ground floor level.'
Adherence
The proposed development has been designed to respect the fine grain of the site's historic plots. Façades on Henry Street have been retained for the most part and where new façades are proposed on Moore Street they have been articulated to provide a subdivision of the terraced streetscape with a strong vertical emphasis. The continuation of retail activity at street level will maintain the established character of vibrant shopfronts that animate the public realm. Taller elements, such as the hotel building, have been strategically positioned towards the northeast of Site 3, to lessen impacts on primary streets – Henry Street, Moore Street, and O'Connell Street. Where additional floors are proposed above the Henry Street terrace, they are modest is scale and are set back behind the building line so that the existing parapet height is maintained. Existing fabric has been retained where possible, interwoven through the scheme to preserve the richness of a tight urban site that has evolved over time whilst meeting the pragmatic demands of commercial viability within the brief. The proposal ensures that the urban core is regenerated in a sustainable manner while protecting the unique character of the site.
'All new buildings should be designed to the highest standard in a modern architectural idiom. Pastiche will be discouraged and will only be allowed or required in exceptional circumstances'
Adherence
All new buildings are executed in a sympathetic but contemporary style, a measure intended to merge in character with but be clearly distinguishable from historic buildings in the vicinity. Elements facing onto Henry Street and Moore Street are intentionally restrained and designed to sit quietly within their respective streetscapes. The design references the proportions and materiality of historic buildings in an appropriate but clearly contemporary manner. The architectural expression of the new buildings towards the north of the site are less constrained by historic reference and reflect the proposed transition of the site as a new regenerated and vibrant civic quarter.
'Materials used should be of a high quality and be durable to avoid long term maintenance problems. They should include stone, brick, render, steel, glass and timber.'
Adherence
All buildings within Site 3 are clad in high quality, self-finished materials. Brick is the predominant material proposed. The use of brick is appropriate and reflects the widespread and use of this historic material within the ACA. Various tones and shades of brick are proposed for the different buildings to maintain the variety and texture that presently characterises the townscape. The Henry Street buildings in themselves , whilst intending to present a uniformity, have characteristic variances, which will be continued in the replacement culmination of the terrace at it rounds the corner onto Moore Street at the replacement No.41 Henry Street. Whilst the eastern terrace of Moore Street from Nos 10-25 in Site 4 adjacent are not within the ACA, the multiplicity of bricks embedded within their elevations contributes to the uniquely vernacular character of the terrace and its National Monument centerpiece. The proposed use of brick in the replacement terrace on the plots of Nos 1-7 Moore Street is therefore considered an appropriate approach to an intention to adhere with

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area policy document
the given urban character, adding a new layer to the existing eighteenth century hand thrown brick and more-engineered stock and red bricks of post-1916 reconstructions. Glazed shopfronts are framed with stone, interspersed with brick piers, reminiscent of existing shopfront characters. Where vertical extensions are positioned above existing buildings, they are faced in either a contrasting colour brick or Corten steel cladding to complement the early 20th century brick and industrial treatment of existing buildings.
'An appropriate and balanced mix of uses will be required in all new developments and large-scale single use developments will not be permitted. Public oriented uses including shops, cafes, restaurants and bars will be required at ground floor level to create more lively, dynamic and successful places.'
Adherence
The creation of a sustainable and vibrant urban center, with a wide mix of uses is proposed. The entrance levels will contain shops, food and beverage outlets to bring activity to the public realm. A cultural/gallery use with cafe/restaurant at ground floor is also proposed. A new hotel, with its foyer fronting onto Henry Place, and proposed residential uses on the currently vacant upper floors are intended to support the vision of a sustainable community that will ensure that active street level units thrives.
'The ground floor of all buildings should be clearly articulated to establish a clear identity for each building and use. In general, a higher floor to ceiling dimension should be provided at ground floor level.'
Adherence
The ground floor of each of the building incorporates shopfronts which will adhere to Dublin City Council guidelines and ACA policies for shopfront design. Retail units are provided with appropriate floor to ceiling heights to accommodate services required for contemporary retail and restaurant experiences.
'The purpose of this section of the plan is to assist in the implementation of successful and appropriate shopfront and advertisement projects. In a limited number of instances, it will the policy to retain the existing shopfront intact, if the shopfront is deemed to be of special architectural character. However, in general, it will not be the policy to restrict or prevent the remodelling of shopfronts. The general policy will be to encourage new and innovative shopfront design. In all cases of remodelling, new works must be to a high standard and be imaginative and modern. It will be the policy to avoid the use of reproduction style unless dictated by a conservation context. In that instance, traditional design and detailing and a high degree of craftsmanship will be required'.
Adherence
It is proposed to replace shopfronts to retained buildings within Site 3 and to align replacements with those generated on new building elements.
'The incorporation of new pedestrian routes and public spaces into new developments will be required where appropriate to enhance and reinforce the existing urban framework. A number of sites have been identified where opportunities for such interventions may be explored including site clusters nos. 4 and 7.'
Adherence
The proposed development includes for improved connections. The new Passageway will improve permeability through the dormant core of the urban block and assist in regenerating laneways within the heart of the block that are presently underutilised and in a state of decline.
'Access requirements for people with disabilities, the elderly and the very young should be incorporated into the design of shops, public and other buildings.'
Adherence
All shops, restaurants and cultural spaces have been designed to facilitate universal access, in accordance with statutory regulations and in line with best practice.
'Plant and tank rooms should be provided within the roof space or within the envelope of the building and should not break the plane of the roof.'
Adherence

Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area policy document
All services have either been integrated in the basement spaces or concealed within roof-top plant rooms and screened with proprietary louvred systems. The roof top plant surmounting the hotel block is simulated to appear as a decorative attic storey in reference to decorative pediments in the vicinity.

Table 15.5.7: Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area.

15.5.2.2.3 Potential Operational Stage Impacts for the Protected and Historic Buildings in the Vicinity

Architectural heritage risks for the individual heritage buildings in the wider vicinity of Site 3 are predicted in Table 15.5.3. above.

15.5.2.3 Do-Nothing Impact

Whilst street level retail units onto Henry and Moore Streets are occupied, the majority of rear, basement and upper level fabric, together with buildings onto Henry Place, are suffering from high levels of vacancy. The buildings are in poor condition, compounded by vacancy of upper levels in particular. A key factor in the cause of vacancy is the absence of an alternative means of escape from upper and lower levels in the event of an emergency- a condition that will remain unaddressed in the event that that 'do nothing' status quo is maintained.

The long term vision for this site, if no development occurs, is a continuance of the incremental decline of this prominent urban block, which will present a greater risk for the survival of its building fabric and the quality of the enclosing ACA.

15.5.3 Potential Impacts Associated with the Development of Site 4

15.5.3.1 Construction Stage

15.5.3.1.1 Demolition Stage

The proposed demolition of buildings within Site 4 will be executed on a phased basis to ensure that mechanisms are absorbed for the protection of important building groups. Site 4 shares boundaries with the National Monument at Nos 14-17 Moore Street, known buildings of frailty that are also protected structures.

Whilst the sequencing and detailing of works adjacent to the National Monument will be subject to a forthcoming Ministerial Consent application, a range of potential scenarios are envisaged in a suite of structural engineering documents attached with the planning application for Site 4, all of which focus on identifying risks for the protected fabric and offering solutions to mitigate against such risks.

In addition to the National Monument, which is outside the boundary of Site 4, the demolition stage raises the potential for impacts for fabric scheduled to be retained and protected as part of the proposed development. the true condition of retained fabric at Nos.10, 20, 21 Moore Street, the party wall of Nos 12-13 Moore Street, Nos 17-18 Henry Place, Nos 6-7 Moore Lane is unknown, due to occupancy at street level and the presence of linings elsewhere. The potential for adverse risks at demolition stage is acknowledged and mitigated against in the detailing of the proposed structural strategy.

15.5.3.1.2 Construction

Potential risks associated with the construction stage of Site 4 are confined to structural risks only, which have been anticipated and countered in Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan.

Potential risks associated with the construction stage of Site 4 are confined to structural risks only, which have been anticipated and countered in Appendix 3.1 – Outline Construction & Demolition Management Plan – Masterplan and Appendix 3.3 – Outline Construction & Demolition Management Plan – Site 4. The protection of retained structures within the development site, and those at the National Monument immediately adjoining, at Nos 14-17 Moore Street, will be considered at all stages of the construction process, as described in Table 15.5.4. above. It is not anticipated that protected structures and historic buildings in the wider vicinity will suffer direct impacts from the construction phase, as described in Table 5.5.5. above.

15.5.3.1.3 Renewal and Integration of Retained Fabric within the Development

Potential risks attached to the execution of conservation and general works to complete the renewal of retained buildings are minimal.

15.5.3.2 Operational Stage

15.5.3.2.1 Retained buildings within the Site

Potential risks attached to the execution of conservation and general works to complete the renewal of retained buildings are minimal.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.5.3.2.2 Potential Operational Stage Impacts for the ACA

Please refer to Table 15.5.6 Summary of impacts for the enclosing environs (including the ACA) as described in Table 12.1 Table of Landscape and Visual Effects of Chapter 12 of the EIAR above for an analysis of wider urban impacts, including those affecting the ACA.

Specific architectural heritage impacts for the ACA in the vicinity of Site 4 are predicted as follows: -

Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area
Policy
New developments should respect the established scale of the existing built fabric - including height, massing, proportions and plot width. Proposals for large scale or 'mega-structural' developments will not be favourably considered and any such proposals should be broken down into smaller, more comprehensible and human scale developments. This can be achieved in part through the provision of multiple uses and access points at ground floor level.
Adherence
The scale and massing of the proposed interventions and new buildings within Site 4 respects the historic urban grain. The introduction of active street fronts onto Henry Place and Moore Lane will have a positive impact on the ACA.
All new buildings should be designed to the highest standard in a modern architectural idiom. Pastiche will be discouraged and will only be allowed or required in exceptional circumstances.
Adherence
The adoption of a high-quality design approach to both the public realm and the new buildings is an overarching objective of the Dublin Central Masterplan. All new buildings or interventions are executed in a contemporary manner, reinterpretation traditional distinctive forms to protect the unique character of the area.
Materials used should be of a high quality and be durable to avoid long term maintenance problems. They should include stone, brick, render, steel, glass and timber.
Adherence

Where introduced, materials have been carefully selected to ensure integration with the existing and proposed future characteristics of the receiving urban environment. The introduction of brick to buildings fronting Moore Street is considered an appropriate response to the character of the Monument and other retained structures. Any addition to existing fabric which does not constitute a reinstatement of a missing element will be treated in such a way as to retain a distinction between the original and new fabric. This is achieved through the use of contrasting materials, such as Corten steel or contrasting coloured brick. The selected materials harmonise and complement the overall palette of the Masterplan scheme and the inherent character of the area.
An appropriate and balanced mix of uses will be required in all new developments and large scale single use developments will not be permitted. Public oriented uses including shops, cafes, restaurants and bars will be required at ground floor level to create more lively, dynamic and successful places.
Adherence
The proposed use on Site 4 is considered compatible with the objectives of the ACA to a unique extent when compared with other uses across the wider designated ACA boundary.A low-density residential scheme is proposed, providing apartments with shared amenities above street level retail and café units. The block south of the National Monument is designed to encourage establishment of a residential community enclosing a communal courtyard, sitting on a level of small retail units facing Moore Street and Moore Lane. Cafés and restaurants are concentrated around the new public square to create active and vibrant spaces.
The ground floor of all buildings should be clearly articulated to establish a clear identity for each building and use. In general, a higher floor to ceiling dimension should be provided at ground floor level.
Adherence
Street level accommodation within new buildings meets this objective. A site-wide shopfront strategy has been prepared within the Dublin Central Masterplan. Section 4.8 of Acme's Site 4 Design and Access Statement describes an approach to the design of shopfronts compatible with the ACA general objective of generation of appropriate shopfront provision in terms of scale, materiality and composition suggestive of the proportions of upper level fenestration of receiving buildings.
The incorporation of new pedestrian routes and public spaces into new developments will be required where appropriate to enhance and reinforce the existing urban framework. A number of sites have been identified where opportunities for such interventions may be explored including site clusters Nos.4 and 7.
Adherence
The proposed development of a public square and new pedestrian link connecting Moore Street with O'Connell Street meets this objective.
Access requirements for people with disabilities, the elderly and the very young should be incorporated into the design of shops, public and other buildings.
Adherence
The proposed urban landscape design is wholly accessible.
Plant and tank rooms should be provided within the roof space or within the envelope of the building and should not break the plane of the roof.
Adherence
The roofscape design meets this objective.

Table 15.5.7: Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area.

15.5.3.2.3 Potential Operational Stage Impacts for the Protected and Historic Buildings in The Vicinity

Architectural heritage risks heritage buildings in the vicinity of Site 4 are predicted in Table 15.5.3. above.

15.5.3.3 Do-Nothing Impact

Site 4 occupies a large swathe of urban landscape within an area of historical significance owing to its contribution to the battlefield of the 1916 Easter Rising.

Notwithstanding the site's connection with the Rising, recent research has identified 18th and 19th century buildings that are considered to possess architectural significance, meriting careful retention and sensitive conservation. The benefit of securing an architecturally sensitive urban content to the setting of National Monument is immeasurable.

The same building fabric is currently at risk, with low levels of occupancy and building fabric in continuing decline.

In the event that the existing condition of vacancy perpetuates, the same building fabric will continue to deteriorate with likely consequences of permanent loss.

15.5.4 Potential Impacts Associated with the Development of Site 5

15.5.4.1 Construction Stage

Potential architectural heritage impacts associated with the development of Site 5 are considered to arise in respect of demolition and excavations, in terms of physical impacts for known friable structures within the National Monument site. Site 5 buildings will be demolished early on in the process and used as access to the Masterplan Sites for an extended period before the actual construction of Site 5 will commence as the final phase of development.

Other risks are envisaged as being limited to the temporary disruption for the setting of the National Monument, as described in Table 15.5.4. above.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.5.4.2 Operational Stage

15.5.4.2.1 Potential Operational Stage Impacts for the ACA

Please refer to Table 15.5.6 Summary of impacts for the enclosing environs (including the ACA) as described in Table 12.1 Table of Landscape and Visual Effects of Chapter 12 of the EIAR above for an analysis of wider urban impacts, including those affecting the ACA.

Specific architectural heritage impacts for the ACA in the vicinity of Site 5 are predicted as follows: -

Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area
Policy
New developments should respect the established scale of the existing built fabric – including height, massing, proportions and plot width. Proposals for large scale or 'mega-structural' developments will not be favourably considered and any such proposals should be broken down into smaller, more comprehensible and human scale developments. This can be achieved in part through the provision of multiple uses and access points at ground floor level.
Adherence
At present, the configuration of the receiving environment shields the ACA from the proposed development. However, on creation of the proposed Masterplan east/west street in O'Connell Street, the site will be visible from the ACA. The building's form will be viewed obliquely from the ACA, framed by the pocket square to its south. At the time of delivery of Site 2AB and Site 2C (Nos.43-51 O'Connell Street) the height of replacement buildings will neutralise the form, scale and mass of the proposed structure.
All new buildings should be designed to the highest standard in a modern architectural idiom. Pastiche will be discouraged and will only be allowed or required in exceptional circumstances
Adherence
The adoption of a high-quality design approach to both the public realm and the new buildings is an overarching objective of the Dublin Central Masterplan. The proposed new building is considered to possess architectural quality that will enhance the visual character of the area.

Materials used should be of a high quality and be durable to avoid long term maintenance problems. They should include stone, brick, render, steel, glass and timber.
Adherence
The materiality of the proposed structure has been carefully examined to ensure that it integrates with its existing and proposed future urban environment. The introduction of brick to buildings fronting Moore Street is considered an appropriate response to the character of the Monument and other retained structures.
An appropriate and balanced mix of uses will be required in all new developments and large scale single use developments will not be permitted. Public oriented uses including shops, cafes, restaurants and bars will be required at ground floor level to create more lively, dynamic and successful places.
Adherence
The proposed building's use is considered compatible with the objectives of the ACA.
The ground floor of all buildings should be clearly articulated to establish a clear identity for each building and use. In general, a higher floor to ceiling dimension should be provided at ground floor level.
Adherence
Street level accommodation meets this objective.
The incorporation of new pedestrian routes and public spaces into new developments will be required where appropriate to enhance and reinforce the existing urban framework.
Adherence
The proposed development of part of a public square within part of the site meets this objective.
Access requirements for people with disabilities, the elderly and the very young should be incorporated into the design of shops, public and other buildings.
Adherence
The proposed urban landscape design is wholly accessible.
Plant and tank rooms should be provided within the roof space or within the envelope of the building and should not break the plane of the roof.
Adherence
The design of the roofscape meets this objective.

Table 15.5.8: Demonstration of adherence with Part II-Development Control, Section A, New Development, of the O'Connell Street Architectural Conservation Area.

15.5.4.2.2 Potential Operational Stage Impacts for the Protected and Historic Buildings in the Vicinity

Architectural heritage risks heritage buildings in the vicinity of Site 4 are predicted in Table 15.5.3. above.

15.5.4.3 Do-Nothing Impact

The building fabric within Site 5, being late 20th century in origin, is in fair-good condition and not at risk of decline to the same extent as what would be presented in Sites 3 and 4, should no development occur. Whilst the site does not contribute positively to its urban context, it presents a neutral impact for the National Monument, a condition that would be maintained if the development were not to proceed.

15.5.5 Cumulative

15.5.5.1 Construction Stage

The delivery of the Masterplan encompassing all six sites, in achieving its urban renewal ambitions will incur considerable change to the receiving environment, within and external to the Masterplan site.

The Masterplan concept and in particular the detailed design development of Sites 3, 4 and 5, has evolved over the course of a lengthy design process to statutory consent stage, a process which included multiple consultations with statutory and non-statutory stakeholders.

Architectural heritage aspects of the Masterplan were reviewed by the variety of stakeholders with an array of specific interests, requiring several design iterations to ensure broad satisfaction with the Masterplan design, as it is now submitted.

Temporary impacts for the physical delivery of the Masterplan at construction stage for the enclosing urban environment, which must stay operational, were examined in statutory consultations.

Cumulative impacts in the development of the combined sites have therefore been envisaged in the careful sequencing of the works. It is acknowledged that construction work, whilst temporary, has the potential to cause disturbance of the public realm, a factor that has been considered in particular for pedestrianised areas of Henry Street and Moore Street, and mitigated against in the suite of construction management strategies attached with this EIAR.

DCC PLAN NO: 2861/21
01/06/2021

15.5.5.2 Operational Stage

Any demolition of buildings within an ACA, some of which are considered to be of significance yet have suffered long-term underuse, must be countered by a viable and long term commercial strategy justifying demolition in the first instance on the basis of commercial unviability, and ensuring that same radical and irreversible measure is wholly vindicated in the promise of replacement structures of comparable significance which can deliver a sustainable long-term use to the overall benefit of the ACA.

The Dublin Central Masterplan site is unique in urban terms in that its primary structures of significance originate from sweeping urban reconstruction; Site 2 in the aftermath of the War of Independence and Site 3 in the aftermath of the 1916 Easter Rising.

It is notable that the sites suffering most replacement at that time, now face a corresponding scenario a century later. It is also notable that the Site 1 building group comprising pre-1916 building fabric, largely physically unaffected by the consecutive battlefields is to be conserved, with certain new additions.

The conservation and purposeful integration of pre-1916 structures in Site 4 form a central component of this scheme, with demolitions centred around building of low interest.

The future conservation, presentation and occupation of the presently vacant National Monument buildings is essentially expanded to include a comparable treatment for retained building fabric in the development site. On completion of the two separate conservation/ development projects, the state-owned and applicant-owned building groupings are intended to appear seamlessly as a unified terrace, offering similarly conserved, occupied and animated buildings contributing collectively and positively to the receiving urban environment.

Site 5 similarly concerns the replacement of mid-20th century structures of limited significance.

On account of the extent of proposed demolition and redevelopment, cumulative operational stage impacts will arise to a greater extent on Sites 2 and 3 of the Masterplan area. On that basis, it is worth reflecting on these sites' capacity for radical renewal, as evidenced by the contribution their respective terraces made to their enclosing environs at a similar operational stage in the aftermath of their reconstruction.

The buildings were designed, in their reconstruction, to inherently reflect retail and residential trends of the time. In 1916, Henry Street was a prominent shopping street and considered by the Wide Street

Commission as having the optimum width to enjoy window shopping, directly influencing the provision of upper level display windows in reconstructed buildings. The devastating impact of fire spread during the 1916 Easter Rising arising in the preventable loss of the building block at Site 3, resulted in secondary escape routes from upper level apartments to shared rear laneways (a benefit now lost to these buildings, to their detriment). Each plot was occupied by a reconstructed building designed uniquely to reflect specific brief requirements.

The reconstruction of Site 2 also followed a similar tradition of design reflecting the requirements of the era. Purpose built offices with few residential components, acknowledged the commercial importance of the street. As with Site 3, no two reconstructed buildings in Site 2 bear the same design, with each building designed uniquely.

What is also common to both urban blocks is their harmonious adaptation to their city centre environs. Over the course of the 20th century, replacement structures of quality in acquiring a collective architectural identity, became synonymous with their urban context.

At an elementary level and setting aside the quality of the existing building groups scheduled for removal, it is possible to conceive how a reimagining of these urban blocks could continue a tradition of positive urban contribution into the future.

Similar to its predecessors over a century ago, the functioning of each building has been carefully considered to meet the future demands of the city. The benefits of a site-wide approach to reconstruction, however, is ensuring that specific functions are located strategically, are not over-supplied and acquire a co-dependence ensuring the longevity of all contributing elements.



Figure 15.5.3: Sketch image of O'Connell Street, due south, encompassing Sites 1 and 2.

A converse view could be taken that the destruction of 18th century terraces, as existing prior to two consecutive battles, presented mitigating circumstances necessitating replacement- circumstances that might be considered absent in a justification for reconstruction in 2021.

It is worth noting at this juncture, that similar levels of demolition to what is now proposed, is permitted under DCC Reg. Ref. 2479/08 / An Bord Pleanála Reg. Ref. PL29N.232347, a decision ultimately made in deference to the same economic imperative.

Notwithstanding the above, it is held that the cumulative operational stage of the proposed Masterplan is considered of a design and use quality to ensure its long-term functioning into the future.

Policy 15 of the Dublin Central Masterplan Area Conservation Plan recommends the following in respect of an enduring operational stage: -

"That an architectural strategy for replacement buildings is devised to ensure that the generation of new buildings overcomes the loss of the existing, as follows: -

To ensure that new buildings are an exemplar of exceptional architectural design, make a positive contribution to their setting, streetscape and wider urban group, are constructed with high quality materials respectful of their context within the ACA, in reflection of the Categories of Special Interest defined in the 'Architectural Heritage Protection Guidelines for Planning Authorities 2011' and the NIAH Handbook 2017. To ensure that the materiality of new building facades is compatible with the brick, stone, metal and ceramic palettes found in the vicinity.

To establish a long-term conservation-led maintenance strategy for replacement buildings; to ensure that each component and building element is maintainable and ultimately conservable. The conservation strategy must include details on the life span of components, a maintenance plan and risk schedule.

Research and recording: To submit all architectural and technical drawings, together with relevant files to the Irish Architectural Archive as a safeguarding measure to assist in the future conservation of replacement buildings."

In adhering with this policy, it is hoped that replacement buildings will not just endure but positively contribute to the city into the future. The potential for adverse cumulative impacts at operational stage will be mitigated, as the contribution of a conserved and occupied development will positively enrich and enliven the wider urban vicinity.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

15.5.5.3 Do-Nothing Impact

Cumulatively, the under functioning of each site permeates the wider urban vicinity, negatively impacting the quality of the ACA and threatening the survival of friable building fabric of heritage interest. Permitted development on these combined sites has not yet proceeded, notwithstanding the passage of time since permission was granted. The building fabric cannot sustain continued long term inaction if purposeful conservation of certain key buildings of interest, as a strategy, is to be encouraged.

15.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

15.6.1 Dublin Central Masterplan

15.6.1.1 Construction Stage

Potential cumulative impacts are envisaged as arising at demolition, excavation and construction stages where the development sequence for multiple Masterplan plan sites occur in tandem. It is envisaged over a prolonged period, that construction will be active to one or more development sites, with common road networks and site compound areas outside designated 'Sites' in correspondingly active use. As all works occur within or in the vicinity of the ACA and neighbouring protected and historic fabric, the cumulative impact of the proposed development is likely to be experienced by this architectural heritage.

15.6.1.2 Operational Stage

Cumulative construction stage impacts are envisaged as being short term, and whilst disruptive, will, on completion provide an enhanced urban environment in which all structures and spaces of architectural and cultural heritage interest can collectively thrive.

15.6.2 Mitigation measures for the development of Site 3

15.6.2.1 Construction Stage

15.6.2.1.1 Qualification of the Composition of the Existing Building Range

Construction strategies for Site 3 were designed to accommodate a range of unknown conditions within the extent of retained building fabric, with numerous scenarios factored into the development of the structural design.

It is proposed to distil construction strategies prior to commencement of works, under the direction of Waterman Moylan's and the architectural and structural heritage teams.

The intended outcome of future investigations will be to frame a precise structural analysis of the buildings, which in turn will directly and accurately inform demolition and protection strategies.

15.6.2.1.2 Qualification of Protection Strategies

The preparation of a detailed construction plan for the demolition of building fabric will inform a correspondingly detailed protection plan for retained fabric, which in turn, will safeguard the architectural heritage characteristics of retained fabric, and also reduce physical impacts for the enclosing ACA.

15.6.2.2 Operational Stage

15.6.2.2.1 Continued Protection of Retained Fabric

All of the retained fabric within Site 3 is included in the designated boundary of the ACA. A significant factor in maintaining the integrity of the ACA at operational stage is the continued maintenance and good presentation of retained fabric. It is envisaged the estate will be under a single Management Company, rather than a fragmented ownership meaning that a higher level of integrity can be maintained.

15.6.3 Mitigation Measures for the Development of Site 4

15.6.3.1 Construction Stage

Primary risks in developing Site 4 are associated with construction impacts in proximity to the National Monument. It is intended, following submission of planning applications and easing of Covid restrictions, to embark on a range of agreed conservation-led investigative works. In conjunction with statutory stakeholders, a detailed design strategy for all stages of the construction process will be developed to ensure that all risks are identified and mitigated. Ministerial Consent will be sought for the expanded construction strategies.

As a principle, it is intended to observe a similar level of detailing to mitigate construction risks for retained fabric within Site 4, on the basis that similar conditions are likely to exist elsewhere requiring a similar level of ameliorative protection and conservation.

15.6.3.2 Operational Stage

Substantial sections of Site 4 shares boundaries with either protected or retained fabric of heritage significance. Monitoring of boundary conditions into the future will be required to ensure the long term protection of these boundary conditions.

Similarly, building fabric scheduled for retention and conservation within Site 4 merits ongoing monitoring to ensure its long term protection. These buildings are not protected structures, but, in accordance with the Conservation Plan, are treated as if they were, as an integral component of a future maintenance strategy.

15.6.4 Mitigation measures for the development of Site 5

15.6.4.1 Construction Stage

Key risks for the development of Site 5 are confined to demolition and excavation stages, where risks of vibrations are predicted as occurring for the National Monument.

Mitigations against foreseen potential impacts arising from the demolition, excavation and enabling works of constructing Site 5 are detailed in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 5.

15.6.4.2 Operational Stage

No mitigations are envisaged as being required for operational stage of Site 5 buildings.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.7 Residual Impact

15.7.1 Dublin Central Masterplan

15.7.1.1 Construction Stage

A key residual impact is the possibility of accidental/ unforeseen permanent loss during the construction stage, of architectural heritage cited as having significance and intended to be retained as part of the proposed development.

A less tangible residual impact following the commencement of the development of the Masterplan is economic uncertainty or a continuing Covid pandemic-scenario arising in the temporary or prolonged cessation of works, leaving historic fabric more vulnerable than it is currently.

The proposed development has been designed so that on commencement of the Masterplan development, both risks are mitigated against in the certainty of funding and in the natural elimination of the pandemic.

15.7.1.2 Worst Case Impact

A worst-case scenario would be the permanent loss of architectural heritage of significance as a consequence of the development.

A further detriment for the delivery of the Masterplan would be for the works to permanently cease as a consequence of long-term economic impacts.

15.7.1.3 Operational Stage

The viability of the Masterplan development at operational stage is dependent on the prosperity of the community for which it is intended to be delivered. In the event of a recession, and piecemeal occupancy – the vitality of the scheme and long term securing of its architectural heritage would be impacted. A positive residual impact, even in the event of a future recession, would be the securing of that same architectural heritage at construction stage, overcoming the current status of incremental decline.

15.7.1.4 Worst Case Impact

A worst case impact for the Masterplan is partial, yet incomplete development, arising in further incremental erosion of the character of the ACA and its architecturally significant buildings.

15.7.2 Residual Impacts Envisaged for the Development of Site 3

15.7.2.1 Construction Stage

A final stage of recording the building ranges following clearance of each building is proposed. Residual impacts, following this second stage of recording is limited to the physical removal of fabric identified for demolition and disruption arising therefrom, which has been anticipated in the Construction Management Plan accompanying this submission prepared by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA.

As careful management of the demolition process will ensure the protection of the adjoining retained fabric, no further residual impacts are envisaged.

15.7.2.2 Worst Case Impact

No worst case residual impact is envisaged as arising at construction stage, if all mitigation measures proposed are adopted.

15.7.2.3 Operational Stage

The impact of an altered external urban context is offset against the benefit of a much needed renewal of this urban block.

It is possible that material impacts arising from the generation of infill fabric to the rear of retained facades might emerge over time, such as cracking of masonry or the build-up of condensation at interstitial layers, arising in efflorescence in masonry.

15.7.2.4 Worst Case Impact

A detailed analysis of the building fabric will be possible prior to construction, by which time a site specific design for the provision of new structures behind existing, provision of insulation and breather membranes can be resolved- all mitigating against the risk of a residual impact arising from the technical detailing of retained facades.

15.7.3 Residual Impacts Envisaged for the Development of Site 4

15.7.3.1 Construction Stage

The sensitivity of constructing this development will not easily tolerate residual impacts. As a consequence, it is hoped that additional future impacts for the National Monument and retained structures of heritage significance within Site 4 can be predicted at Ministerial Consent stage, or immediately following commencement of work, where carefully considered amendments to a future consent can be sought, if necessary. As a consequence of an avoidance of residual impacts, none are envisaged as arising.

15.7.3.2 Operational Stage

The terraced, multi-occupancy context of buildings north and south of the National Monument will inevitably arise in a possible residual risk of damage occurring from within properties adjacent. Every effort must be taken to secure the long term integrity of boundary conditions to mitigate against operational stage risks, by way of quality alarm systems and regular maintenance.

The same conditions will arise in respect of retained fabric, within Site 4, where buildings will be occupied by multiple tenants of differing profiles. It is essential that all properties within the development at Site 4 are subject to strictly observed and implemented monitoring, inspections and maintenance to ensure that all historic fabric within and adjoining the site is safeguarded.

15.7.3.3 Worst Case Impact

A worst case impact for fabric of heritage significance within and abounding the development site is the occurrence of damage spreading from one property to another. As cited for the Operational Stage of Site 4, above, it is imperative that an effective management plan for the future occupancy of the development is implemented, to mitigate risks of emergence of worst case impacts.

15.7.4 Residual Impacts Envisaged for the Development of Site 5

15.7.4.1 Construction Stage

No architectural heritage residual impacts are envisaged as arising from the construction stage development of Site 5.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.7.4.2 Operational Stage

No architectural heritage residual impacts are envisaged as arising from the operational stage development of Site 5.

15.7.4.3 Worst Case Impact

No architectural heritage worst case residual impacts are envisaged as arising from the development of Site 5.

15.7.5 Cumulative

15.7.5.1 Construction Stage

At construction stage, existing streetscapes offered by the combined sites, that presently define the architectural setting of the site from within the public realm will be temporarily supplemented with hoarding to overcome possible environmental changes arising from the works. Methodologies for consolidation and repair of shared boundaries will be executed in order to maintain their integrity and mitigate risks arising from the works.

15.7.5.2 Operational Stage

On completion of the development, the cumulative impact of the combined development on the enclosing urban environs will be considerable. The Masterplan site has, since its origins, not known a period of decline as it has experienced since the early 1980s, particularly in the context of the rest of the city, which has, in the round, improved markedly over the intervening period. That same environment has withstood the perceived hostility of urban decay as now defining its urban character.

Notwithstanding the inevitable change in character, other large-scale schemes have been constructed in the vicinity of the Masterplan area, all contributing collectively to the increasingly 20th century character of the townscape which has proven that it can tolerate and indeed embrace structures of scale and contrasting design.

It follows that the site's redevelopment, whilst maintaining the urban character will seek to exploit its scale, street frontage and historical pattern of diverse and successive redevelopment, in the generation of a more ambitious scheme than presently exists.

The Masterplan site's changing chronology over time introduced, at each successive stage of development, buildings of scale, density and architectural treatment, radically contrasting with the smaller scale residential character of 18th and 19th century buildings in the vicinity. At each stage, the enclosing urban environs embraced an evolving character.

The cumulative impact of building on a tradition of ambitious development on this site is thus held to be lessened on account of the site's existing and past morphological character, and how that same

character was accommodated by its enclosing environs on account of the proportions of the enclosing streets and internal laneways, and a passive interaction with same.

15.7.5.3 Worst Case Impact

A worst case impact for the development of Sites 3, 4 and 5 would be in prolonging their development further, which in time would create a challenge for the presentation of the heritage significance of Moore Street and its National Monument that might not be possible to overcome in isolation of the development of these sites.

15.8 Monitoring

15.8.1 Dublin Central Masterplan

15.8.1.1 Construction Stage

Multiple protection strategies are outlined in the Construction Management Plans accompanying this EIAR, all of which must be observed in order to achieve the development.

15.8.1.2 Operational Stage

The delivery of the Masterplan as designed is dependent on its continued visual quality into the future. It is envisaged, given the strategic importance of the Masterplan site, and the corresponding importance to ensure that it thrives in the long term, that a maintenance schedule will be adhered to by future operators to maintain the visual amenity of the conserved site.

15.8.2 Monitoring of Site 3

15.8.2.1 Construction Stage

Demolition stage will require observation throughout to ensure that fabric scheduled for retention is protected and risk of damage averted.

15.8.2.2 Operational Stage

Monitoring at operational stage will be required to ensure that retained fabric is maintained and contributes positively to the character of the ACA.

15.8.3 Monitoring of Site 4

15.8.3.1 Construction Stage

Exceptional care will be deployed at construction stage of Site 4 to monitor all works in proximity to the National Monument. The detail of the process of monitoring will be examined rigorously in a forthcoming Ministerial Consent process, which will follow the statutory planning submission process. In addition to securing the structural integrity of the National Monument, retained fabric will require careful monitoring to ensure its safeguarding throughout the construction stage, mindful that the same fabric is generally in poor condition.

15.8.3.2 Operational Stage

Monitoring at operational stage will be required to ensure that retained fabric is maintained and contributes positively to the character of the urban environment.

15.8.4 Monitoring of Site 5

15.8.4.1 Construction Stage

The demolition stage and excavation stage will require careful monitoring to ensure that no inadvertent damage occurs to protected fabric in the vicinity.

15.8.4.2 Operational Stage

Not envisaged as being required on heritage protection grounds, at operational stage.

15.9 Reinstatement

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

15.9.1 Dublin Central Masterplan

15.9.1.1 Construction Stage

Every effort has been made to ensure that worst case residual risks of inadvertent damage or loss of architecturally significant building fabric are envisaged, accounted for and mitigated against. Every building has been photographically recorded and measured, to counter any such unfortunate event. This practice will be further expanded prior to the commencement of the Masterplan development and on vacation of each building to ensure that each building component, feature and space is illuminated to enable accurate recording.

In the unlikely event that unintended damage or loss of fabric occurs, building material will be labelled and safely stored to enable faithful reconstruction. At that time, the enhanced building records will serve as a solid repository to inform accurate reinstatement.

15.9.1.2 Operational Stage

At operational stage, risks of accidental loss or damage, whilst mitigated against insofar as possible at design and construction stage for architecturally sensitive buildings, are present for all building projects. On completion of the development, the completed building records will be submitted to the Architectural Archive for safekeeping. In the unlikely event of loss or damage of building fabric into the future, these records will be available for use in accurate reconstructions.

15.9.2 Reinstatement – Site 3

15.9.2.1 Construction Stage

It is proposed to protect and safeguard in the first instance, but reinstate if required, boundary conditions onto Nos 34 and 35 Henry Street.

It is further proposed to prevent, in the first instance, but reinstate if required, damage to the public realm outside the development site, in particular the special character of the ACA.

During the demolition process, it is intended to protect and safeguard retained structures adjacent (within the development site) in accordance with structural and conservation methodologies.

15.9.2.2 Operational Stage

Reinstatement measures at operational stage are envisaged as potentially arising from inadvertent damage to retained fabric during fit out stage by future tenants. Every effort will be made to ensure that such a scenario does not arise.

15.9.3 Reinstatement – Site 4

15.9.3.1 Construction Stage

It is intended to safeguard and protect all fabric scheduled for retention within Site 4, with extensive protection measures envisaged within the accompanying Construction Management Plan seeking to avoid a scenario where damage occurs, requiring reinstatement.

The greatest element of risk attached to the construction of Site 4 is the potential for inadvertent damage to arise to the National Monument at Nos 14-17 Moore Street. In the event that damage occurs, reinstatement will take place in accordance with conservation methods to the satisfaction of statutory stakeholders.

15.9.3.2 Operational Stage

Reinstatement measures at operational stage are not envisaged as having the potential to arise, as all works will be monitored closely and varied, if required, to reflect site conditions as they are known to arise. In the unlikely event of a catastrophic event, historic fabric will be carefully restored to its original condition referencing archival material. As an additional measure, historic fabric will be further recorded prior to commencement of works to inform such a reconstruction.

15.9.4 Reinstatement – Site 5

15.9.4.1 Construction Stage

As it is intended to demolish all structures on Site 5, no reinstatement is envisaged.

15.9.4.2 Operational Stage

Reinstatement measures at operational stage are not envisaged as having the potential to arise.

15.10 Difficulties Encountered

Whilst much of the Masterplan site is vacant (approximately 60% of floor area is under-utilised), some units are occupied, with access to carry out physical investigations and recording limited, particularly on account of the pandemic. Notwithstanding, all buildings were accessed with only a limited number of areas within same buildings inaccessible. In these rare instances, a view on the significance of a structure was taken on the basis of assessing visible elements.

Further, and to a greater extent, due to Covid-19 restrictions since March 2020, research of the site in public archives has not been possible. The limitations presented for / prohibiting of research in public archives, whilst atypical for architectural heritage assessment in normal times, are not on balance of all findings, site and archival, believed to alternatively influence the final architectural heritage opinion on significance of structures within the grouping.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

16 CULTURAL HERITAGE (ARCHAEOLOGICAL)

DCC PLAN NO.2861/21
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16.1 INTRODUCTION

16.1.1 General

This chapter describes the likely significant effects of the Proposed Development on the archaeological heritage environment. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 16.1 below indicating the Dublin Central Masterplan area) which will be assessed also.

The purpose of the study is to assess the potential significance and sensitivity of the baseline archaeological heritage environment and in turn to identify and evaluate the likely significant effects (positive and negative) on this environment. Mitigation measures are proposed where necessary to safeguard any monuments, features or finds of antiquity identified during the course of the present study.

The following aspects are particularly relevant to the archaeological assessment within an urban environment: -

- Design: -
  - Foundation design (e.g. piling, ground beam layout, groundworks, basement levels / location, attenuation, lift shafts etc.).
- Construction: -
  - Earth-moving works (e.g. demolition, bulk excavation, piling, drainage, services)

A detailed description of the Proposed Development is provided in Chapter 3: Description of Proposed Development.

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16.1.2 Site Location

The Proposed Development is located in Dublin City centre on the northern side of the River Liffey and on the western side of O'Connell Street. The site is generally bounded by O'Connell Street Upper to the east, Parnell Street to the north, Moore Street to the west and Henry Street to the south, with Moore Lane traversing the middle of the site in a north / south direction.

A site wide cumulative Masterplan has been prepared by Dublin Central GP Limited (the 'Applicant') to set out the overall development vision for the Dublin Central project. This is called the Dublin Central Masterplan. The Dublin Central Masterplan area is divided into six identifiable sites for the purpose of making individual planning applications; Sites 1 and 2 (2AB and 2C) lie east of Moore Lane and Sites 3, 4 and 5 lie to the west. Site 3 is in its own block and bound to the north and east by Henry Place (See Figure 16.1 below).

Each site within the Proposed Development will be subject to an individual planning application.



Figure 16.1: Dublin Central Masterplan area and development sites.

The works that would enable the introduction of the O'Connell Street Metrolink station will be included with the application for Site 2AB and Site 2C (See Figure 16.2 below). The proposed Site 3, 4 and 5 boundaries, relevant to the current applications, do not sit over the proposed extents of the Metrolink Station. The application for the Metrolink Station itself will be made by Transport Infrastructure Ireland (TII) separately as part of the application for the Metrolink railway order.



Figure 16.2: Location of the Metrolink O'Connell Street and the Dublin Central Masterplan area.

16.2 GUIDANCE AND LEGISLATION

The following legislation, standards and guidelines were consulted to inform the archaeological assessment: -

- National Monuments (Amendments) Acts, 1930 – 2014 (a summary is provided in Appendix 16.1).
- Planning and Development Act 2000, as amended.
- Heritage Act, 1995.
- UNESCO World Heritage Convention, 1972.
- ICOMOS Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas, 2005.
- Council of Europe Convention for the Protection of the Architectural Heritage of Europe (Granada) 1985, ratified by Ireland in 1991.
- Council of Europe European Convention on the Protection of the Archaeological Heritage (Valletta) 1992, ratified by Ireland in 1997.
- The Burra Charter, the Australia ICOMOS Charter for Places of Cultural Significance 2013.
- The European Landscape Convention (ELC), ratified by Ireland 2002. (The Department of the Environment, Heritage and Local Government 'Landscape and Landscape Assessment Guidelines' have been in draft form since 2000, however the Draft National Landscape Strategy (NLS) was launched in July 2014).
- Guidelines on the information to be contained in Environmental Impact Statements, 2002, EPA.
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements), 2003, EPA.
- EPA: Draft Revised Guidelines on The Information to be Contained in Environmental Impact Statements, September 2015.
- EPA: Advice Notes for Preparing Environmental Impact Statements, Draft, September 2015.
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out environmental impact assessment (Department of Housing, Planning and Local Government, August 2018),
- Department of Housing, Planning and Local Government (2018) Circular PL 05/2018 - Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017).
- Circular PL 1/2017 – Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive).
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands.
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000.
- Guidelines for the Assessment of Architectural Heritage Impact of National Road Schemes, 2006, NRA.
- Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes, 2006, NRA.

- National Landscape Strategy for Ireland 2015-2025, Department of Arts, Heritage and the Gaeltacht.
- Historic Scotland (October 2010), Managing Change in the Historic Environment.
- The Heritage Council (2010), Proposals for Irelands Landscapes and International Council on Monuments and Sites (2011).
- Historic England (2017). The Setting of Heritage Assets. Historic Environment Good Practice Advice in Planning No. 3 (Second Edition).

16.3 ASSESSMENT METHODOLOGY

16.3.1 General

The modern urban streetscape is a result of change and modifications over millennia and understanding how these processes occur and how they are represented in today's city is critical. The evaluation of the archaeological resource of the Proposed Development was based on a desk study of published and unpublished documentary and cartographic sources, supported by a site inspection. This has facilitated the production of an archaeological and historical background to the Proposed Development lands, identifying the nature of the recorded archaeological sites and finds arising from previous development and excavation in its environs. This has also established, as far as the records allow, the archaeological potential of the site and its immediate environs.

The methodology has been designed so a full understanding of the potential effects on the character of the archaeological resource in the study area can be assessed.

Architectural and Cultural Heritage is being examined in Chapter 15: Cultural Heritage (Architectural). This chapter provides a detailed historical account of the development of the urban landscape, it includes the results of a survey, inventory, and assessment of all the properties within the Dublin Central Masterplan area. The chapter also examines the historic events associated with the 1916 Easter Rising and the subsequent War of Independence in the 1920s. It identifies features, or evidence pertaining to the 1916 Easter Rising as part of the assessment. It also includes the forensic archaeological assessment of fabric within the walls in a number of structures to establish their date. The detailed assessment identified properties of significance within the Dublin Central Masterplan area that are in addition to protected structures and facades; and as part of design mitigation has led to the retention of historic structures and / or significant fabric.

The visual change to the urban environment is represented in photomontages in Chapter 12: Landscape and Visual Impact Assessment.

16.3.1.1 Desk Study

The assessment has been based on the available information and has followed the existing best practice format of desk and field study. The desk study availed of the following sources: -

- National Monuments, Preservation Orders and Register of Historic Monuments lists, which were sourced directly from the Department of Housing, Local Government and Heritage (DHLGH).
- Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR). The SMR, as revised in the light of fieldwork, formed the basis for the establishment of the statutory Record of Monuments and Places in 1994 (RMP; pursuant to Section 12 of the National Monuments (Amendment) Act, 1994). The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. The information held in the RMP files is read in conjunction with published constraint maps. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (National Monuments Service, DHLGH), which is available online at www.archaeology.ie and includes both RMP and SMR sites.

Those sites designated as SMR sites have not yet been added to the statutory record but may be scheduled for inclusion in the next revision of the RMP.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- The topographical files of the National Museum of Ireland (NMI).
- Cartographic sources, which included: Speed (1610), De Gomme (1673), Phillip (1685), Brooking (1728), Rocque (1756 and 1757), Scalé (1773) and the first edition and later (1838-1847) Ordnance Survey Mapping.
- Excavations Bulletins and Excavations Database (1970-2020); and Dublin County Archaeology GIS, online (The Heritage Council).
- Place names; Townland names and toponomy (loganim.ie).
- Dublin City Industrial Heritage Record (DCIHR) (Dublin City Council 2003 – 2009).
- A Dublin City Council's (DCC) Dublin City Development Plan (2016 – 2022). A Summary of relevant DCC policies in relation to archaeological heritage is provided in Appendix 16.2.
- Review and interpretation of aerial imagery (Google Earth 2001 – 2020, OSI Aerial Premium, OSI Digital Globe 2011 – 2013, Bing 2019) to be used in combination with historic mapping to map potential cultural heritage assets.
- A review of GPR data of the streets within the Dublin Central Masterplan lands.
- Other documentary sources (as listed in the Chapter 21: Bibliography) including previous assessments and studies carried out for this development block associated with previous planning applications and planning compliance reporting. The research carried out previously for the site was also availed of and revised in light of new findings. These reports include:
  - Courtney Deery Heritage Consultancy. 2011. Dublin Central: 14, 15, 16, 17 Moore street, National Monument, Moore Street, Dublin North City, Co Dublin – Archaeological Method Statement – Ministerial Consent Application. Unpublished report.
  - Courtney Deery Heritage Consultancy. 2012. 13-19 Moore Street, Dublin 1, Archaeological Heritage Environmental Impact Assessment Report. Unpublished report for Courtney Deery Heritage Consultancy Ltd.
  - Myles, F. and Shaffrey G. 2012. Application for a Ministerial Consent to carry out works at 14-17 Moore Street, Dublin 1, a National Monument. Report submitted to the Departments of Arts, Heritage and the Gaeltacht in response to an Additional Information request.
  - Simpson, L. 2014a. 'Finding's report: archaeological Assessment and supervision of Engineering test-pits at Nos 14-17 Moore Street/8-9 Moore Lane (National Monument) and Nos 6-7 Moore Lane. Ministerial Consent C392. Courtney-Deery Heritage Consultancy Ltd.
  - Simpson, L. 2014b, Archaeological assessment of cellars at Nos 8-9 Moore Lane (National Monument) and at Nos 6-7 Moore Lane, Dublin 1 Ministerial Consent No. C392 Courtney Deery Heritage Consultancy Ltd.
  - Simpson, L. 2015a, Archaeology Strategy and Method Statement for construction works at Nos. 14-17 Moore Street (National Monument) Courtney Deery Heritage Consultancy Ltd.
  - Simpson, Linzi, 2015b. Archaeological monitoring during the Essential Works programme at Nos 14-17 Moore Street, Dublin 1 Courtney Deery Heritage Consultancy Ltd.
  - Weadick, S. and Deery, S. 2018. Archaeological Finds Retrieval during the Essential Works Programme at Nos 14-17 Moore Street, Dublin 1, Phase 1 – Report and Preliminary Finds Register. Courtney Deery Heritage Consultancy Ltd.

16.3.1.2 Site Inspection

Site visits were carried out within the overall Dublin Central Masterplan area, taking cognisance of the potential implications of the Proposed Development on the surviving archaeological heritage landscape (e.g., where upstanding monuments might be visible).

16.3.1.3 Test excavation

The assessment incorporated the results of licenced archaeological testing (Licence Ref: 20E0649) carried out on the 28th and 30th of November 2020 at Nos. 40 – 41 (Site 1) and Nos. 50 – 51 O'Connell Street (in Site 2AB). This was complimented by a review of the results of archaeological investigation, monitoring and excavation in sites immediately adjacent to Dublin Central Masterplan area, available on the Excavations database (www.excavations.ie) and on the Dublin County Archaeology GIS (www.heritagemaps.ie) which are available online.

16.3.2 Study Area

The Dublin Central Masterplan area lies in the heart of Dublin City on the northern side of the River Liffey. The site is low lying and occupies ground that gently slopes south towards the Liffey. It lies partly within the statutory Zone of Archaeological Potential (ZAP) for the Historic City of Dublin, RMP No. DU018-020 (Figure 16.3). The site lies outside the medieval precinct walls of St. Marys Abbey in the area of the city that was predominantly developed in the early 18th century. It lies to the south of Parnell Street (formerly 'Great Britain Street') which runs along the line of an ancient routeway / road that dates from at least the Late Medieval period.

To establish the general archaeological potential of the Dublin Central Masterplan area, the assessment of the archaeological environment necessitated an understanding of the development of the northern side of the River Liffey from the prehistoric period to the present day. The archaeological baseline also examined individual recorded archaeological sites within 100m radius of the development for potential physical impacts, this includes Nos. 14 – 17 Moore Street, a national monument which shares its northern and southern boundaries with Site 4 and the site of an 18th century brickfield.

DCC PLAN NO 2861/21
RECEIVED: 01/06/2021

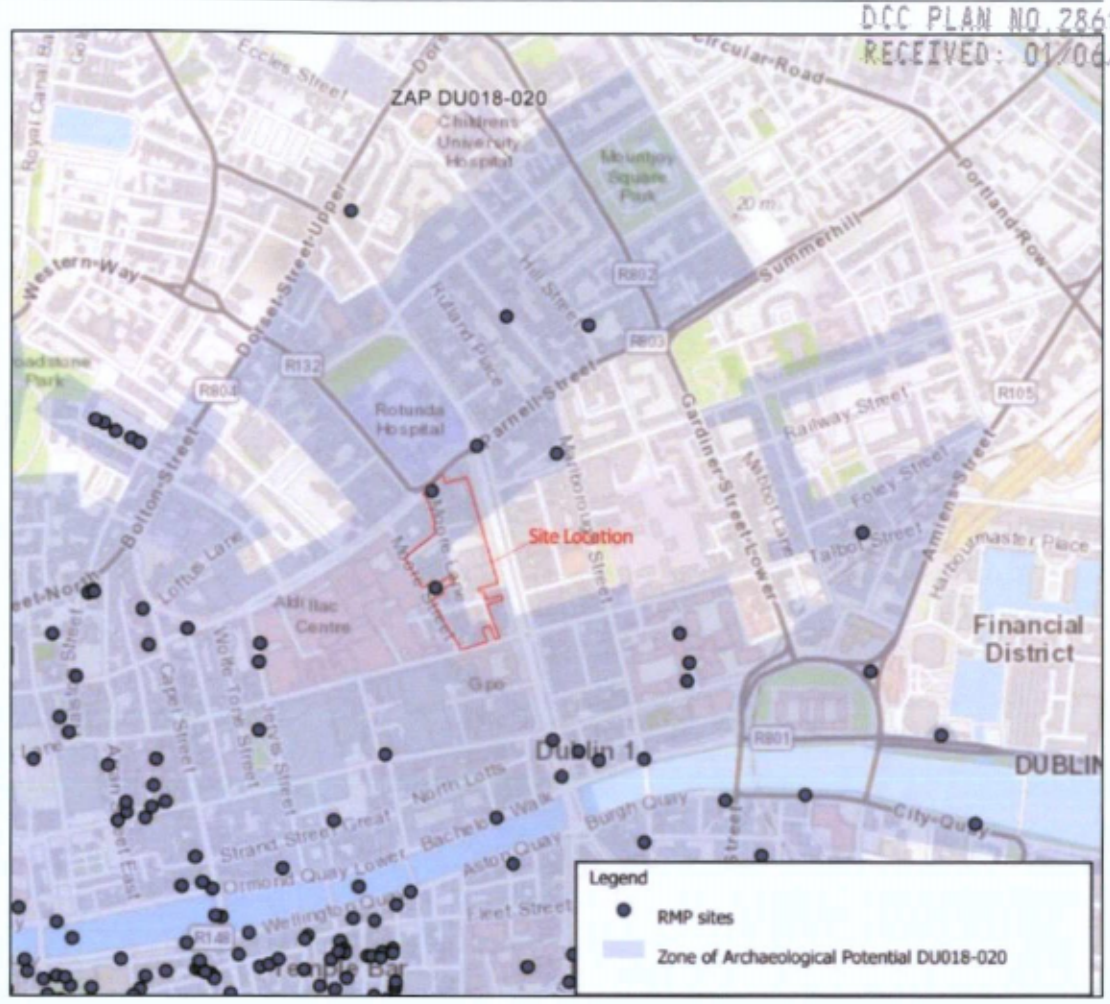

Figure 16.3: Dublin Central Masterplan area location, ZAP for Dublin and RMP sites.

The site is entirely urban in nature, composed of hard standing, buildings, and artificial surfaces. Since the 18th century the area has been subject to sequences of construction, infill, some demolition, and reconstruction within each property plot.

The surviving upstanding properties and relict remains of historic and architectural heritage merit are examined in detail in Chapter 15: Cultural Heritage (Architectural).

16.3.3 Consultation

The archaeological heritage consultants formed part of an integrated heritage conservation team (comprising conservation architects, built heritage historians, forensic archaeologists, landscape historians and conservation engineers). There was open communication throughout the project between the conservation team and the scheme architects, landscape architects, engineers and planners. Several design team meetings, online consultation and site visits were conducted throughout the design process.

Consultation with statutory stakeholders was an important aspect to the sustainable development of this site. Formal online meetings with presentations and onsite discussions were held with the National Monuments Service (NMS) of the Department of Housing Local Government and Heritage (DHLGH) and the DCC City Archaeologist who are responsible for the protection of archaeological heritage.

In addition to this, as part of the integrated conservation team, meetings were held with the DHLGH and the Office of Public Works (OPW) in relation to Nos. 14 – 17 Moore Street, a National Monument, which is in the ownership of the State. A presentation of the Proposed Development, including a summary of the architectural heritage analysis of the Dublin Central Masterplan area was also given to the Moore Street Advisory Group (MSAG). The Applicant (Dublin Central GP Limited) has also carried out extensive consultation with local stakeholders and interested groups. This engagement and consultation with statutory planning heritage and conservation authorities has influenced the proposed design scale and layout of the development which can be considered to be a significant departure (and improvement) from the permitted development of the lands.

An archaeological strategy of test excavation of the accessible open areas of the site was agreed with the DCC City Archaeologist. An archaeological method statement to carry out testing at Nos. 40 – 41 O'Connell Street and Nos. 50 – 51 O'Connell Street was issued to the Department and a licence to carry out the testing works was obtained (Licence No. 20E0649). A testing report was subsequently submitted to the NMS, NMI and DCC City Archaeologist on the 26th of January 2021, the results of the testing are summarised in this chapter (section 16.4.2.2 and the testing report is provided in Appendix 16.4).

16.3.4 Impact Assessment Methodology

The assessment of the likely significant effects on the archaeological environment resulting from the construction and / or operation of the Proposed Development relies on a combination of qualitative and quantitative assessment.

Archaeological heritage sites are considered to be a non-renewable resource and such material assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could adversely affect these sites. The likely significance of all impacts is determined in consideration of the magnitude of the impact and the baseline rating upon which the impact has an effect (i.e. the sensitivity or value of the asset). Having assessed the predicted magnitude of impact with respect to the sensitivity / value of the asset, the overall significance of the impact is then classified as not significant, imperceptible, slight, moderate, significant, very significant, or profound.

The assessment methodology, a glossary of impact assessment terms, including the criteria for the assessment of impact significance, is contained in Appendix 16.3.

16.4 RECEIVING ENVIRONMENT

16.4.1 Archaeological & Historical Background

16.4.1.1 Introduction

The historical and archaeological background draws from and expands upon previous studies carried out for the wider Dublin Central Masterplan area and from recent investigations carried out in the area in advance of neighbouring developments. Cumulatively, these assessments improve our records and understanding of the development of Dublin City from the earliest of times.

16.4.1.2 Prehistoric Period (4000 – 400AD)

Dublin has a recorded history of human settlement of over 9,000 years, centred along the line of the River Liffey which before its containment was a wide tidal estuary inundating the study area to the south. Up to the Anglo-Norman period, much of modern Dublin was submerged by the tidal River Liffey, said to have been around 300m wide during the Early Christian period. The areas now occupied by Townsend Street, much of O'Connell Street, and the lands of Trinity College were all under water, and large mud flats were left behind at low tide (Somerville-Large 1979).

Until recent times there was a scarcity of evidence for prehistoric activity in the Dublin city area, new archaeological evidence has shown that there was prehistoric activity both on the northern and southern shores and inlets of the River Liffey along its former shoreline. On the north side of the River, the earliest sites uncovered include Late Mesolithic fish traps near the mouth of the River Liffey at Spencer Dock in Dublin 1, which were buried deep in estuarine deposits. A burnt mound (SMR DU018-134) with an early Bronze Age date was discovered well beneath medieval deposits in Hammond Lane, Dublin 7. This open air cooking site demonstrates that a Bronze Age community lived nearby and made use of the former flood plains of the River Liffey for exploiting food resources.

A set of Iron Age waterfront structures located near the confluence of the Liffey and the River Bradogue, (an area known as 'The Pill' during the medieval period) was found at Ormond Quay, Dublin 1. These structures represent the earliest attempt in this area to stabilise the river frontage. The same investigations revealed a single late Mesolithic Bann flake, suggesting the exploitation of the riverine environment of the River Liffey was even earlier still.

16.4.1.3 Early Christian and Medieval Period (5th to 11th Centuries AD)

During the Early Christian period, three of the mythical five great roads of Ireland met in the Dublin city area, probably at the junction of St. Augustine Street, Cornmarket and Thomas Street on the south bank of the River Liffey. People using the road from the north would have forded the river at low tide, while those coming from the south would have crossed the boggy land around the River Poddle. A small farming and fishing community probably emerged at the junction, and a church dedicated to St Mo-Lua seems to have existed (Clarke 1995). The early secular settlement was called Áth Cliath, the hurdle ford, but nearby, a monastic settlement was established within an enclosure, the limits of which are still preserved by Peter Row, Whitefriar Street, Stephen Street Upper and Lower and Johnson Place. This ecclesiastical settlement, which was bisected by Aungier Street in the late 17th century, was known as the 'black pool', after a dark tidal pool formed by the peaty waters of the Poddle (Clarke 1995).

16.4.1.3.1 Viking Activity

The development of Dublin as an urban settlement dates to the early 10th century when a Scandinavian (Viking) colony was established on the southern banks of the River Liffey. The first real town of Dublin was established by Norse settlers in AD 841. A mixed Hiberno-Norse settlement developed, and archaeological investigations have uncovered the post and wattle houses of the period. By the second half of the 10th century, Dyflinn, as it was then known, was a town of respectable size for its time. The centrepiece of the settlement was Christ Church Cathedral, built in wood around 1030 by King Sitric Silkbeard and Bishop Dúnán. Towards the end of the 11th century, town walls were raised, making Dublin one of the first walled towns outside the former Roman Empire. A bridge to the north side of the river was erected some time before 1112, and it was there that St. Michan's was founded. Later, another monastic settlement, St. Mary's Abbey (the origin of the name Abbey Street), was established as a Savigniac house and subsequently acquired by the Cistercians. Two more monasteries were established on the south side: All Saints Priory, which would become the site of Trinity College, and the nunnery of St. Mary de Hogges (Clarke 1995). There is evidence to suggest that there was a Gaelic settlement preceding the foundation of the Viking town, which was centred on the Christchurch area.

Viking Gravefield

A possible cemetery site (DU018–020495) dating to the Viking period was recorded in 1763 when the Dublin Magazine recorded that *'vast quantities of human bone'* had been found during the construction of 'new gardens' at Parnell Square. These gardens were located in the current grounds of the Rotunda Hospital. More burials were uncovered along Granby Row and Cavendish Row. Along Granby Row, *'a large sword with a spear of about two feet in length with crumbling pieces of iron resembling broad rivets'* was also recovered (RMP file DU018–020495).

The burials are thought to have stretched from Dominick Street to the west to Mountjoy Square to the east and from Dorset Street to the north to Parnell Street to the south. A further account of Viking burials occurred in 1788, where Joseph Walker wrote that a sword and helmet with several human bones had been uncovered during the sinking of foundations of a house on Parnell Square North (Walker 1788). Human bones, a sword and shield boss, were uncovered during the excavation of foundations on Parnell Square North (Ó Floinn, R. 1998). In a series of magazine and newspapers of this period, further discoveries of human remains were noted along George's Street North, Summerhill, Gardiners Row and Mountjoy Square. This concentration of burial activity may be related to Viking activity in the area (Figure 16.4). The findspots are located on a ridge that overlook the former river estuary, a topographical setting was much favoured by the Vikings.

Such 'warrior burials' usually refer to individual graves of people of Scandinavian descent buried predominantly in the 9th century, along with their weaponry, which often included swords, shields and spears. This was a high-status mode of burial, usually confined to aristocratic young men who had presumably been fatally wounded in battle. However, this was not exclusively so as the collection from Dublin includes at least one older man and a female grave. De Courcy (1996) suggests that the main action of the Battle of Clontarf took place to the east of the area bounded by O'Connell street, Dorset Street, Drumcondra Road, the River Tolka and beyond to Ballybough and the North Strand.

In 2015, further disarticulated human remains were identified at Nos. 23 – 28 Parnell Square north of the Rotunda (Licence No 15E0361), these fragments were radiocarbon dated to the 8th and 10th centuries AD, reinforcing the evidence of Viking activity in the area. Given the profile of the individuals represented in the remains (late adolescents, adults two young children and an infant) it is likely that these remains represent clearance of a nearby burial area, rather than a battlefield site (Tobin in McIlreavy, 2018).

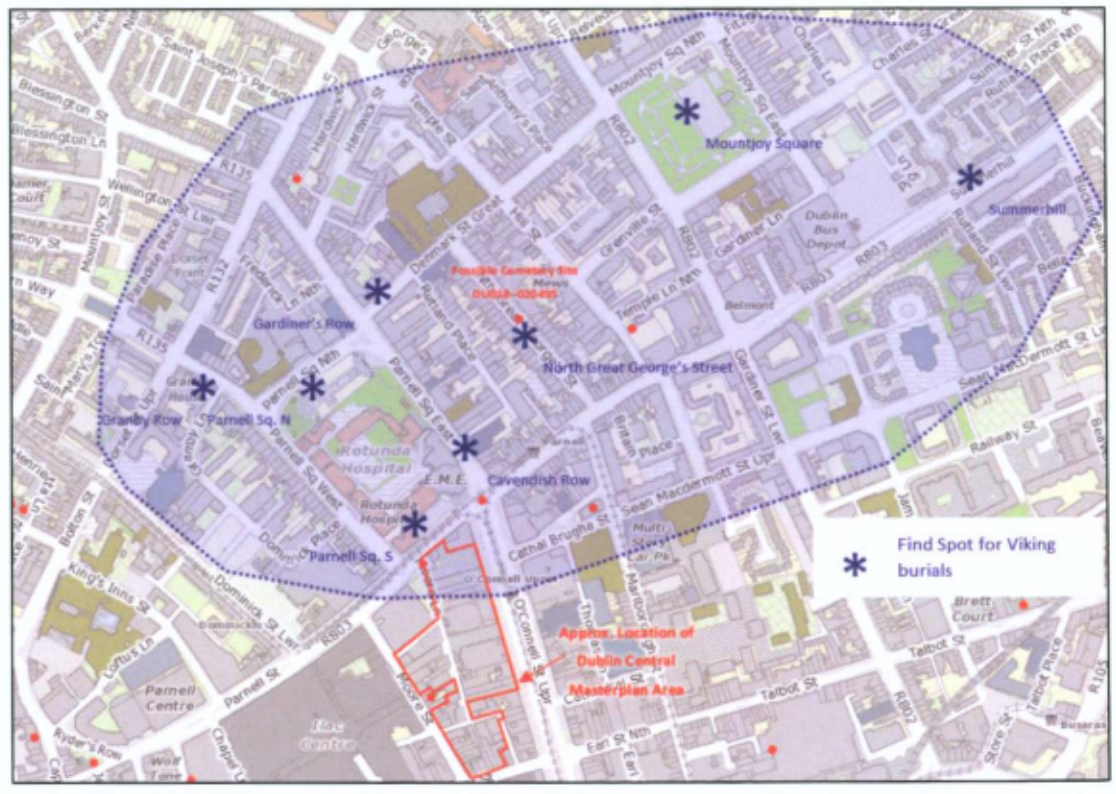

Figure 16.4: Find spots for Viking burials – the estimated size of the grave field (after Simpson 2021).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

16.4.1.4 Medieval Period (Late 12th century to early 16th century)

16.4.1.4.1 The Development of Oxmantown, The Northern Suburb

After the conquest of the city by the Anglo-Normans in 1170 AD, many of the Hiberno-Norse citizens of Dublin were forced to settle on the northern bank of the river opposite the walled town of Dublin. This suburb of Dublin was known as Oxmanstown, or Ostmanby, a place-name derived from the descriptive 'Ostmen', meaning 'men from the east'. It formed a suburb of the medieval Viking town of Dublin and seems to have been centred on a thoroughfare running north from the river, now Church Street. The modern Bow Street formed one of the main streets of Oxmantown, which led directly to the original ford, known in AD 770 as Áth Cliath, across the Liffey. That Oxmantown was a separate entity from Dublin is made very clear from the documentary sources that constantly refer to it as the 'villa Ostemannorum'. Ecclesiastical establishments had their own churches and they administered to the flock on that side of the river. St. Michan's was the only medieval parish church in Oxmantown. This was situated west of the Kings highway and north of Hangman's Lane.

16.4.1.4.2 St. Mary's Abbey

As the city expanded later in the medieval period, the north bank of the river came to be dominated by the Cistercian Abbey of St. Mary's. Founded in 1139, it was developed on the eastern perimeter of the Oxmantown suburb, originally a Savigniac monastery, subsequently becoming a Cistercian House around 1147. The Abbey and its extensive land holding incorporated the area to the east of the northern suburb in the medieval period. The Abbey appears to have been surrounded by a walled enclosure that delimited the abbey precinct, the western edge of the Abbey enclosure was formed by the Bradogue Stream. To the North of it the Abbey Green lay between two routes out of town, now Parnell Street and Dorset Street (McCullough, 1989). This was depicted by John Speed on his map of 1610 (Figure 16.5) and was also cited in a deed of 1443 (Clarke 1998).

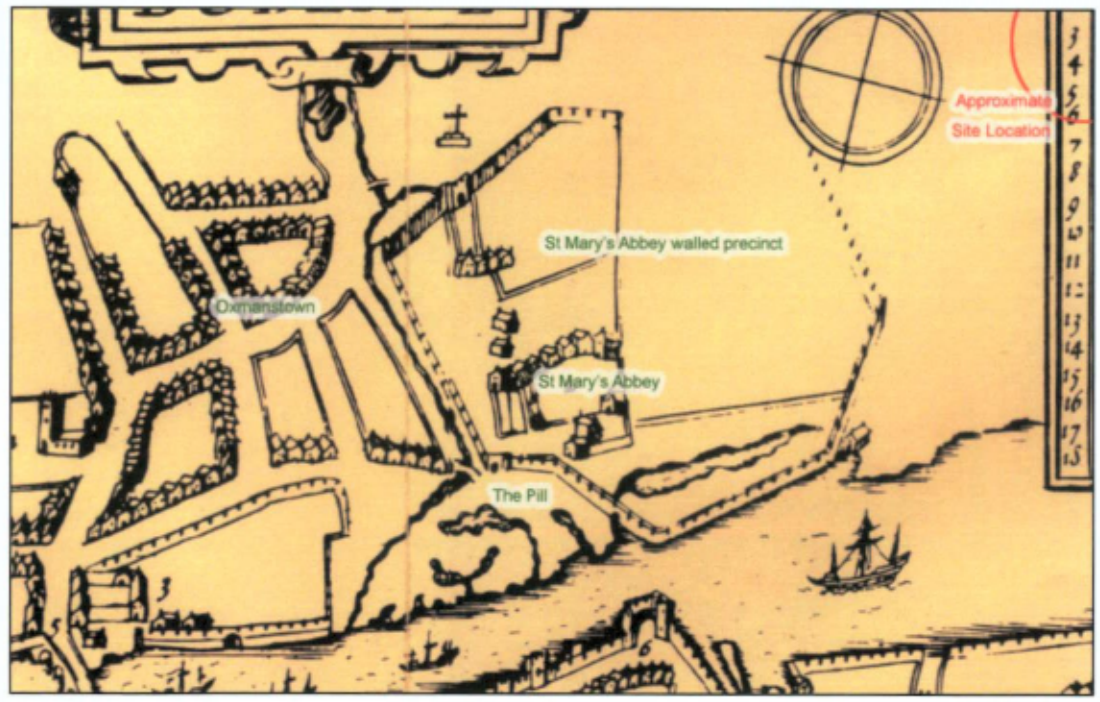

Figure 16.5: John Speed's 1610 Map of Dublin.

St. Mary's Abbey central building complex was located around Mary's Lane, where the chapter house survives today. No trace of the other abbey buildings survives above ground level (Clarke 2002) although a possible gate house associated with the inner precinct of the Abbey was recently identified on the corner by Little Green Street and Little Mary Street (Duffy and Ní Cheallacháin, 2019), excavations on Strand Street have uncovered substantial foundations of what appears to be the outer southern precinct of the abbey.

The liberty administered by the Abbey of St. Mary's was an extensive landholding that stretched to the east of the northern suburb in the medieval period and is likely to have included the area now occupied by Moore Street and Parnell Street. The present day site of the Proposed Development is located east of the walled precinct. On both Speed's map of 1610 and De Gomme's map of 1673 Figure 16.6), most of this area was land owned by the Abbey, but it was not extensively developed.

De Gomme's map indicates nascent development in the form of new street layouts in the northeast suburb within the Abbey Lands (Figure 16.6). The eastern extent of St. Mary's Abbey comprises an undeveloped tract of land shown as 'Abby Parkes', this equates with the area of enclosed land shown by Speed. An unnamed road forms the eastern boundary of this land and may represent the line of the present day Liffey Street, the undeveloped Moore Street area lies to the east of this in open undeveloped land. This part of the city was largely on reclaimed land, and the marshy mud flats were still vulnerable to inundation from the sea.

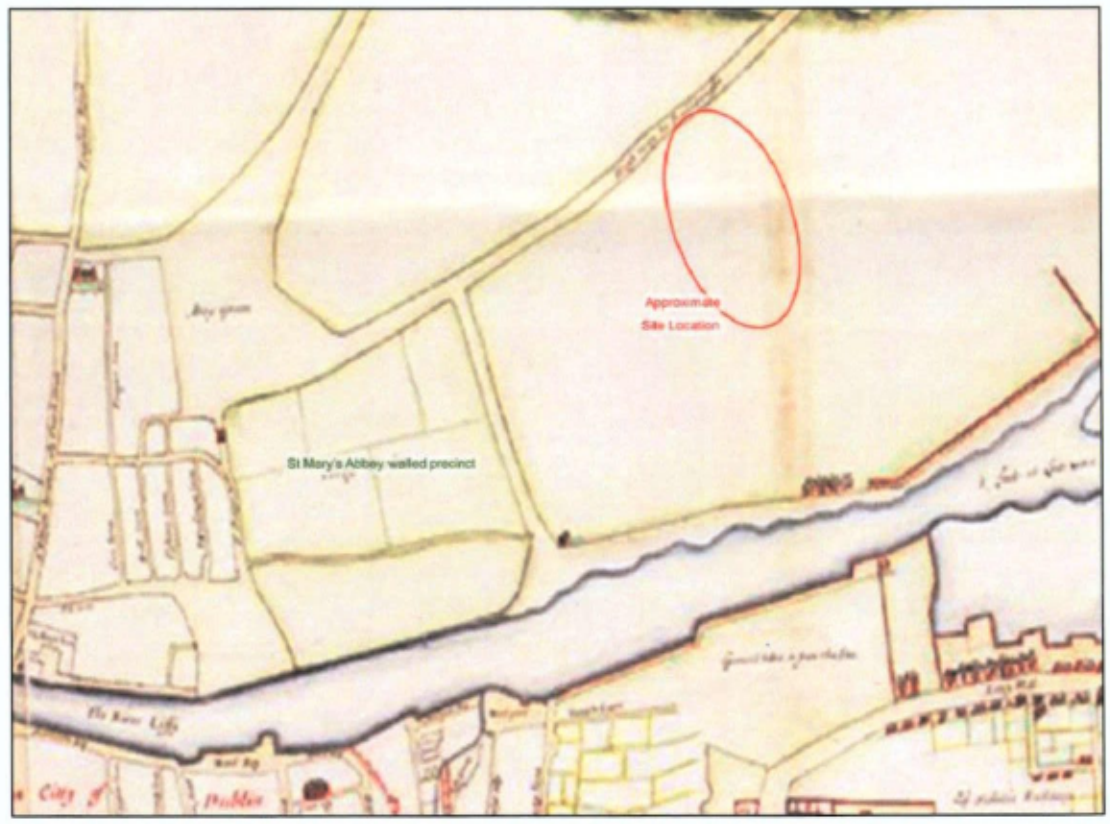

Figure 16.6: De Gomme's map of Dublin, dated 1673.

While much of Parnell Street (formerly Great Britain Street) was laid out in the first half of the 18th Century (Bennett 1991), the line of the street follows a more ancient thoroughfare (Craig 1992) and is depicted on De Gomme's map (Figure 16.6).

Thomas Phillip's map of 1685 (Figure 16.7) shows the northern foreshore of the Liffey reclaimed and the modern alignment of quays running east to the end of Bachelor's Walk and several new bridge crossings connecting both sides of the rapidly expanding city. Abbey Street runs east to intersect with the east end of the new quays, Marys Street runs north and parallel to this but only continues to easterly as far as the present-day Liffey Street, Liffey Street extends south from Great Britain Street (modern Parnell Street) to intersect with the west end of the new quay at Bachelor's Walk. It appears that the Moore Street area has yet to be developed and continues to part of an open tract of undeveloped land.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021



Figure 16.7: Phillips' map, dated 1685.

16.4.1.5 Early Post-Medieval Period

In 17th century Dublin, the tidewater of the River Liffey estuary still covered much of modern Dublin's commercial centre, both north and south of O'Connell Bridge (Andrews, 1983).

The character of the north-eastern corner of the city around St. Mary's Abbey changed dramatically following the passing of the Dissolution Act in 1536. In 1537, the Abbey and its lands were parcelled out, and granted in 1543 to Walter Peppard for a term of 21 years, with a reversion in favour of James Fitzgerald, Earl of Desmond. In 1561, Matthew King, Clerk of the Cheque of the Army and Garrisons in Ireland, acquired the interest in the lease from Gerald, the then Earl of Desmond, but owing to the latter's rebellion and attainder, the property reverted to the Crown. Subsequently in February 1610, James I granted to Henry King, son of the aforementioned Matthew, part of the lands of St Mary's Abbey, 50 acres of demesne and 30 acres of pasture, including 'a large messuage or slated house called the Fermorie, otherwise Fermor', besides an estate in Grange of Clonliffe. These lands were purchased from him by Sir Garrett Moore, first Lord Moore (after whom Moore Street is named), who in 1619, obtained a royal grant of them in perpetuity.

Lord Moore, who was advanced to the dignity of Viscount in 1612, took up his residence in the Abbey and his son, the second Viscount, also used it as his town-house until the rebellion of 1641 drove him to take the field against the insurgents. On 7 August 1643, Lord Moore fell in action at Portlester in Meath and the house in the Abbey was not used as a residence by his successors. The property however continued in their possession.

The period following the destructive wars of the 1640s and the restoration of the monarchy in 1660 saw a rapid redevelopment of the city. In 1663, when Alderman William Hawkins built a sea wall from modern day Townsend Street to Burgh Quay, the land within the study area began to be developed for the first time (Bennett 1991). As mentioned above during the late 17th century, at the time of Bernard de Gomme's map (Figure 16.6), much of the area to the south of the study area was still marshy mud flats still vulnerable to inundation from the sea.

By the 1660s, brick was being used to construct houses, replacing any surviving timber-framed house that had survived the turbulent second half of the 17th century. The earliest 'planned development' was on the Aungier Estate on the south side of the river, where dating of the oak and deal suggest the date 1663. The arrival of French Huguenots and Flemish settlers, particularly at the end of the 17th century, saw new architecture in the form of the brick terraced houses along with new industries, much of them centred on the southern side of the Liffey in the Liberties.

16.4.1.6 Later Post-Medieval / Early 18th Century

Relative political stability up to the Act of Union provide for the expansion, growth and development of Dublin into a prominent European city. From the late 17th century onwards, wealthy and ambitious citizens of Dublin set about acquiring the leases of large tracts of land bounding on the old walled city and along the Liffey frontage especially on the southern side but also on the northern. These were large estates, and their names can still be identified in the place-names today such as Humphrey and Jervis. In the early 18th century, the Moore family, Earls of Drogheda, were the dominant landholders responsible for laying our Henry Street, Moore Street, Earl Street, Off Lane and Drogheda Street. These new streets were in marked contrast to the narrow winding streets of the old town on the southern side of the Liffey. The new development of the current city streetscape from Capel Street to O'Connell Street and beyond to Parnell and Mountjoy Square occurred principally between the mid-17th and 18th centuries.

Private individuals, such as Luke Gardiner and Nathaniel Clements, became agents of urban development from the 1660s and were particularly important during the 18th century. Other Landlords such as Viscounts Fitzwilliam and the Earls of Meath, held large areas as part of great estates, some of these holdings also providentially close to the growing city. Many of these estates had been given to those loyal to the English crown as a means of colonization and to maintain stability. Others saw the opportunities offered by property speculation and over time built up holdings of land with an eye to profit (Brady and Simms, 2001).

Both Gardiner and Clements were jointly involved in the development of Georgian Dublin on the north side of the city. Gardiner purchased the Drogheda estate, which was part of the lands of Mary's Abbey, in Dublin in the early 18th century. This seems to have been Gardiner's first large purchase (Craig, 1959).

They were also closely associated with the architect Richard Castle. Castle and Clements became respectively Gardiner's architect and contractor after the great architect Edward Lovett Pearce's death. Nathaniel Clements (1705 –1777) in association with Luke Gardiner organised the building of Henrietta Street. Clements leased land and built houses in Sackville Street including two houses on the west side of Sackville Street (within the Proposed Development area), located at Nos. 40 – 41 O'Connell Street Upper. Clements also owned a house on the opposite side of the street that was situated on the site of the present Gresham Hotel. Other landlords such as Viscounts Fitzwilliam and the Earls of Meath, held large areas as part of great estates, some of these holdings also providentially close to the growing city. Many of these estates had been granted to those loyal to the English crown as a means of colonisation and to maintain stability. Others saw the opportunities offered by property speculation and over time built up holdings of land with an eye to profit (Brady and Simms, 2001).

From the late 17th century onwards, these wealthy and ambitious citizens of Dublin set about acquiring the leases of large tracts of land bounding on the old walled city. The development of the current city streetscape from Capel Street to O'Connell Street and beyond to Parnell and Mountjoy Square occurred principally between the mid-17th and 18th century.

By the early 18th century, the city had expanded on both sides of the Liffey, the influx of French Huguenots, and other Dutch and Flemish Protestants from the late 17th century onwards contributing to a massive regeneration and repopulation of the city. This was most typified by the construction of brick terraced houses, known colloquially as 'Dutch Billys', with their diagnostic front gable and triangular fireplaces.

Charles Brooking's map of Dublin, made in 1728 (Figure 16.8), shows that substantial development had occurred. O'Connell Street, then named Drogheda Street, extending between Great Britain Street (subsequently Parnell Street) and Abbey Street was developed but not as far as Bachelor's Walk along the river. The North Strand Road formed the eastern sea wall (part of which is now Amiens Street), although the area to the east had been walled and was silting up. According to this map the study area was already partially developed with blocks of structures (not individual building plots) fronting onto Moore Street, Henry Street and the now O'Rahilly Parade (within Sites 5, 4 and 3), the northeastern corner at Parnell Street / O'Connell Street (Drogheda Street) appears to be similarly developed. The blocks of development and the east–west laneways indicated do not seem to relate to the subsequent cartographic evidence, which suggests that site was first developed in the mid-18th century and not the early 18th century.

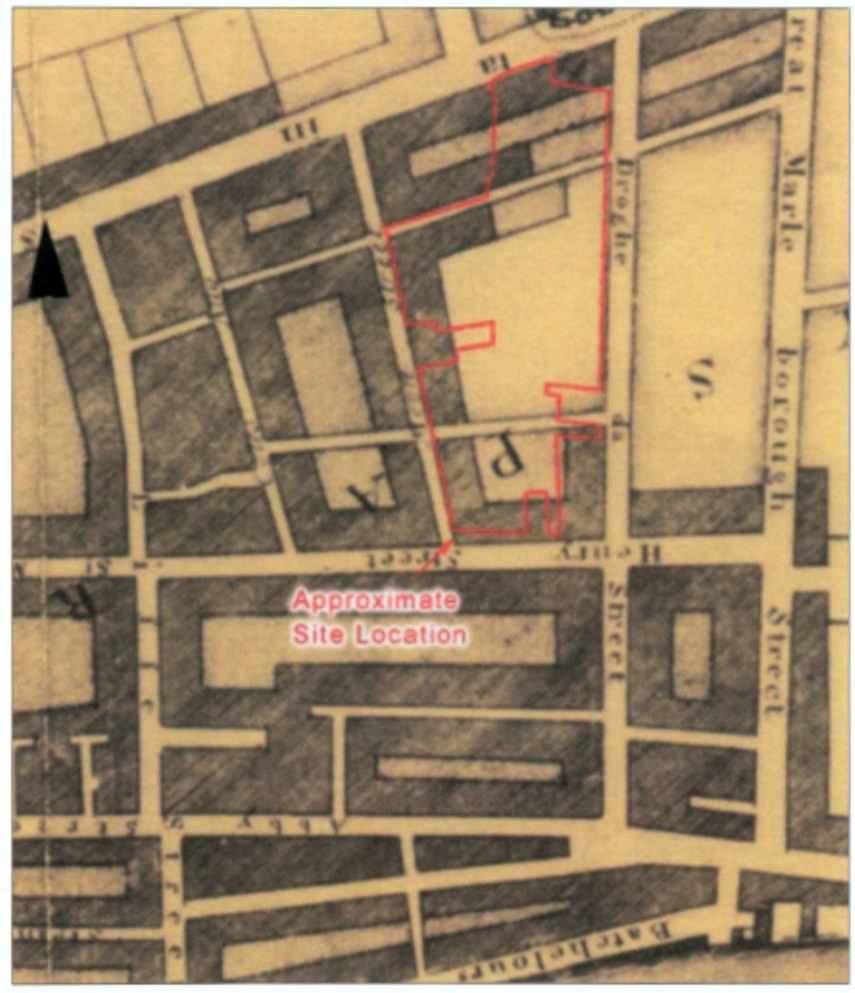

Figure 16.8: Brooking's map of Dublin, 1728 and approximate Dublin Central Masterplan area location.

By the mid-18th century, the Moore Street/ O'Connell Street area was developed for housing and this is captured on Rocque's map of the city, dated 1756 (Figure 16.8). This is the first map to show the individual plots of land and structures associated with them, it shows a greatly expanded city. The present streetscape has been developed. In addition to Moore Street, Off Lane (now Henry Lane) and Old Brick Field Lane (now Moore Lane) is laid out. Only the western section of Sackville Lane (now O'Rahilly Parade) has been formed and is unnamed. In terms of the plot development, the information shown on Rocque's map does not correlate to Brooking's map. According Rocque only the northern and southern ends of Moore Street are fully developed, comprising houses of varying sizes with rear plots and some gardens.

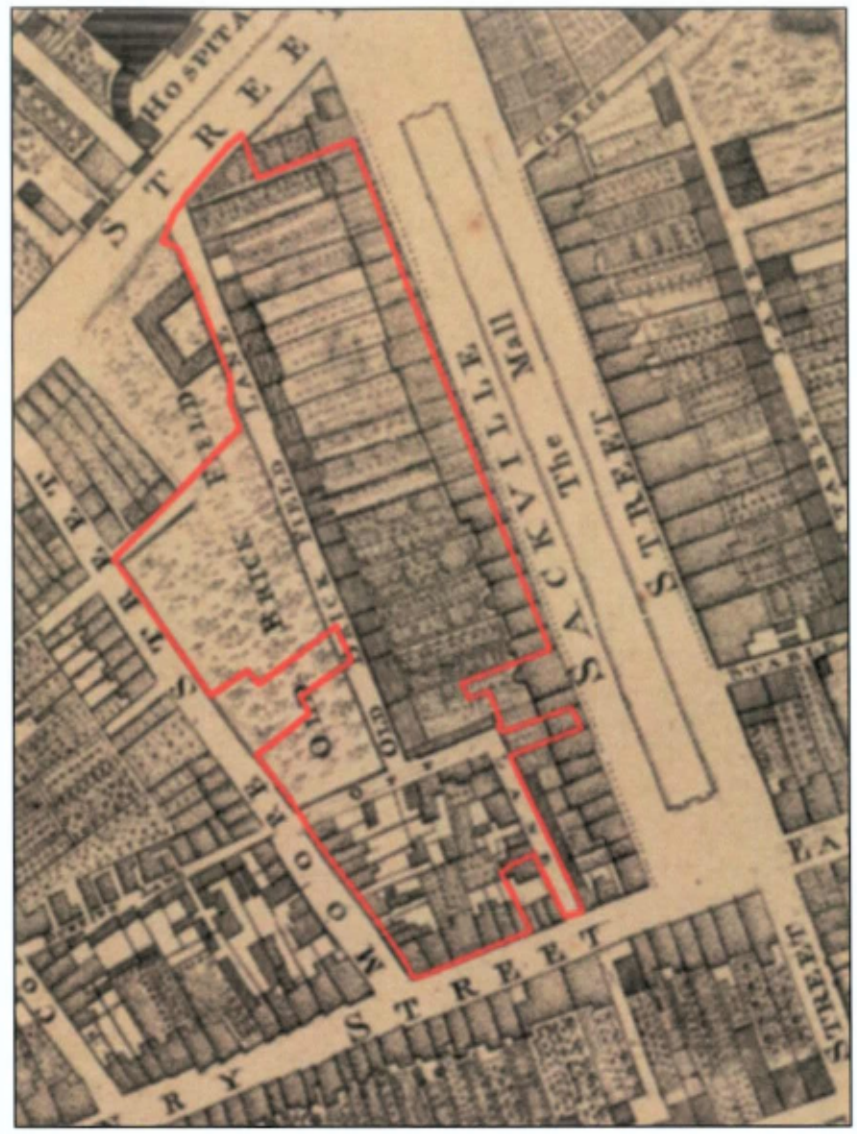

Figure 16.9: John Rocque, 'An exact survey of the city and suburbs of Dublin', dated 1756 and approximate Dublin Central Masterplan area location.

An area bounded by Moore Street / Off Lane / Old Brick Field Lane, consists of a large open area called *Old Brick Field*, which stretches from Parnell Street to Off Lane within Sites 5 and 4 of the Dublin Central Masterplan area). It appears to have been partially enclosed by a wall, including a 'u' shaped structure at the northern end of the field (recent excavations on O'Connell Street show that the brickfield may have been much more extensive, see Section 16.4.2).

In this map the eastern (Site 1 and 2) and southern side of the Dublin Central Masterplan area (Site 3) has been almost completely developed. Large houses are shown fronting onto O'Connell Street (called Sackville Street) and stretching back as far as Moore Lane (called Old Brick-field Lane), with evidence of stable / mews buildings along this frontage. In between are pleasure gardens are laid out in geometric patterns. Site 3, the block between Moore Lane and Henry Street and Henry Place (Off Lane) was less formal or regular in its layout with different sized building plots wrapping around the block, with irregular sized yards to the rear. There appears to be gardens associated with large structures fronting Henry Street.

DCC PLAN NO.2861/21
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16.4.1.6.1 The Brickfield

The Brickfield was evidently in use extracting clay to make the handmade bricks in big clamps firing the bricks on site. It was probably in production well before the 18th century, as excavations at Parnell Street and O'Connell Street have identified even earlier houses dating to the late 17th century rather than mid-18th century. Brick is first recorded in Dublin in the late 16th century, with Richard Frame / Feane recorded as a bricklayer in 1560, and with lands leased by Dublin Corporation to George Burroes in 1599 *'to make bricks on a 4½ acre plot of ground east of the Stein River'*. From the late 17th century onwards brick kilns and brick fields are recorded on maps of the city and property deeds maps generally located on the outskirts of the city and pushed further out as Dublin city developed. In 1730, Edward Lovett Pearce passed a building act controlling the quality of brick which also indicates that it was a widespread activity at the time. Non-mechanised brick making was a slow and seasonal, it involved digging the brick clay in autumn or winter, tempering the clay, hand-moulding the brick, air drying and then burning them in temporary kilns. By 1756 the brickfield on Moore Street is termed *'Old Brickfield'* and was presumably out of date by this stage. Prior to this, in 1771, brickmaking was banned in Dublin. An *'Act to prevent the pernicious practice of burning bricks within the City of Dublin, or neighbourhood thereof'* was made where no brick could be made or burnt within two miles of the public lamps of the city of Dublin (Roundtree, 2007).

The excavations at Nos. 14 – 17 Moore Street suggests that the brickfield had been opened up as a municipal dump before the houses were built there in the 1770s. It would appear that after the clay was extracted, the quarry pit was deliberately infilled with layers of domestic refuse in much the same way as the modern dockland was partially reclaimed today, the quarry pit proving a very convenient dumping place for the general population of north Dublin (Simpson 2014a, *cf.* 16.4.2.3). The site of the quarry was eventually developed, the infill material removed along the street frontage in preparation for the construction of a new terrace of houses, Moore Street.

In the reduced versions of Rocque's map (which vary in detail), there is a large undeveloped site (roughly at Nos. 42 – 45 O'Connell 's Street, in Site 1) at the northern end of Sackville Street that may be a remnant of the brickfield, either a mound or quarry indicated which dominates the western side of the site (Figure 16.10 and Figure 16.11). However, it may equally be spoil generated from the construction activity being carried out around the site.

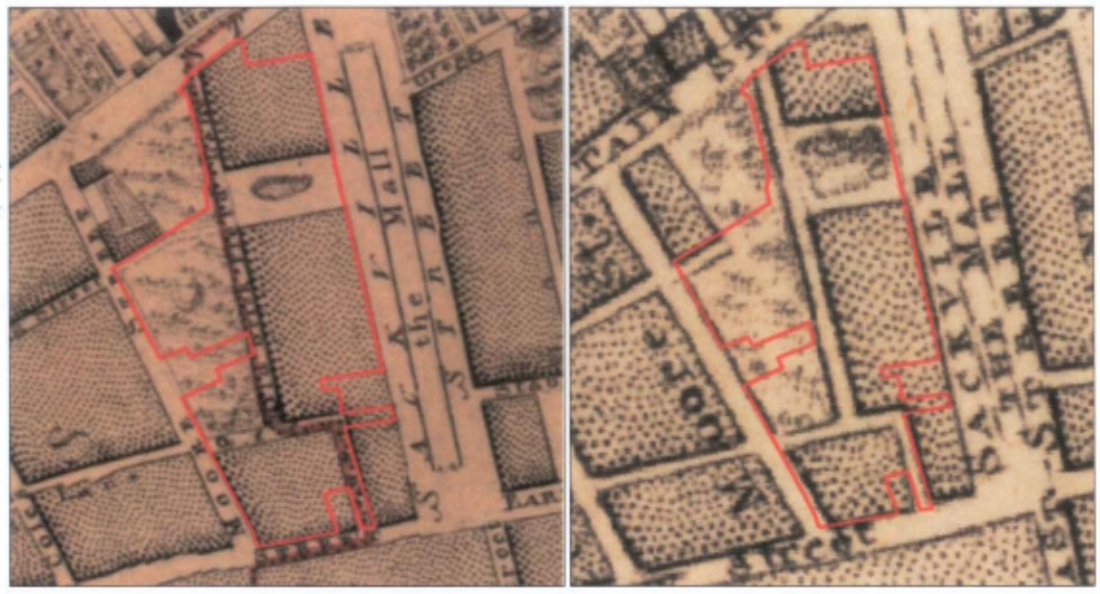
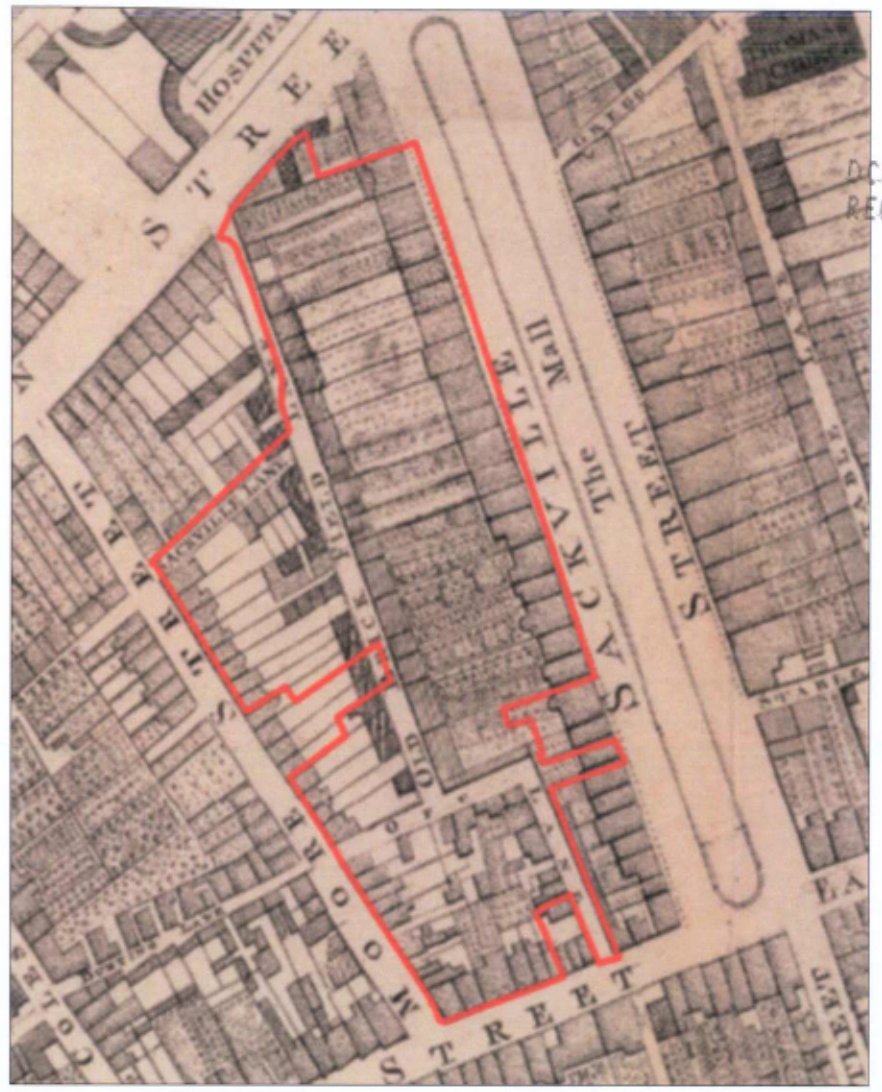


Figure 16.10: John Rocque's reduced plan from Survey of the city and suburbs of Dublin, with the parish divisions, dated 1757.

Figure 16.11: John Rocque, Survey of the City, Harbour, Bay and Environs of Dublin 1757.

Almost two decades later the Scale's 1773 revised edition shows this brickfield area entirely developed (Figure 16.12). The western side facing Moore Street was fully developed with a continuous terrace of buildings. The eastern side of the block facing Old Brick Field Lane is also developed with a terrace of eight buildings and a numerous of other structures. *'Sackville Lane'* (now O'Rahilly Parade) is now named and extends to Old Brick Field Lane. There is a vague scar of the mound / quarry in the gardens to the rear of Nos. 42 – 45 O'Connell Street shown in the later map editions.



DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Figure 16.12: Bernard Scalé updated version of Rocque's map, dated 1773.

The somewhat unregulated development and growth of the city during this era, coupled with a narrow medieval street pattern, left the city difficult to navigate, having a serious impact on commerce and trade. A 1757 Act of Parliament was therefore passed for the establishment of the Commissioners for the Making of Wide and Convenient Streets and Passages, otherwise known as the Wide Street Commissioners. This organisation was responsible for the planning and construction of new streets on behalf of the city, or for overseeing the planning and construction of all new streets by private developers. In 1777, the Wide Streets Commission was given a grant to extend Sackville (now O'Connell) Street to the quays, and, in 1782, it was given Parliamentary approval to build a bridge (to be called the Carlisle Bridge, now O'Connell Bridge) over the River Liffey. The bridge, designed by James Gandon, was opened in 1795, but the extension of Sackville Street was under construction until 1800. Because of the works of the Wide Street Commissioners, cellars from structures demolished at this time can sometimes be found beneath the road surfaces.

By the first Edition of the Ordnance Survey map, dating to between 1838 and 1847, the modern streetscape is recognisable. Substantial development has taken place at the site and the brickfield has been completed developed. *'Old Brick Field Lane'*, now renamed Moore Lane and *'Sackville Lane'*, now O'Rahilly Parade, is also shown (Figure 16.13). But there are still gardens intact on both sides of the development site where presumably there was minimal ground disturbance.

By 1891 and 1911 Ordnance Survey maps the gardens have all but disappeared and there are numerous infill buildings with dense occupation (Figure 16.14).



Figure 16.13: First Edition of the Ordnance Survey, dating to between 1838 and 47.

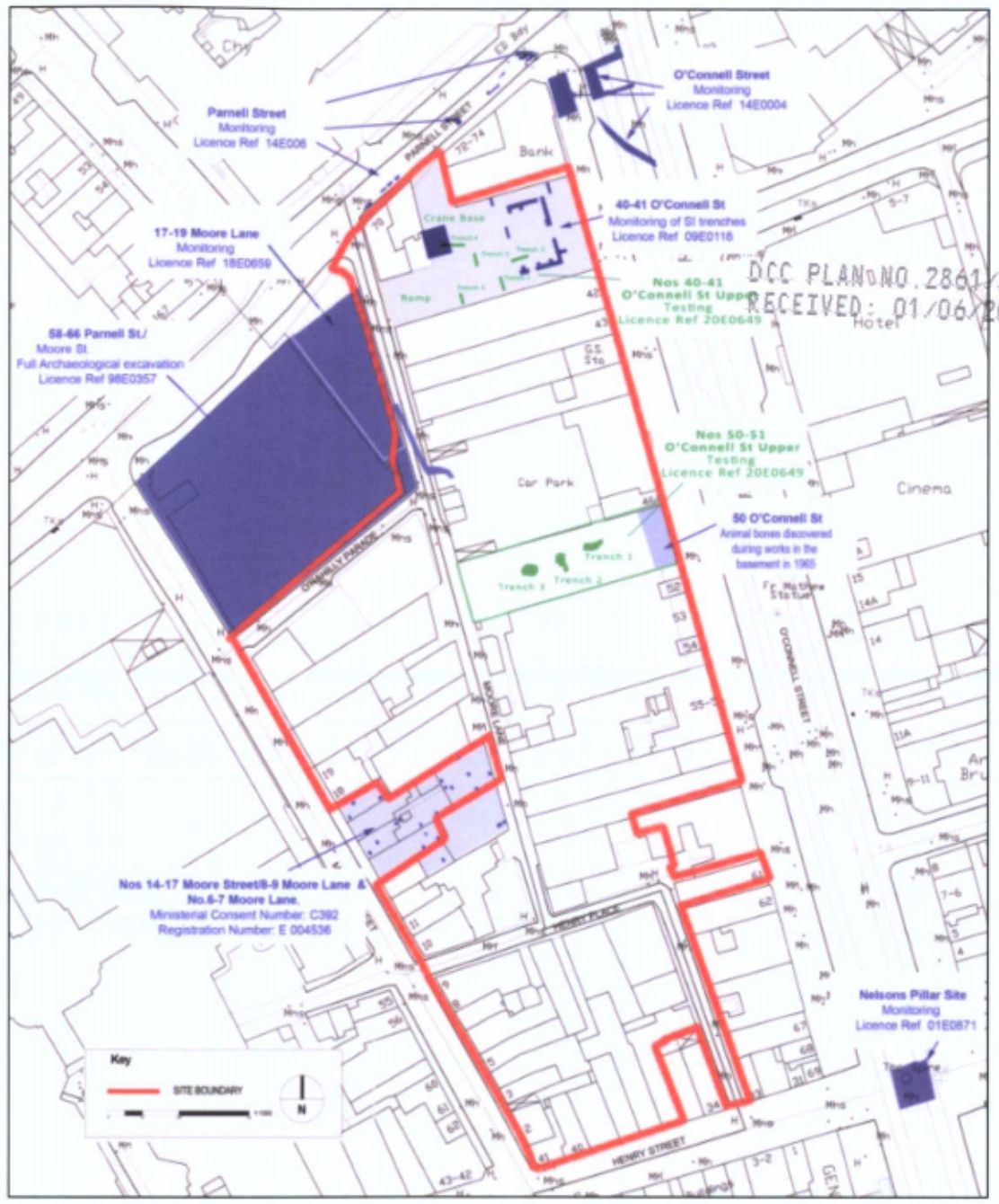
Figure 16.14: Revised Edition of the Ordnance Survey, 1891, 1:1056 sheet XVIII.

All the existing structures within the Dublin Central Masterplan area is described in detail the Architectural Heritage assessment Chapter 15: Cultural Heritage (Architectural).

16.4.2 Archaeological Assessments

16.4.2.1 Introduction

Investigations have been carried out within the general environs which provide some insight into the general ground conditions and archaeological potential within the Dublin Central Masterplan area (Figure 16.15).



DCC PLANNO. 2861/21
RECEIVED: 01/06/2021

Figure 16.15: Archaeological excavations, assessments within and in the environs of Dublin Central Masterplan area.

16.4.2.2 Archaeological Assessment within the Dublin Central Masterplan Area

16.4.2.2.1 Introduction

Archaeological testing was undertaken on behalf of the Applicant in two vacant plots within the Dublin Central Masterplan area, at Nos. 40 – 41 O'Connell Street and Nos. 50 – 51 O'Connell Street (Licence Number 20E0649, (Figure 16.16). The testing was carried out on Saturday the 28th of and the 30th of November 2020 under licence no. 20E0649 (Simpson 2020). Both sites are open car-parks, stretching between O'Connell Street on the east and Moore Lane on the west. The full testing report is provided in Appendix 16.4.



Figure 16.16: Nos. 40 – 41 O'Connell Street (left) and Nos. 50 – 51 O'Connell Street (right).

16.4.2.2.2 Nos. 50 - 51 O'Connell Street Upper

Currently in use as a car-park, Nos. 50 – 51 O'Connell Street Upper located in Site 2AB of the Dublin Central Masterplan area (Figure 16.15), originally comprised two property plots which were amalgamated by the removal of the boundary wall. The northern and southern boundary walls are historic walls preserving the imprint of various buildings. They were constructed of brick and limestone and reveal the imprint of at least four buildings, dating from the middle of the 18th century onwards (the testing report in Appendix 16.4 provides a photographic and written record of the walls). Thus, the expectation was that the foundations of these buildings would survive in situ along with the drains, latrines and surfaces usually found on similar sites. The trenches were carefully positioned to try and trace any walls that could be associated with the historic standing walls. However, no other features were found. The unstable nature of the fill resulted in the sides of the trenches constantly collapsing and, as a result, the trenches were restricted to just three, these unexpectedly revealed deep deposits of very modern infill and refuse, extending up to 4m in depth.

Trench 1 exposed modern fill up to 3.40m. It exposed yellow clays at the base of the trench and close inspection identified areas of fire-reddening in the clay, the result of intense heat, most likely to have emanated from the brickworks, captured on Rocque's map of Dublin, dated 1756.

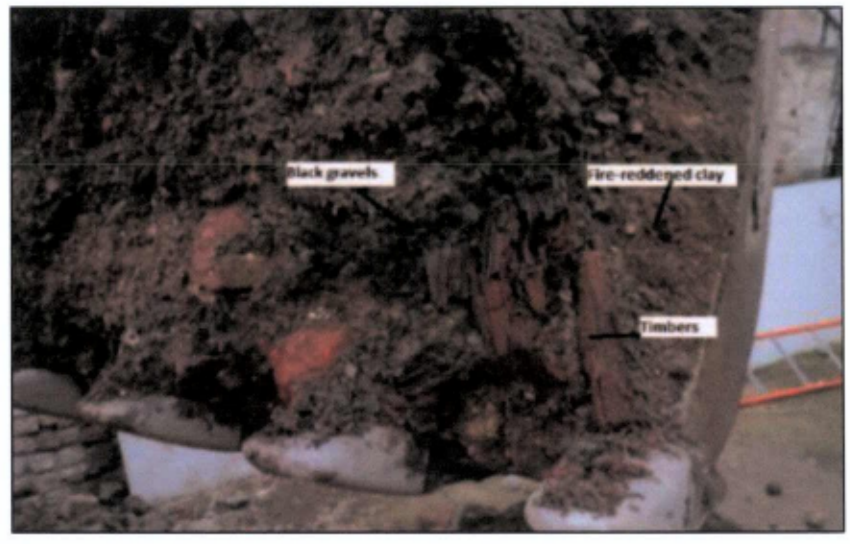


Figure 16.17: Fire reddened clay and timbers found at the base of Trench 1.

In trench 3, a substantial limestone footing lying 2.70m below present ground level and orientated east-west was identified. It was constructed of small cut limestone blocks and measured approximately 1m in width by at least 0.80m in depth. It was well-faced on the exposed northern side and it had been demolished to a single continuous level. There was an offset on the northern face, set 0.14m below the top of the wall, measuring 80mm in width. A small section of what appeared to be a blackened floor was exposed on the northern side of the trench, extending for 0.35m north-south by 0.55m east-west perhaps suggesting that there was a cellar in this location originally.



Figure 16.18: The northern face: note modern debris.

The Goad's Insurance map of 1893 indicates that the building at the western end of the site was two stories in height but with a basement, which was relatively unusual for a rear building. Rocque's map, dated 1756, does show a stable/coach-house, which is unlikely to have a basement, but which might have been integrated into the building on Goads Map. The wall foundation and floor found in Trench 3 is likely to be related to this structure. The evidence suggests that the basement was demolished but the foundations of the wall and possibly the floor are still *in situ*.

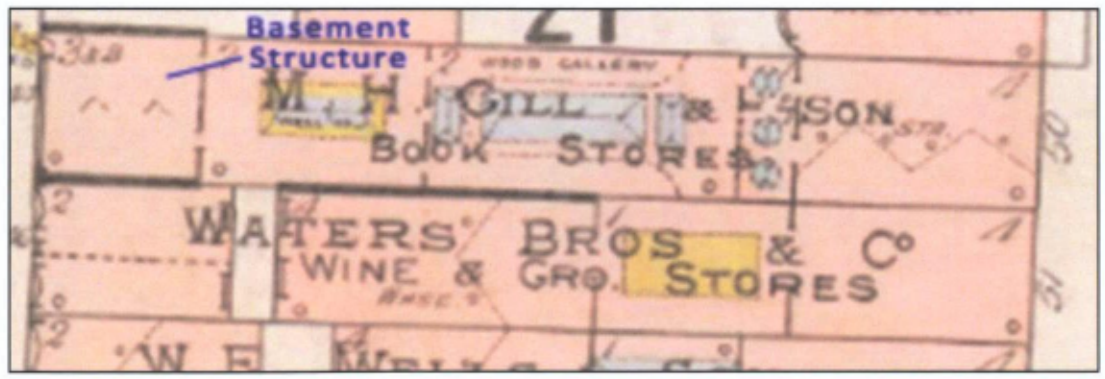


Figure 16.19: Goad's Insurance map of 1893 showing Nos 50 and 51 O'Connell Street.

The testing of this plot is likely to be most representative of the probable archaeological findings for the western side of the Dublin Central Masterplan area (Site 1 and 2AB / 2C), comprising buried structural elements (where there are no basements) and standing historic walls. There is also potential for archaeological deposits extending back to the medieval period to survive in the central area of the plots that were formerly gardens.

16.4.2.2.3 Nos. 40 – 41 O'Connell Street

The original houses at Nos. 40 – 41 O'Connell Street were demolished in 1968 for the construction of a hotel which was completed by 1972. The hotel was subsequently demolished in 2009 and a number of enabling works were carried out to support the adjoining buildings (including No. 42 O'Connell Street, RPS Ref: 6022) which were monitored (Licence Ref: 09E0118, Simpson 2009). These works revealed the hotel had a deep basement, cut into exposed natural sticky clay and gravels, indicating the basement is likely to have removed any features of significance.

The testing was concentrated in the central area of the site, as the eastern end had been previously inspected and the western end contained a ramp down into the site and could not be disturbed. The previous monitoring programme in 2009, mentioned above, found this concrete to be up to 1m in depth, sitting over natural coarse gravels. A total of nine trenches were then excavated through the basement floor level. These established that the floor sat on natural gravels and silts, with no indication of any walls or features (*Ibid*). In addition to this, an inspection of the site boundaries reveal that they are of modern date or shuttered out in concrete.

The testing programme was very challenging, as there are a series of deep slabs at basement level across the site up to 1m in depth in places, which could not be removed during the testing. A total of five trenches were attempted (Figure 16.15 and Figure 16.21), which exposed the temporary crane base inserted previously. This crane base was sealed by layers of brown organic domestic refuse, which had been thrown down over the modern crane base, but which is likely to have originated from somewhere on the site.

Thus, the archaeological testing confirmed that site (Nos. 40 – 41 O'Connell Street, in Site 1) is unlikely to contain any archaeological features over most of the site although the southern end, the ramp area may represent an area not excavated out in the modern period. From the previous testing the underlying deposits appear to comprise heavy gravels and silts that are natural deposits.

16.4.2.3 Previous Investigations within the Dublin Central Masterplan Area

16.4.2.3.1 O'Connell Street / Moore Lane: Boreholes

A number of bore-holes were carried out within the environs of the site in 1990 and again in 2000 but without the presence of an archaeologist (Figure 16.20). As a result, the information is limited but, in general, the inclusion of brick marks a post-medieval archaeological deposit.

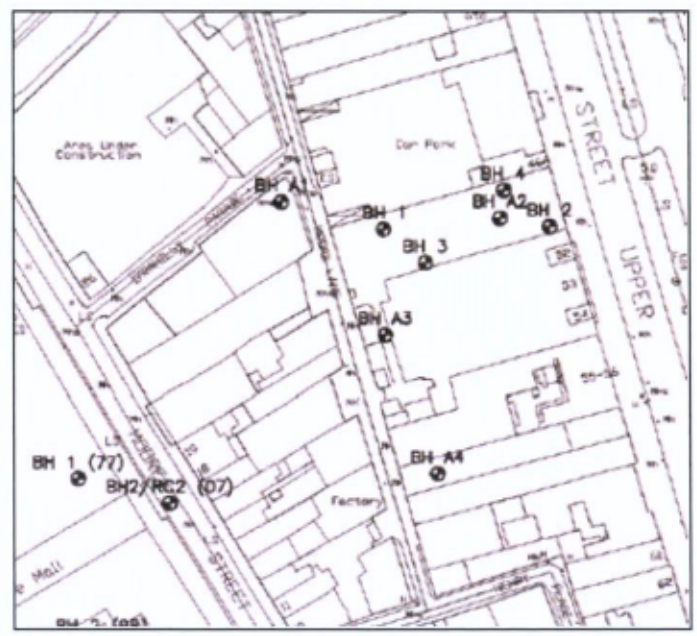


Figure 16.20: O'Connell Street/Moore Lane bore-holes locations.

The relevant bores were done to the rear of Nos. 47 to 50 O'Connell Street and to the rear of No. 53 O'Connell Street / Moore Lane, which give some information on the general ground conditions. In general, most of the bore-holes suggest deposits containing brick to a depth of 3m which is usually indicative of cellars and buildings but with clay deposits in the interior. The cellars appear to be cut into natural gravels and silts, which lie approximately 1m below present ground level.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

16.4.2.4 Investigations adjacent to the Dublin Central Masterplan area

16.4.2.4.1 Nos. 14 – 17 Moore Street / 8-9 Moore Lane

The results of archaeological monitoring of site investigation and essential works at the National Monument Nos. 14 – 17 Moore Street (under Ministerial Consent) (Simpson 2009, 2014, 2015) provides information on the archaeological potential of Site 4 and 5 in the Dublin Central Masterplan area, the block defined by Moore Street, Henry Place and Moore Lane was the last block to be developed in the Dublin Central Masterplan area as shown on Rocque's maps (Figure 16.9–Figure 16.12). As indicated on these maps, Site 3 within the Dublin Central Masterplan area was developed slightly earlier.

This work involved engineering test pits located within the confines of the National Monument at Nos. 8 – 9 Moore Lane, within Nos. 14 – 17 Moore Street, within the rear yard of Nos. 15 and 16 Moore Street and also directly adjacent to the monument in the infill houses to the rear of Nos. 13 and 14 Moore Street and within the cellars of Nos. 6 – 7 Moore Lane. Subsequent monitoring was carried out during an essential works programme included underpinning within the cellars, of engineering test-pits in the rear, the excavation for pads for propping system to the rear of Nos. 14 and 15 Moore Street and of works to the existing standing elements such as the boundary walls.

Nos. 14 – 17 Moore Street lies within the site of the '*Old Brickfield*'. This large brickfield was probably opened up in the late 1720s when the various streets were being laid out in the general area, and it was accessed by Moore Lane an early route, which was originally called 'Brick Field Lane'. The combined results of the monitoring works suggests that the 18th brickfield works quarried out the natural boulder clay to a depth of 2.20m exposing a coarse gravel layer. No archaeological finds or features were found in the natural riverine gravels.

It was established that following the clay extraction the quarry pit was deliberately infilled with layers of domestic organic debris, evidently forming the city dump that operated from 1756 to 1773 and containing some ceramics, glass and metal. Along the street frontage the infill material was removed to prepare for the construction of the houses on Moore Street and the house foundations were founded on the natural gravels. In the rear yards of Nos. 14 – 17 Moore Street the organic fill depositions were still present.

The post-medieval infill layers were the earliest deposits found on site and there was no indication of any medieval activity. The typical stratigraphy encountered is provided in Table 17.1 (below) which suggests that the dumping occurred in bands indicating the deliberate building up of the quarry pit.

Depth	Results
0.00m – 0.07m	Concrete
0.07m – 1m	Dark brown organic refuse, composed of friable clay, charcoal and cinders, the remnants of domestic refuse. This deposit included inclusions of animal bone shell, mortar and 18th century brick.
1m – 1.50m	At this level the organic deposit had less mortar and brick and was highly organic in nature with inclusions of bone, including one butchered bone.
1.50m – 1.60m	A thick band of re-deposited yellow/orange boulder clay. This layer was probably the original boulder clay removed during the harvesting of boulder clay for brick-making.
1.60m – 1.80m	A continuation of organic refuse but slightly greyer in colour.
1.80m – 1.90m	A band of very dark brown organic material, as above.
1.90m – 2.05m	A very rich refuse deposit, with a distinctive reddish hue.

Depth	Results
2.05m – 2.15m	Very mixed stony organic, stone averaging 60mm in diameter. It contains shells and layers of black silt.
2.15m	Hard stony clay, dark yellow in colour, with small stones between 30mm and 40mm in diameter. This is a natural deposit.

Table 16.1: Description of an average test-pit through the organic clays

In addition, cellars in Nos. 8 – 9 Moore Lane (part of the National Monument) and separately to the rear of No. 13 Moore Street (Nos. 6 – 7 Moore Lane) debris dumped in the large basement on the eastern side of the National Monument was cleared out as part of the programme of works. No archaeological matter and/or historical material evidence was found within the rubbish that had been deposited historically within the cellars of Nos. 8 – 9 Moore Lane.

Given the significance of the 1916 Easter Rising event that occurred at the site, the archaeological strategy for the National Monument included the sieving through and collection of the material that had accumulated beneath the floorboards in the cavity spaces between the floor joists to recover any artefacts that might be related to the 1916 events that occurred within the buildings. This revealed a substantial collection of diverse and eclectic artefacts spanning the occupation of the house. In total 756 number of finds were recovered. However, the pottery sherds, nails, glass and metal objects were bulk numbered, and the total of individual objects were in the region of 4,458 .These included as expected a very large collection of nails and building debris, but also fragments of paper and textiles (possibly used to block drafts or dragged below the floor boards by rodents), cutlery, crockery, bottles, coins, match-boxes, sewing paraphernalia suggestive of small-scale cottage industry, toys etc. which may have been swept, or lost between the gaps and cracks in the floorboards or along the skirting boards etc. Other more-high quality artefacts included part of a cameo brooch, jewellery, a patriot pamphlet with pictures of Robert Emmet and Sir Edward Fitzgerald, and a stamp of President Garfield (1884). The patriot pamphlet is particularly interesting as it may have been related to the 1916 occupiers. The bulk of these finds date from the late 19th centuries to the first three decades of the 20th century, and therefore are more or less contemporary with the events of Easter 1916. Indeed, some of the objects (the George III and Victoria I coins) found in House No. 16 would have been lying under the floorboards when Connolly and his men had taken refuge there the evening before they surrendered. The artefacts are being retained by the Department of Housing Local Government and Heritage on the grounds of the wealth of information it provides about the material culture and the social history of the people living in the buildings before, during and after Easter 1916, this will be used in the eventual interpretation of the site (Weadick and Deery, 2018).

16.4.2.4.2 Nos. 58 – 66 Parnell Street / Moore Street (Now Jurys Inn)

A large excavation at Nos. 58 – 66 Parnell Street / Moore Street was carried out in 2003, it was located in the north-west corner of the block but outside the Dublin Central Masterplan area (O'Donovan 1999, Licence Ref. 98E0357) in advance of the Jurys Inn development. Four main phases of archaeological activity were identified in what was a dense and complicated site. Phase 1 (the lowest level) was dated to the medieval period (12th – 14th century) and was represented by a thin layer of turbated top-soil, probably the remnants of cultivated soil perhaps associated with St Mary's Abbey. This topsoil layer was sealed by the remains of the brickfield, depicted on Rocque's map of Dublin, dated 1756 and represented by deep deposits of burnt or fired red clay. Sometime during this phase houses with triangular fireplaces were built along O'Rahilly Parade, the cellar of at least one of which survived generally intact. The third and most major phase, dated to between 1750 and 1770, was the construction of the Georgian street-front, fronting onto Parnell Street (formerly known as Great Britain Street) which involved laying out nine new plots running north-south and parallel to Moore Street. The final phase was represented by modern usage, up until the present day.

In general, the surviving remains consisted of stone and brick structures, cellars, buildings, cobbles, drains, a lime-kiln, paths and vaults and extended to 3m in depth on average (Figure 16.21). The cellars were deepest along O'Rahilly Parade at 3.10m but each plot had additional buildings, some with some basements, in the rear plots. Where there were no basements there were garden soils to a depth of between 0.20m and 0.50m in depth, the lowest levels of which were medieval in date, the upper post-medieval. However, there were also large refuse pits some as deep as 3.50m cut into the boulder clay (O'Donovan, 2004).

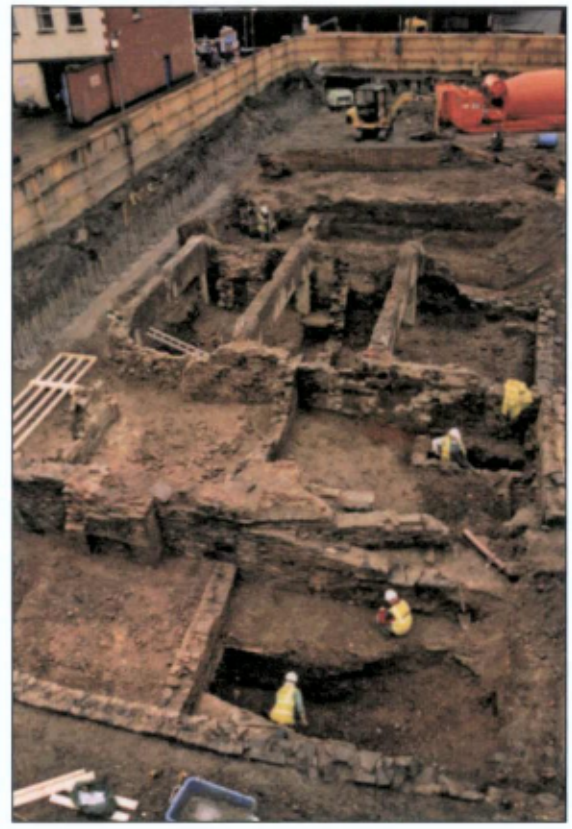


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Figure 16.21: Excavations at Parnell Street: Note red clay deposits associated with brick-making (after O'Donovan, 2004).

This site is close to the Viking cemetery site but there was no indication of any Viking burials. However, the survival of the medieval soils makes it a possibility elsewhere.

16.4.2.4.3 Nos. 17-19 Moore Lane

A hotel development of Nos. 17 – 19 Moore Lane is currently nearing completion. Archaeological monitoring of the works revealed that almost the entire footprint of the site was excavated in the 18th and 19th centuries to facilitate the construction of a network of cellars. These cellars correspond to structures and plots depicted in detail within the OS mapping and the 1893 Goad's fire insurance plan. Three cellar groups (A-C) were identified, cleaned of backfill and recorded. Cellar A group were likely to be associated with the construction of a terrace of Georgian houses in the mid to later 18th century. Cellar B group were later in date and relate to the more commercial use of the site to the south of the houses fronting onto Parnell Street. Cellar C are likely to date to the mid to late 19th century.

Associated with the Cellar C group a service tunnel that ran c. 20m along Moore Lane was identified. It was possibly connected to the public house 'Devlin's Pub' that once stood at No. 17-19 to 'WA Gilbey's' bottling stores located south along Moore Lane (no longer upstanding, at the rear of 46 O'Connell St). Local lore has it that Michael Collins frequented pub which may have acted as a headquarters during the Irish War of Independence and subsequent Civil War (Bailey, 2020, Licence No. 18E0659).

Subsoil was located at an average of 3m depth and, in areas not containing cellars, the overburden consisted of a mixture of soils and post-medieval levelling deposits with red brick, stone and mortar fragments present. All horizons across the site were graded to natural subsoil.

16.4.2.4.4 Excavations and Monitoring relating to the Luas Works – O'Connell Street and Parnell Street

Works connected with the Luas line have also taken place in an around the environs of the site most notably along Parnell Street (although mostly in the central median of the roads) (Seaver & Kavanagh 2017, O'Dowd & Mitchell 2017). At the western end of Parnell Street, to the east of the site under discussion, early cellars were found beneath the Georgian cellars, these were evidently associated with the brick terraced houses of the late 17th century known colloquially as 'Dutch Billys'. At least one was found in the Parnell Street excavation with similar cellars identified during the Luas works just north of the site outside the Rotunda hospital. A slightly different structure with an early slated roof, probably of late 17th / early 18th century date was also found during the Luas works at the intersection of Parnell Street and O'Connell Street. These works suggest that Parnell Street had been raised significantly presumably because the area was wet and marshy. This raising of the road preserved a significant amount of material beneath.

Utilities works in advance of the Luas on O'Connell Street extended the full length of the street to the junction with Parnell Street and the Parnell National Monument (RMP DU018-425, RPS 6020). Works took place largely in the central paved median, western carriageway and footpaths. Natural gravels were noted at a range of locations along the street during site works. They ranged from 1.6m at the southern end of the street to 2.5m in depth at the northern end. The earliest features and deposits on O'Connell Street comprised deposits of red-brickfield dust related to brickworks (RMP DU018-020506) in Moore Street, they were found at 1.9m, a considerable depth, at the northern end of O'Connell Street opposite Nos. 37 – 38 O'Connell Street.

This was overlain by extensive areas of metalling (the top of the metalling ranged from between 1.2m and 1.66m below current ground level) which were found throughout the northern end of the street. These are likely to represent earlier street levels. The overlying extensive metalled deposits which cover O'Connell Street Upper may relate to the earliest street surfaces connected with Sackville Mall. They have been identified in both northbound and southbound carriageways and therefore are unlikely to be related to the older course of Drogheda Street which was confined to the southbound side of the carriageway.

A range of cellars were also found on O'Connell Street. The earliest were found at the junction of Abbey Street and within the central island. These were related to buildings which fronted onto Abbey Street prior to the construction of Sackville Street Lower (O' Connell Street).

An isolated find of human remains—a fragment of a cranium—was made at the north end of O'Connell Street Upper from a deposit overlying one of these cellar walls, it was suggested that there was no obvious origin for this. The deep sequential deposits of refuse and compacted metalling recorded at the junction of Marlborough Street and Parnell Street show the extent to which the ground was built up over time (Sever & Kavanagh 2017). This is similar to the refuse deposits identified at Nos. 14 – 17 Moore Street where the brickfield was infilled.

A further significant cluster of cellars were found in the central median opposite Nos. 35 – 39 and directly outside Nos. 37 – 38 O'Connell Street (Allied Irish Bank – AIB). The latter were part of a complex which continued onto Parnell Street (O'Dowd et al. 2016). A substantial Victorian sewer ran north-south up the northbound carriageway of O'Connell Street at varying depths. During the course of the monitoring programme at Parnell Street a number of archaeological features were uncovered. These were generally 18th to 19th century in date and related to the development of Parnell Street during this period and associated civic infrastructure—drains, watermains and street surfaces.

Monitoring of ground reduction works for a proposed ESB substation for Luas Line A identified sub-surface structural remains on the central median of O'Connell Street between the O'Connell National Monument (RMP DU018-423) and William Smith O'Brien Monument (RMP DU018-424) (Myles and Kerins 2005. The remains comprised a brick outhouse relating to a property marked on Rocque's Map of 1756 and an attached cobblestone wall of possibly late 17th century date.

16.4.2.4.5 Nelsons Pillar site (The Spire) – O 'Connell Street

Investigations at the site of Nelson's Pillar at the junction of O'Connell Street and Henry Street, in advance of the construction of the Spire, identified sterile gravel layers at a depth of 1.42m OD (3.45m below the level of the footpath). This deposit was truncated by three 18th century basements relating to structures illustrated for this location on Rocque's Map of 1756. The structures, located under the central median of O'Connell Street, were demolished in the 1780–1790s by the Wide Street Commissioners to accommodate the construction of O'Connell Street Lower. The cellars, which had cobbled floor surfaces, limestone walls and red-brick vaulted ceilings, had a maximum width of 3.43m, height of 2.02m and extended for a length of approximately 4m from the street frontage (Myles 2001). The cellars were in-filled with demolition material relating to the activities of the Wide Street Commissioners this included late 17th century ceramics and roof tiles.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

16.4.2.4.6 Parnell Street

The impact of commercial development from the early 19th century on the remnants of 18th century residential Henry Street removed almost all of the original residential plots. Archaeological test excavation on Parnell Street in 1995 demonstrated the impact of the ILAC Centre. This phase of testing recorded an average depth of 3m of modern overburden across this area with the original street frontages badly damaged by services (Halpin, 1995, Licence Ref. 95E0163). Other archaeological investigations in this vicinity demonstrate similar levels of impact on the residential 18th century features. Survival in the main appears to be street frontage in most cases.

Basements were also noted along Parnell Street during investigations excavations in 1995, which extended to 3m in depth but were cut into archaeological soils, dated to the post-medieval period (Halpin, 1995).

16.4.3 National Museum of Ireland, Irish Antiquities Division, Topographical Files

There have been very few finds of archaeological interest from within the study area. This is to be expected from this part of the city, as much of the area was covered by high tides until the seventeenth century, when it was reclaimed, and because of the fact that building development in the 18th and 19th centuries has greatly disturbed the ground. The finds recorded by the topographical files, therefore, are post–AD 1700 in date.

Animal bones were discovered during work on a basement at 50 Upper O'Connell Street in 1965. They consisted largely of ox bones, but also included sheep bones. Many appeared to have cut marks, and the archaeologist who visited the site (Peter Danaher) concluded that the site might have been a knacker's or butcher's yard (NMI Ref. IA 15/65).

As described above, however, significant archaeological discoveries were recorded north of the O'Connell Street and Parnell Street area in the second half of the 18th century during the development of Parnell Square. The burials were believed to be Viking in origin and may have indicated a Viking cemetery or a small collection of burials on high ground overlooking the river and sea (cf. historical background above).

16.4.4 Designated Archaeological Sites

16.4.4.1 National Monuments

16.4.4.1.1 Definition

A 'national monument' as defined in Section 2 of the National Monuments Act (1930, as amended) means a monument: -

> *"the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto…".*

16.4.4.1.2 Nos. 14 – 17 Moore Street is a National Monument in State care, it is subject to a preservation order (PO) made under the National Monuments Acts 1930 to 2014 (PO No. 1/2007). In addition to this designation, it is also listed in the Record of Monuments and Places (RMP DU018-390) and in the Record of Protected Structures in the Dublin City Development Plan 2016 – 2022 (RPS Nos. 5282-5285).



Figure 16.22: 14–17 Moore Street terrace, view southeast.

- **Description**

  The buildings at Nos. 14 – 17 Moore Street date from the mid-18th century. The facades of all four buildings were rebuilt in the 19th century and they survive as a distinct and recognisable group in the streetscape (RMP files).

- **Extent**

  The designated preservation order boundary under PO No. 1/2007 comprises Nos. 14, 15, 16 and 17 Moore Street and also includes the rear yards of Nos. 15 and 16 Moore Street and Nos. 8 – 9 Moore Lane (Figure 16.23).

- **Significance**

  Nos. 14 – 17 Moore Street, as a place, is of significant historical importance in the history of Ireland. The events relate to the final 24 hours of the 1916 Easter Rising; from the evacuation of the Volunteers from the GPO on Friday, 28 April 1916 to the decision to surrender on Saturday, 29 April 1916.

  The cultural significance of the terrace lies in the fact that, during the 1916 Easter Rising and after the GPO fell to the British forces, the rebel leaders or the 'GPO Garrison' retreated from the GPO and fought their way to Moore Street where they burrowed their way through the terrace, from No. 10 as far as No. 16 before ultimately setting up the last headquarters of the Provisional Government of the Irish Republic (Myles, 2012).

These men included five of the signatories of the Proclamation, Pádraig Pearse, Joseph Mary Plunkett, Thomas Clarke, Sean Mac Diarmada and James Connolly, the latter of whom was badly injured. They eventually surrendered from No. 16 Moore Street on 29 April 1916, signalling the end of the 1916 Easter Rising. The physical impact of the 1916 Easter Rising is visible within the fabric of the surviving structures in the form of creep-holes punched through the walls as the Volunteer leaders moved from one house to another before finally stopping and setting up their base at No. 16 Moore Street.

- **Ownership**

  The National Monument Service of the Department of Housing, Local Government and Heritage (DHLGH) and the Office of Public Works (OPW) look after the National Monuments in State care. The conservation and presentation of these monuments are project-managed by the OPW, with responsibility for the archaeological aspects of projects resting with the Department.

- **Governance – Section 14 Consent**

  Section 14 of the National Monuments Act 1930 (as amended) requires that the consent of the Minister is required for archaeological works at or near a National Monument in the ownership or guardianship of the Minister or a local authority or to which a preservation order applies. The Minister is required to consult with the Director of the National Museum of Ireland in relation to such an application for consent. The Minister may grant a consent in writing for the carrying out of works, other than works connected with an approved road development, affecting such a monument. Such conditions as may be determined by the Minister, including conditions requiring archaeological excavation, may be attached to a consent issued under Section 14. In deciding on a consent, the Minister is not restricted to archaeological considerations but is also entitled to consider the public interest in allowing the carrying out of any works.

- **Area to Assess Potential Impact on the National Monument**

  An area defined by the National Monuments Service was formally established around the National Monument to allow an assessment to be compiled of the potential impact of proposed works in proximity to the National Monument (Figure 16.23). The envelope of buildings that form this area comprises Nos. 13, 18 and 19 Moore Street, as far east as and including the Moore Lane frontage (that includes Nos. 6 – 7 Moore Lane to the rear of No. 13 Moore Street).

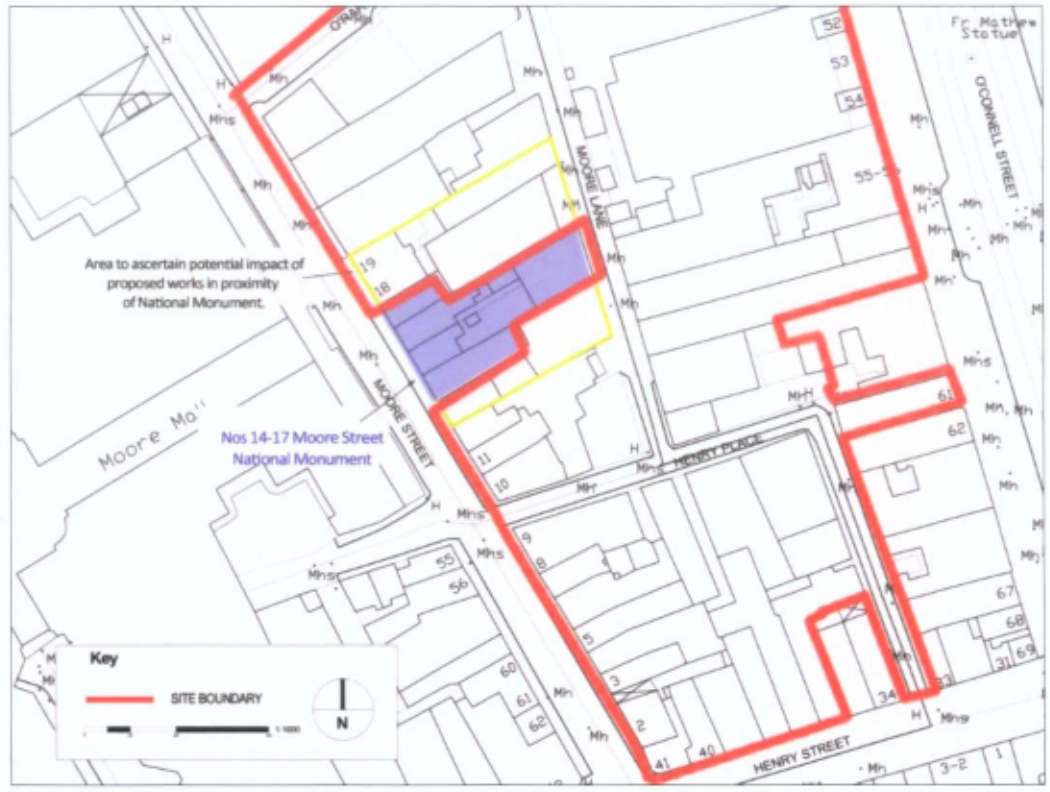

Figure 16.23: National Monument Nos. 14 – 17 Moore Street and the area defined around it to ascertain impact

Nos. 14 – 17 Moore Street is outside of the proposed Dublin Central Masterplan area but shares its northern and southern boundaries with Site 4 (Figure 16.23). Nos. 13, 18, 19 Moore Street are within Site 4 of the Dublin Central Masterplan area. There is an existing planning permission and Ministerial Consent (C494) in place for the conservation and adaption of Nos. 14 – 17 Moore Street (and the Pre-1916 structures) into a commemorative centre. The works include the walls and yard and the upstanding fabric of Nos. 8 – 9 Moore Lane (including the surviving façade onto Moore Lane) and a new two storey extension to be constructed on the northern side of No. 17 Moore Street, which will require the demolition of No. 18 Moore Street (a post 1916 structure). The southern side of No. 18 Moore Street, No. 18A Moore Street, is in the ownership of the State and the northern side is within the ownership of the Applicant. This new structure will provide an active edge onto the new public plaza (in Site 4) and will protect the party wall of No. 17 Moore Street.

Battlefield

Structures

The assessment of the 1916 Battlefield, mapping of events and the identification of 1916 fabric within the Dublin Central Masterplan area is discussed in detail in Chapter 15: (Cultural Heritage (Architectural). The forensic assessment and historic review of the structures in the urban block has led to the retention of a number of structures that were standing in 1916: -

- Nos. 20 – 21 Moore Street.
- Party wall of No. 13 Moore Street.
- No. 10 Moore Street.
- Nos. 8 – 9 Moore Street / 11 – 13 Henry Place.
- Nos. 6 – 8 Moore Lane.
- No. 17 Moore Lane.

Though previously considered to be contemporary with the events of the 1916 Easter Rising, forensic evidence has shown that No.10 Henry place was found to be rebuilt after 1916 (see Chapter 15: Cultural Heritage (Architectural)). The 'White House', as it was known, was subject to intense fire from the Rotunda and had the potential to reveal evidence of the battle. Whilst the structure will be removed, the footprint of the building will be retained, and a gallery space will be developed.

Laneways

Though not designated, associated with the events of the 1916 Easter Rising are the laneways surrounding the monument, comprising Henry Place, Moore Lane and O'Rahilly Parade, which formed part of the battleground and the evacuation route from the GPO. These streets significantly aid the interpretation of the events of the 1916 Easter Rising and as such are being retained within the Dublin Central Masterplan area.

Stone setts and granite kerbing survive on Moore Lane and O'Rahilly Parade beneath a tarmac surface (Figure 16.24).

DCC PLAN NO. 2861/21
01/06/2021



Figure 16.24: Stone paving in-situ (left) and Granite paving in-situ (right).

A GPR survey carried out on the streets within the Dublin Central Masterplan area has identified what appears to be the substantial survival of stone setts along Moore Lane and O'Rahilly Parade and the complete absence of stone setts on Henry Place. The data suggests that the surface along Henry Place was replaced by reinforced concrete slab. When the GPR results are overlain with existing services it is clear that the setts were lifted and re-laid on several occasions (Figure 16.25, see Chapter 15: Cultural Heritage (Architectural) and Chapter 12: Landscape and Visual Impact Assessment.

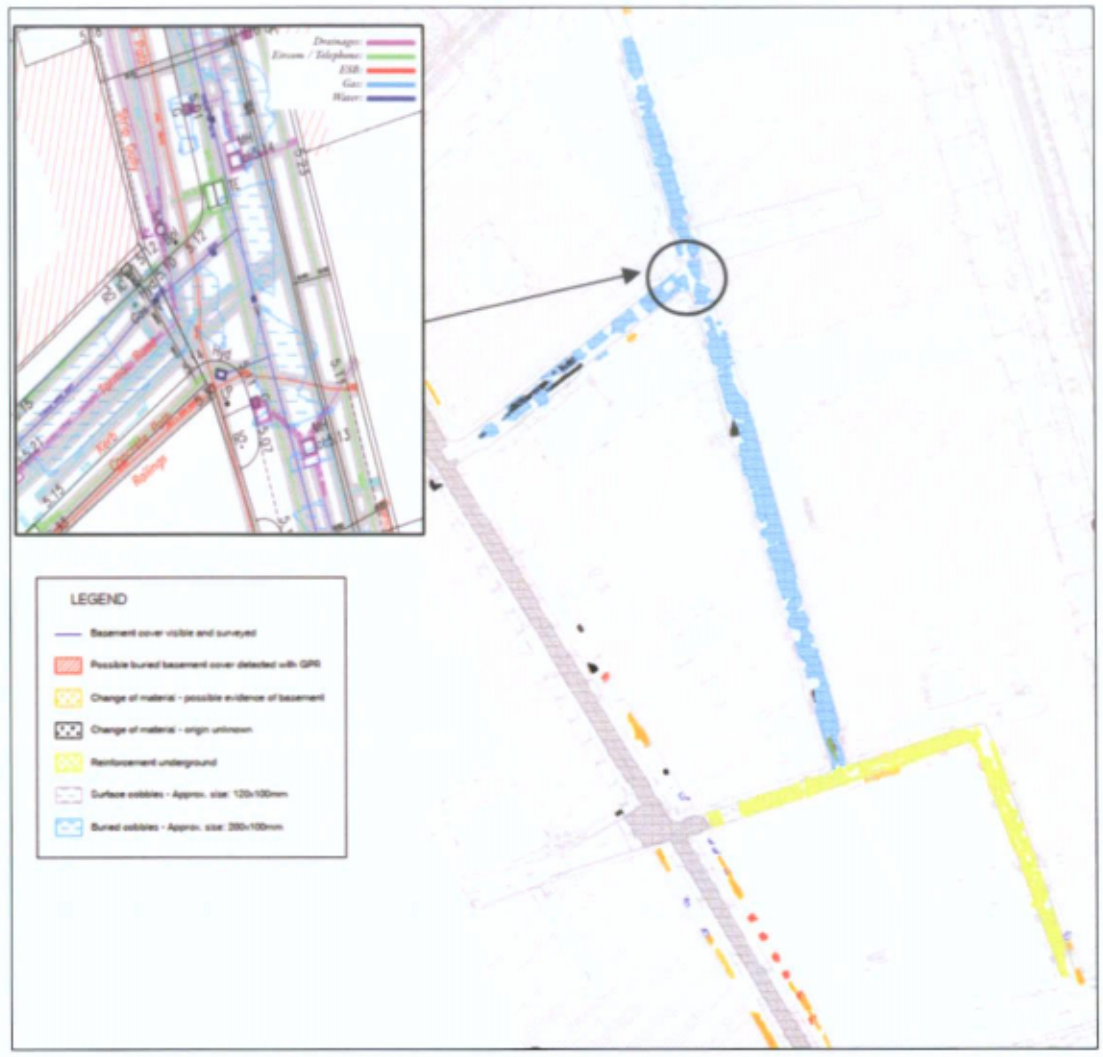

Figure 16.25: GPR survey of the lanes within the Dublin Central Masterplan area (inset shows the services with the lane).

As mentioned above a mid to late 19th century service tunnel running c. 20m along the top of Moore Lane was recently identified running from the former public house 'Devlin's Pub' (during excavations for Nos. 17 – 19 Moore Lane) with bottling stores south along Moore Lane, WA Gilbey's stores (no longer upstanding to the rear of Nos. 46 O'Connell Street). No other tunnels were present in the GPR survey data.

The stone setts and kerbing will be recorded, lifted, and stored during construction of the Dublin Central Development and will be reused and reinstated in appropriate locations along the laneways in accordance with best conservation practice (see Chapter 15: Cultural Heritage (Architectural)). There is a potential that earlier fabric, or the build-up of surfaces associated with 'Old Brickfield Lane' may survive beneath this surface.

16.4.4.1.3 Parnell Monument

The Charles Stewart Parnell monument at the junction of O'Connell Street and Parnell Street is also a National Monument (RMP DU018-425) in the care of the Local Authority. In 1899, the foundation stone was laid for a monument dedicated to Charles Stewart Parnell (1846 – 1891) and after a protracted project the monument was unveiled on 1 October 1911 to large crowds (RMP Files).

16.4.4.2 Record of Monuments and Places (RMP sites)

The Record of Monuments and Places (RMP) is a statutory list of archaeological monuments provided for in the National Monuments Act (as amended). The heretofore mentioned National Monument of Nos. 14 – 17 Moore Street (RMP DU018-390) is also a recorded monument.

Located just inside the Dublin Central Masterplan area to the north is a brickworks site (DU018-020506) (Figure 16.26), however excavation and cartographic sources shows that it is likely to have been located in an area defined by Parnell Street, Moore Street, Moore Lane and Henry Place, and potentially may have extended as far as O'Connell Street (cf. Section 2.3).

The brickworks site is also recorded in the Dublin City Industrial Heritage Record (DCIHR Ref. 18_07_110). There are no further DCIHR sites recorded in the vicinity of the Dublin Central Masterplan area.

DCC PLAN NO.2861/21
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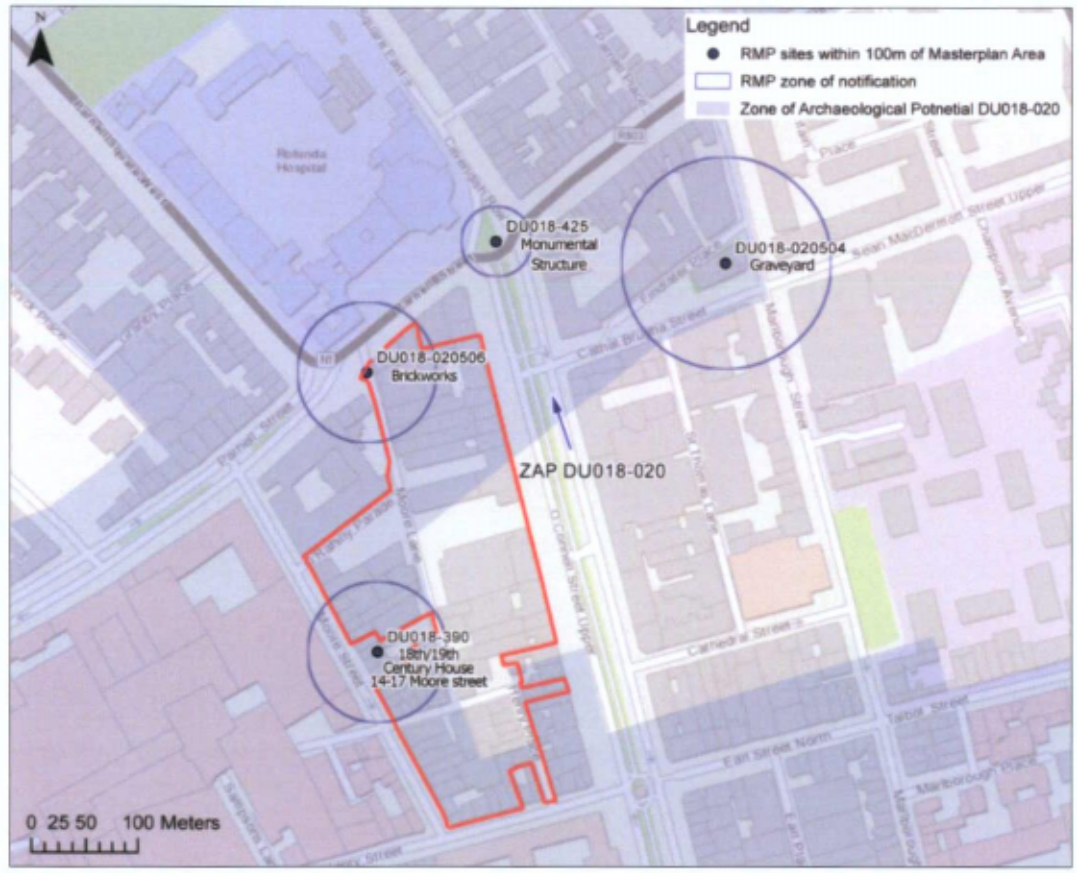


Figure 16.26: RMP site location and Zone of Archaeological Potential for Dublin City and the Dublin Central Masterplan area

RMP/SMR No.	Type	ITM	Location
DU018-020506	Brickworks Site	715670, 734928	Within the Dublin Central Masterplan Area shown at the end of Moore Lane/Parnell Street. Rocque 1756: Old Brick Field. Whilst the site is located in the RMP at the top of Moore Lane Historic sources show that it extended in the urban block bound by Parnell Street, Moore Street Moore Lane and Henry Place. Within Site 5 and 4 of the Dublin Central Masterplan area.

RMP/SMR No.	Type	ITM	Location
DU018-390	House - 18th/19th century house	715680, 734770	Located within the same urban block as the Dublin Central Masterplan Area. As above in the preceding table. Nos. 14, 15, 16 and 17 Moore Street and also includes the rear yards of Nos. 15 and 16 Moore Street and Nos. 8-9 Moore Lane. Between Site 4 of the Dublin Central Masterplan area.

Table 16.2: RMP / SMR Sites within and in the immediate vicinity of the Dublin Central Masterplan Area.

A further two RMP sites are located within 100m of the Dublin Central Masterplan area development boundary (Table 16.3), the Charles Stewart Parnell monument at the intersection of Parnell Street and O'Connell Street and St. Thomas's Church and Graveyard in an area formed by Cathal Brugha Street, Findlater Place and Marlborough Street.

St. Thomas's Church (DU18-020504) was built between 1758 and 1762, was destroyed during the Civil War in 1922 between 1931 and 1932 (Bennett 1991).

RMP/SMR No.	Type	ITM	Location	Distance
DU018-020504	Church and graveyard site	715873, 734995	Cathal Brugha Street, Findlater Place, Marlborough Street.	c. 250m east of the Dublin Central Masterplan area.
DU018-425	Monumental structure	715742, 735004	Parnell Street, O'Connell Street Upper and Cavendish Row	c. 90m northeast of the Dublin Central Masterplan area.

Table 16.3: RMP / SMR Sites within 100m of the Dublin Central Masterplan lands.

16.4.4.3 Zone of Archaeological Potential for Dublin City (DU018-020)

Zones of archaeological potential (ZAP) can be defined as areas within the urban and rural landscape that possess the potential to contain archaeological remains due to the settlement history of a place and or to the presence of topographical features such as rivers, lakes and high, defendable ground.

The Proposed Development is partially within the Zone of Archaeological Potential (ZAP) for Dublin City (DU018-020) (Figure 16.26). The Dublin City Development Plan 2016 – 2022 recognises that the appropriate archaeological strategy for preservation and development can only be determined for each site on the basis of an understanding of the archaeological potential of a site and the archaeological impact of a Proposed Development on that potential.

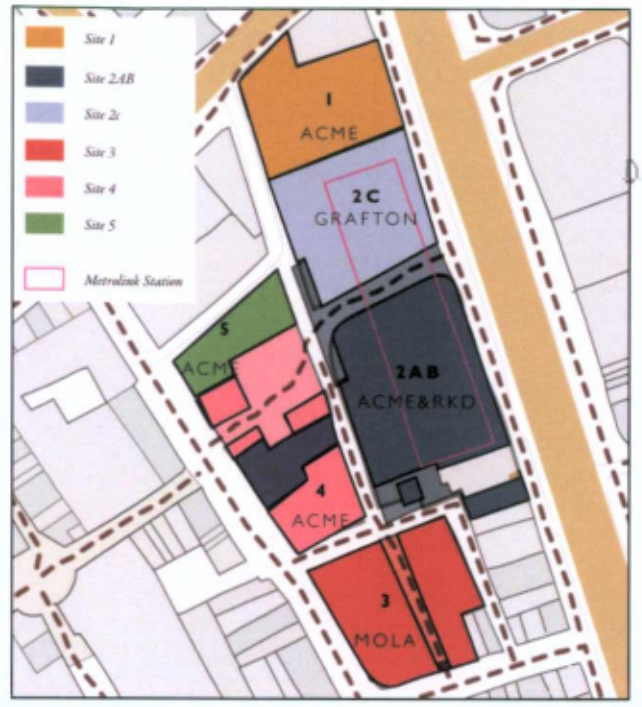
Any development proposals within a designated ZAP must be subject to pre-planning discussion and it is policy that applications accompanied by an archaeological assessment including where possible archaeological testing.

16.5 CHARACTERISTICS OF PROPOSED DEVELOPMENT

16.5.1 Dublin Central Masterplan

The Dublin Central Masterplan area (c. 2.2 Ha) is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. Internally it is subdivided by Moore Lane and Henry Place. It comprises six separate development sites (Sites 1 – 5 in Figure 16.27). Site 2 is subdivided into sub-phases 2AB and 2C.

Site 2AB and 2C will include works associated with the facilitation of a proposed O'Connell Street Metrolink Station. Sites 3, 4 and 5 are located on the western side of the Dublin Central Masterplan area block whilst Site 1, 2AB and 2C are on the eastern side.



DCC PLAN NO.2861/21
REC: 01/06/2021

Figure 16.27: Dublin Central Masterplan area with each site indicated.

Each site within the Dublin Central Masterplan area is broadly set out in Table 16.4 below, it and includes a number of protected buildings, protected facades and buildings of historical importance present within the Proposed Development site that will be retained and incorporated into the development (these are assessed and set out in detail in Chapter 15: Cultural Heritage (Architectural)).

Site	Urban block	Heritage Assets to be retained and incorporated
Site 1	Generally bounded by Parnell Street, Moore Lane and O'Connell Street.	• 42 O'Connell Street- Protected Structure – retention and refurbishment. • O'Connell Hall – Protected Structure – retention and refurbishment. • 70 Parnell Street – Protected Structure - retention and refurbishment. • 71 Parnell Street – Facade retention.
Site 2 (2AB, & 2C)	Generally bounded by O'Connell Street and Moore Lane.	*Site 2C* • 43 O'Connell Street – Facade Above Ground Protected Structure – facade retention. • 44 O'Connell Street – Facade Above Ground Protected Structure – facade retention. • 45 O'Connell Street – Facade retention. *Site 2AB* • 52-54 O'Connell Street facade (Carlton) – Facade Above Ground Protected Structure – facade retention. • 57-58 O'Connell Street facade – Facade Above Ground Protected Structure – facade retention. • Rear boundary wall of 56-58 O'Connell Street – Taken down and rebuilt in a similar manner to existing. • The Reading Room to the rear of 59 O'Connell Street – retention and refurbishment.

Site	Urban block	Heritage Assets to be retained and incorporated
		• 61 O'Connell Street facade – Facade Above Ground Protected Structure – full retention and refurbishment of the building.
Site 3	Generally bounded by Moore Street and Moore Lane (c. 0.4 Ha). Nos. 36 – 41 Henry Street, Nos. 1 – 9 Moore Street, Nos. 3 – 13 Henry Place (formerly known as Nos. 2 – 13 Henry Place), Clarke's Court and Mulligan's Lane, and also the rear of Nos. 50 – 51, Nos. 52 – 54 and No. 55 Upper O'Connell Street, Dublin 1	• 8-9 Moore Street – Full retention and refurbishment. • 10 Henry Place- Reinterpretation of building as it was in 1916. • 11-13 Henry Place – Full retention and refurbishment. • 36-37 Henry Street – Full retention and refurbishment. • 39-40 Henry Street – Facade retention.
Site 4	Generally bounded by Moore Street and Moore Lane (c. 0.34 Ha). The centre of Site 4 being retained. Site 4 includes Nos. 10 – 13 and Nos. 18 – 21 Moore Street, Nos. 5 – 8 and Nos. 10 – 12 Moore Lane, and also the rear of Nos. 50 – 51, Nos. 52 – 54 and No. 55 Upper O'Connell Street, Dublin 1	• 10 Moore Street – Full retention and refurbishment • 12-13 Moore Street Party Wall – Full retention and refurbishment. • 20-21 Moore Street – Full retention and refurbishment. • 17-18 Henry Place – Facade retention. • 6-7 Moore Lane – Full retention and refurbishment.
Site 5	Generally bounded by Moore Street, O'Rahilly Parade and Moore Lane (c. 0.21 Ha). Site 5 No. 22 – 25 Moore Street, No. 13 Moore Lane and No. 14 Moore Lane (otherwise known as Nos. 1 – 3 O'Rahilly Parade and Nos. 14 – 15 Moore Lane or Nos. 1 – 8 O'Rahilly Parade and Nos. 14 – 15 Moore Lane), Dublin 1.	• 14 Moore Lane - taken down and material reused within new buildings in Site 4.
Public Realm	Moore Lane, Henry Place and O'Rahilly Parade	• Setts and kerbs restored and re-laid.

Table 16.4: Application sites within the Dublin Central Masterplan area.

Site 4 is located to the north and south of Nos. 14 – 17 Moore Street (National Monument).

The development is a mixed use development, and includes office, hotel, residential, food and beverage and retail spaces. It is expected that the O'Connell Street Metrolink Station will be proposed below the Site 2 of the Dublin Central development.

The Proposed Development is in an urban area and is almost 100% hardstanding, with no green or planted areas.

16.5.2 Proposed Development – Site 3, 4 & 5

16.5.2.1 Site 3

The Proposed Development comprises a mixed-use scheme (c. 15,842.4 sq. m gross floor area) accommodated in 2no. blocks, ranging in height from 1 – 9 storeys over 2no. new independent single level basements. A proposed new Passageway separates the 2no. blocks (Block 3A & Block 3B), connecting Henry Street and Henry Place (Figure 16.28).

Construction access to Site 3 will be facilitated at the junction of Moore Lane and O'Rahilly Parade (which will require taking down the existing boundary wall of a depot site).The removal of a boundary wall onto Moore Lane at the rear of properties at Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street is also required to facilitate a layby for construction traffic (Figure 16.28).

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Site 3 includes the conservation, repair, refurbishment and adaptive reuse of part of existing building fabric including the retention of Nos. 36 – 37 Henry Street, No. 39 – 40 Henry Street (upper floor façade), Nos. 8 – 9 Moore Street, Nos. 11 – 13 Henry Place with internal and external modifications and new shopfronts. Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance. It includes the demolition of all other existing buildings and structures on site.



Figure 16.28: Site 3 site location and Ground floor layout

A full project description for Site 3 is provided in Chapter 3: Description of Proposed Development.

16.5.2.2 Site 4

The Proposed Development comprises a mixed-use scheme accommodating 15no. apartment units, café / restaurant use, retail use, cultural use and office use (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (National Monument/Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. It also includes the provision of a part of the new public plaza and archway onto new public square (Figure 16.29).

Site 4 includes the conservation, repair, refurbishment and adaptive reuse of part of existing building fabric including the retention of Nos. 20 – 21 Moore Street, No. 10 Moore Street, Nos. 6 – 7 Moore Lane with internal and external modifications and new shopfronts. Works to include repair and upgrade works (where required) of existing masonry, external and internal joinery, plasterwork and features of significance. It includes the demolition of all other existing buildings and structures on site.

In addition, the party wall between Nos. 12/13 Moore Street will be retained, the assessment identified a backfilled creep holes between the terraces which was created during the Rising. The facades of Nos. 17-18 Henry Place (also known as 4-5 Moore Lane) which forms the corner of Moore Lane and Henry Place will also be retained as it forms part of the character of the streetscape. Proposals for the conservation, repair, refurbishment and adaptive reuse of these buildings are provided in Chapter 15: Cultural Heritage (Architectural).

To the north and south of Site 4 is Nos. 14 – 17 Moore Street which are proposed for development by the OPW and the Department of Housing, Local Government and Heritage (DHLGH) under Ministerial Consent C495. The buildings will be developed as an commemorative centre that will provide for a visitor experience that will engage with the events of 1916 and provide a greater understanding of the building fabric and significance of the monument. An extension to the National Monument on the northern side, No.18a, is proposed for ancillary use to the monument is included in the Site 4 application (Figure 16.29). This is owned by the (DHLGH) and has already received Ministerial Consent. The extension to the National Monument within No. 17 Moore Street is not included in the Dublin Central Masterplan but will be subject to a separate application made by the DHLGH.

Construction access to Site 4 will be facilitated at the junction of Moore Lane and O'Rahilly Parade (which will require taking down the existing boundary wall of a depot site). The removal of a boundary wall onto Moore Lane at the rear of properties at Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street is also required to facilitate a layby for construction traffic (Figure 16.29).



Figure 16.29: Site 4 site location and Ground floor Plan and Plaza

A full project description of Site 4 is provided in Chapter 3: Description of Proposed Development.

16.5.2.3 Site 5

Site 5 comprises a mixed-use scheme in a single building (c. 6,478 sq. m gross floor area) ranging in height from 2 – 6 storeys (top floor set back) over single storey localised basement. The building includes office space from 1st to 5th floor with office lobby at ground floor level, with 3no. terraces at 2nd, 3rd and 5th floor respectively and 3no. licenced restaurant / café units with takeaway / collection facility at ground floor, together with provision of a 'delivery hub' unit at ground floor level (c. 46 sq. m). Provision of part of a new public plaza (168 sq. m) and associated temporary works pending completion of the combined plaza with the concurrent planning application for the adjoining Site 4 immediately to the south (Figure 16.30).

DCC PLAN NO. 2861/21
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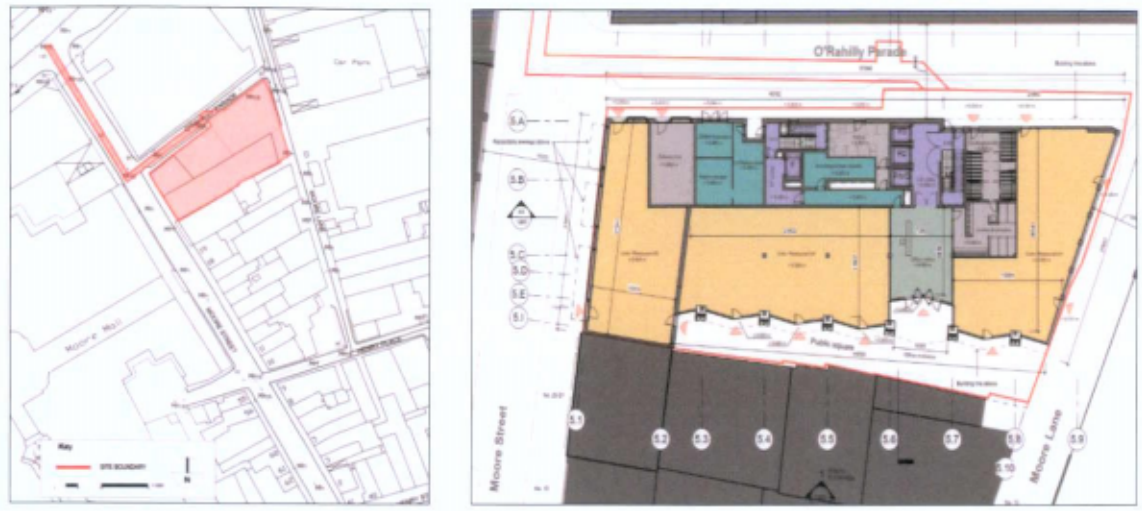

Figure 16.30: Site 5, site location and Ground floor Plan

A full project description of Site 5 is provided in Chapter 3: Description of Proposed Development.

16.6 POTENTIAL IMPACTS

16.6.1 Dublin Central Masterplan

16.6.1.1 Construction Stage

16.6.1.1.1 Introduction

The archaeological assessment through the review of previous excavations, of designated sites and of written and cartographic sources has assisted in clarifying the nature, location and significance of the archaeological remains that are likely to be encountered within the Dublin Central Masterplan area. It has facilitated the confident assessment of the potential impact of the scheme on the archaeological resource.

16.6.1.1.2 Impacts to National Monument – Nos. 14 – 17 Moore Street

There will be a potential impact on the National Monument PO boundary where its boundaries are shared with Site 4. Proposed works in proximity to the National Monument[1], will include those associated with the demolition of existing buildings at Nos. 18 and 19 Moore Street back to Moore Lane (Nos. 10 – 11 Moore Lane), No. 13 Moore Street and its rear yard, and the retention works associated with Nos. 6 – 7 Moore Lane. The assessment of the potential impact on the structures are described in Chapter 15: Cultural Heritage (Architectural).

From an archaeological perspective there is a potential that demolition of the adjacent structures or earthmoving works might reveal material remains associated with the 1916 Easter Rising, for example, guns or other munitions buried or otherwise concealed around the monument or backfilled into cellars in areas that are not currently visible or accessible. The discovery of such material would add to our knowledge of the battle and would ultimately form part of the national collection and interpretation of the site.

[1] An area defined by the National Monuments Service around the National Monument to allow an assessment to be compiled of the potential impact of proposed works in proximity to the National Monument. The envelope of buildings that form this area comprise Nos 13, 18 and 19, as far east as and including the Moore Lane frontage (that includes Nos. 6 – 7 Moore Lane to the rear of No. 13 Moore Street).

Site preparation, enabling and earthmoving works in the vicinity of the national monument has the potential to impact on below ground in-situ archaeological remains predating both the Georgian terrace and the development of the urban block. Test excavation of archaeological deposits in proximity to and within the National Monument, has revealed infill organic deposits up to 2m in depth which are consistent with the recorded archaeological profiles found in this area of the ZAP for the Historic City of Dublin (see section 16.4.2.2). This material, though of archaeological interest will not be critical to our understanding of the 1916 Easter Rising event, and the significance attached to the buildings on Moore Street (Nos. 14 – 17). The findings will enhance our knowledge of the eastern development of the city in the 18th century.

The historic identity and layout of the streetscape is at the heart of the public realm plans for the Dublin Central Masterplan area. It acknowledges that Moore Street, Moore Lane, Henry Place and O'Rahilly Parade are a significant aspect of the historic character of the area, contributing to the legibility of the events of the last movements of the rebels before their retreat to Nos. 14 – 17 Moore Street from the GPO. The development of the Dublin Central Masterplan area preserves the grid of laneways within the block and as such the key views that support the interpretation of the 1916 events i.e., the existing sight lines along Moore Lane and the lack thereof along Henry Place. In addition, based on a full understanding of the historic fabric of the structures facing the lanes the Proposed Development will retain structures of historic interest (i.e., No. 10 Moore Street, Nos. 20 – 21 Moore Street, Nos. 6 – 8 Moore Lane and No. 17 Moore Lane). The historic granite sets and stone sett pavements on O'Rahilly Parade and Moore Lane will be recorded in-situ, lifted and re-laid in suitable locations along the laneway (see Chapter 15: Cultural Heritage (Architectural)).

The retention of these historic elements will have an overall positive effect on the National Monument and its future use as a commemorative centre (Chapter 15: Cultural Heritage – (Architectural)). They will enhance the experience of the public realm and will assist in the legibility of, and public access to, the 1916 Easter Rising events and how they unfolded, thus reinforcing the interpretation and experience of the National Monument.

16.6.1.1.3 Impact on Archaeological Potential

The Dublin Central Masterplan area is located in the ZAP for the historic city of Dublin (RMP DU018-020). This is a zone of high archaeological potential relating to the development of the city since the earliest of times.

Despite the intensive development of the Dublin Central Masterplan area during the 18th to 20th centuries, which may have truncated or removed entirely the archaeology in its wake, the assessment has revealed the possibility for earthmoving works in this part of the city to encounter archaeological sites, soils or features associated with the following: -

- **Early Medieval and Medieval Potential**
  - The findspots of scattered burials associated with a Viking cemetery site (DU018–020495) is concentrated on the northern side of Parnell Street. The Viking burials have been found at 3.50m below present ground level in subsoil. Topographically the burial site is likely to have taken advantage of a high ridge overlooking the former Liffey estuary and a major routeway that ran along Parnell Street. The excavation of two large sites south of Parnell Street and north of O'Rahilly Parade adjacent to the Dublin Central Masterplan area did not identify any human remains.
  - The site lies outside the walled precinct of St. Mary's Abbey, which in medieval times dominated the eastern lands of the northern suburb of the historic core. It is considered unlikely given the distance from the walled precinct that any structural remains associated with the abbey would be identified in the Dublin Central Masterplan area. Should features survive it is likely to be in the form of medieval cultivated soils and/or agricultural features, such as ditches, and boundaries.

There may be undisturbed clays to the rear of the properties in the block, which do not have cellars / basements. These are depicted as open yards in Rocque's 1756 and Scale's 1773 maps, it is in these locations were the highest potential lies to reveal these remains should they be present.

- **Post Medieval Potential**
  - There is a significant potential that features associated with the 18th century 'site of' a brickworks (DU018-020506) might be encountered during the earthmoving works. Cartographic sources suggest that the brickfield was located in the area defined by Moore Lane, Moore Street and Henry Place, however archaeological evidence suggests that it might extend to O'Connell Street. In addition to this, the former brickfield quarry pit was backfilled in the 18th century with up to 2m of reclamation deposits representing domestic refuse from the city, this infill material was mostly organic but also contained ceramics, glass and metal. It is likely that such infill material will be identified in Sites 4 and 5 as they are located within the brickfield site defined on Rocque's maps.
  - Basements or complex of house foundations, walls, vaults, drains, cobbled surfaces, and other features dating from the early 18th century and later should be anticipated for the Proposed Development. They are likely to extend across the entire Dublin Central Masterplan area.

Ground-breaking works within the ZAP will result in a direct impact on any features that may survive below ground. The as yet undiscovered archaeological features in the ZAP are of Medium sensitivity value, and the magnitude of the impact is Medium. This would result in a potentially **Negative, Moderate** and **Permanent** impact on any previously unknown archaeological sites or features which may survive below ground.

The 'Outline Construction & Demolition Management Plan - Master Plan', prepared by Waterman Moylan is provided in Appendix 3.1 of the EIAR.

16.6.1.2 Operational Stage

There is no likely or significant predicted impact on the archaeological resource during the operational stage of the project. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore **no potential impacts** are envisioned at the operation stage of the development.

16.6.1.3 Do-Nothing Impact

In the "do-nothing" scenario the Dublin Central Masterplan area would not be redeveloped and therefore there would be no adverse impacts to any as yet undiscovered subsurface archaeological deposits, features or finds. Under the do-nothing scenario, any archaeological features that lie below the existing ground level will remain in- situ. Any information that might enhance our understanding of the eastern development of the city in the early post medieval and post medieval period will remain unknown.

16.6.2 Proposed Development – Site 3, 4 & 5

16.6.2.1 Construction Stage

16.6.2.2 Site 3

16.6.2.2.1 National Monuments

There are no National Monuments or sites under Preservation Order in the vicinity of Site 3. Nos. 14 – 17 Moore Street is located c. 30m north of the site and will not be impacted by the development of this block.

Approximately 9m from the rear wall of the National Monument it is proposed to demolish the boundary wall to the rear of Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street (on Moore Lane) to facilitate construction access to the Site 3.

The assessment of the potential impact on the physical fabric of the structures are described in Chapter 15: Cultural Heritage (Architectural).

Part of the evacuation route from the GPO during the 1916 Easter Rising was enacted on Henry Place which bounds Site 3 to the north and east. A detailed account of this is provided in Chapter 15: Cultural Heritage (Architectural), which examines the battlefield and its relationship to the historic structures. The lanes will be retained in the overall Dublin Central Masterplan area and as such the key views that support the interpretation of the 1916 events i.e., the existing sight lines along Moore Lane and the lack thereof along Henry Place. In addition, Nos. 8 – 9 Moore Street (a late 18th Century Structure), and Nos. 11 – 13 Henry Place to the rear will be retained and the footprint of the former 'White Building' will be retained. This, alongside the retention of No. 10 Moore Street and the building envelope of 17 – 18 Henry Place on the northern side of the lane (in Site 4), will ensure that the evacuation route remains legible in the public realm.

The retention of these historic elements will have an overall positive effect on the National Monument and its future use as a commemorative centre. They will enhance the experience of the public realm and will assist in the legibility of the 1916 events and how they unfolded, thus reinforcing the interpretation and experience of the National Monument.

16.6.2.2.2 Recorded Archaeological Monuments

There are no specific recorded sites (RMP / SMR sites) within the boundary of the site or in its immediate vicinity.

16.6.2.2.3 Zone of Archaeological Potential for Dublin City (RMP DU018-020)

Dublin Central Site 3 lies within the designated ZAP for the historic city of Dublin (RMP DU018-020). This is a zone of high archaeological potential relating to the development of the city since the earliest of times. There is the potential that previously unknown archaeological sites or features may survive below ground within this zone.

Based on the information gathered to date from archaeological research, cartographic sources and previous excavations, the archaeological potential of Site 3 is characterised by the following: -

- **Early Medieval and Medieval Potential**
    - The findspots of scattered burials associated with a Viking cemetery site (DU018–020495) is concentrated on the northern side of Parnell Street. Topographically the burial site is likely to have taken advantage of a high ridge overlooking the former Liffey estuary and a major established routeway that ran along Parnell Street. Given the distance from Site 3 and its closer proximity to the original Liffey shoreline it is considered improbable that Viking remains would be identified within Site 3.
    - The site lies outside the walled precinct of St. Mary's Abbey, which in medieval times dominated the eastern lands of the northern suburb of the historic core. It is considered unlikely given the distance from the walled precinct that any structural remains associated with the abbey would be identified in Site 3. Should features survive it is likely to be in the form of medieval cultivated soils and / or agricultural features, such as ditches, and boundaries.

    There may be undisturbed clays to the rear of the properties in the block, which do not have cellars/basements. These are depicted as open yards in Rocque's 1756 map (Figure 16.9), it is in these locations where the highest potential lies to reveal in-situ remains, though some cellars may not be so deep as to have removed all soils to the natural subsoil level.

DCC PLAN NO.2861/21
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- **Post Medieval Potential**

  Based on the excavations in this part of the city features that are likely to be encountered within Site 3 include the following: -

  - There is a potential that the brickfield site (RMP DU018- 020506) shown on Rocque's Map (ibid) may extend beyond the area defined by Parnell Street, Moore Street, Moore Lane and Henry Place into Site 3. Excavation has shown that it potentially may have extended as far east as O'Connell Street.
  - Early basements or complex of house foundations, walls, vaults, drains, cobbled surfaces, and other features dating to the early 18th century and later should be anticipated for the Proposed Development.
  - There are areas of the site that have existing basement, where underlying deposits are likely to have been removed (Figure 16.31). However, these basements may have incorporated earlier 18th century fabric.
  - The existing basements associated with 8-9 Moore Street, 11-13 Henry Place and of 36, 37 Henry Street will be retained as part of the development; and the basements on the Henry Street frontage will be backfilled (Figure 16.31).

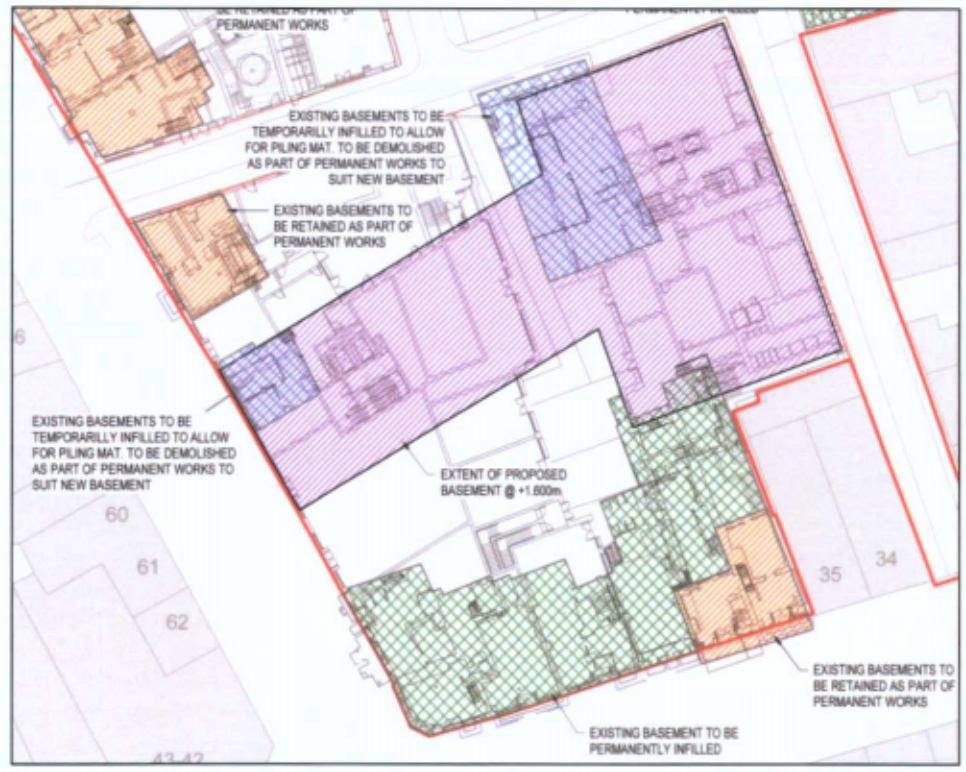

Figure 16.31: Site 3, Basements to be retained (orange), permanently infilled (green) and temporary infilled in advance of piling for new basement (blue), extent of the proposed basement (pink).

Site 3, Basement and Substructure Design

There is a proposed single storey basement to house plant across the northern half of the site (Figure 16.32). The basement will be constructed within a 600mm diameter secant pile wall. The excavation material will generally be made ground down to circa 5m below ground level then Alluvium (Sandy Gravel). The top of the piled wall will be tied together with a 1050x1000m reinforced concrete capping beam which will allow the transfer of vertical frame and floor loads onto the piles.

The Proposed Development will be supported on piled foundations comprising traditional non-displacement rotary bored piles. Based on the ground conditions identified and the building frame loads, 3 piles are used per column, 1200mm deep pile caps will be used above the piles to support the columns over (Figure 16.32).

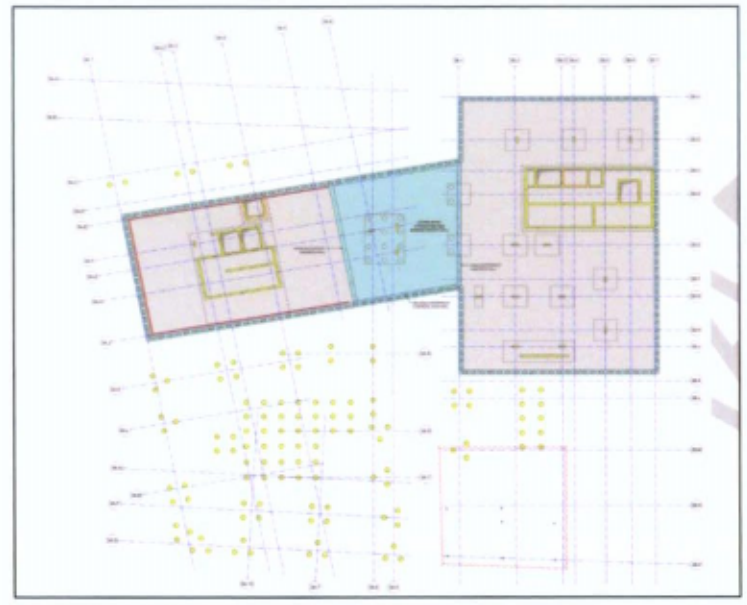

Figure 16.32: The proposed basement and pile foundation layout and attenuation tank (in blue).

There will be a direct impact on any subsurface archaeological features that might be encountered during earthmoving within Site 3. The predicted impact of the construction phase on potential intact archaeological remains will be negative. The as yet undiscovered archaeological features within the ZAP are of medium sensitivity value and the magnitude of the impact is medium resulting in an overall **moderate** and **permanent impact** on the archaeological resource which may survive below ground.

The 'Outline Construction & Demolition Management Plan – Site 3', prepared by Waterman Moylan is provided in Appendix 3.2 of the EIAR.

16.6.2.3 Site 4

16.6.2.3.1 Impacts to National Monument – Nos. 14 – 17 Moore Street

There will be a potential impact on the National Monument Preservation Order boundary where its boundaries are shared with Site 4. Proposed works in proximity to the National Monument will include those associated with the demolition of existing buildings at Nos. 18 and 19 Moore Street back to Moore Lane (Nos. 10 – 11 Moore lane), No. 13 Moore Street and its rear yard, and the retention works associated with Nos. 6 – 7 Moore Lane. Approximately 9m from the rear wall of the National Monument it is proposed to demolish the boundary wall to the rear of Nos. 50 – 51 and Nos. 52 – 54 (a protected structure) Upper O'Connell Street (on Moore Lane) to facilitate construction access to the Site 3.

The assessment of the potential impact on the physical fabric of the structures are described in Chapter 15: Cultural Heritage (Architectural).

The foundation and substructure strategy has been developed considering the age and condition of the existing structures that are proposed to be retained in and around the Site 4 development, and with particular care and consideration to the boundaries with the National Monument. Mini bored piles are proposed as an efficient solution due to the low loads from the structures above, whilst ensuring a low risk to surrounding structures (Figure 16.34).

Appropriate protective measures such as development phasing, further investigation, temporary works (if required) and a vibration monitoring strategy embedded into the construction and management plan, will be put in place during demolition and construction phases of the development as outlined in the accompanying Chapter 15: Cultural Heritage (Architectural). Such measures will ensure that there is no inadvertent damage to the monument.

From an archaeological perspective there is a potential that demolition of the adjacent structures or earthmoving works might reveal material remains associated with the 1916 Easter Rising, for example, guns or other munitions buried or otherwise concealed around the monument or backfilled into cellars in areas that are not currently visible or accessible. The discovery of such material would add to our knowledge of the battle and would ultimately form part of the national collection and interpretation of the site.

Site preparation, enabling and earthmoving works in the vicinity of the National Monument has the potential to impact on below ground in-situ archaeological remains predating both the Georgian terrace and the development of the urban block. Test excavation of archaeological deposits in proximity to and within the National Monument, has revealed infill organic deposits up to 2m in depth which are consistent with the recorded archaeological profiles found in this area of the ZAP for the Historic City of Dublin (see section 16.4.2.2). This material, though of archaeological interest will not be critical to our understanding of the 1916 Easter Rising event, and the significance attached to the buildings on Moore Street (Nos. 14 – 17). The findings will however enhance our knowledge of the eastern development of the city in the 18th century.

The historic identity and layout of the streetscape is at the heart of the public realm plans for the Dublin Central Masterplan area. It acknowledges that Moore Street, Moore Lane, Henry Place and O'Rahilly Parade are a significant aspect of the historic character of the area, contributing to the legibility of the events of the last movements of the rebels before their retreat to Nos. 14 – 17 Moore Street from the GPO. The development of the Dublin Central Masterplan area preserves the grid of laneways within the block and as such the key views that support the interpretation of the 1916 events i.e., the existing sight lines along Moore Lane and the lack thereof along Henry Place. In addition, based on a full understanding of the historic fabric of the structures facing the lanes the Proposed Development will retain structures of historic interest (i.e. No. 10 Moore Street, Nos. 20 – 21 Moore Street, Nos. 6 – 7 Moore Lane and No. 17 Moore Lane). The facades of 17-18 Henry Place (also known as 4-5 Moore Lane) which forms the corner of Moore Lane and Henry Place will be retained in Site 4. In addition, the party wall between 12/13 Moore Street will be retained, preserving the backfilled creep hole between the terraces created during the 1916 Easter Rising. The retention of these structures is outlined in detail in Chapter 15: Cultural Heritage (Architectural).

The historic granite sets and stone sett pavements on O'Rahilly Parade and Moore Lane will be recorded in-situ, reworked and re-laid in suitable locations along the laneway under the Dublin Central Masterplan. These works do not form part of Sites 3, 4 and 5.

The retention of these historic elements will have an overall positive effect on the National Monument and its future use as a commemorative centre. They will enhance the experience of the public realm and will assist in the legibility of, and public access to, the 1916 Easter Rising events and how they unfolded, thus reinforcing the interpretation and experience of the National Monument.

16.6.2.3.2 Impact on Archaeological Potential

Dublin Central Site 4 lies within the designated ZAP for the historic city of Dublin (RMP DU018-020). This is a zone of high archaeological potential relating to the development of the city since the earliest of times. There is the potential that previously unknown archaeological sites or features may survive below ground within this zone.

Based on the information gathered to date from archaeological research, cartographic sources and previous excavations, the archaeological potential of Site 4 is characterised by the following: -

- **Early Medieval and Medieval Potential**
  - The findspots of scattered burials associated with a Viking cemetery site (DU018–020495) is concentrated on the northern side of Parnell Street. The Viking burials have been found at 3.50m below present ground level in subsoil. Topographically the burial site is likely to have taken advantage of a high ridge overlooking the former Liffey estuary and a major routeway that ran along Parnell Street. The excavation of two large sites south of Parnell Street and north of O'Rahilly Parade adjacent to the Dublin Central Masterplan area did not identify any human remains.
  - The site lies outside the walled precinct of St. Mary's Abbey, which in medieval times dominated the eastern lands of the northern suburb of the historic core. It is considered unlikely given the distance from the walled precinct that any structural remains associated with the abbey would be identified in the Dublin Central Masterplan area. Should features survive it is likely to be in the form of medieval cultivated soils and/or agricultural features, such as ditches, and boundaries.

Site 4 is located within a former quarry associated with a brickworks. It is likely that any archaeology that may have been located in this area dating to the early Medieval/ Medieval period (such as agricultural features or isolated human remains) was removed sometime in the 18th century as part of the brickworks. There is a significant archaeological potential for Site 4 to reveal brickfield levels, brickfield quarry infill and 18th century structural remains: -

- **Post Medieval Potential**

  There is a significant archaeological potential for Site 4 to reveal brickfield levels, brickfield quarry infill and 18th century structural remains: -

  - The RMP places the 'site of' a brickworks (DU018-020506) at the junction of Parnell Street and Moore Lane c.125m to the north. Cartographic sources however indicate that the brickfield was located in the area defined by Moore Lane, Moore Street and Henry Place and extended into Site 4. There is a significant potential that features associated with the 18th century 'site of' a brickworks (DU018-020506) might be encountered during the earthmoving works.
  - Unlike the area to the north of O'Rahilly Parade the results of archaeological investigations in Nos. 14 – 17 Moore Street indicate that the area of the former brickfield quarry pit was backfilled in the 18th century to build up the ground for construction. Evidence has shown that part of the former brickfield quarry pit was backfilled in the 18th century with up to 2m of reclamation deposits representing domestic refuse from the city, this infill material was mostly organic but also contained ceramics, glass and metal. It is likely that this is the case other areas within Site 4.
  - Basements or complex of house foundations, walls, vaults, drains, cobbled surfaces, and other features dating from the early 18th century and later should be anticipated for the Proposed Development. They are likely to extend across the entire site.

  The northern half of Site 4 may be free of cellars / basements where there are open yards in cartographic sources (Scalé's Map of 1773,Figure 16.12) and there may be undisturbed clays. It is in these locations were the greatest potential lies to reveal in-situ features should they be present.

Site 4, Basements and Substructure Design

There are existing basements beneath No's 10 to 13 and between Nos 6-7 Moore Lane which may have removed or truncated any in-situ archaeological sites or features (Figure 16.33). There is also a potential that a basement is present beneath No. 18 Moore Street.

DCC PLAN NO.2861/21
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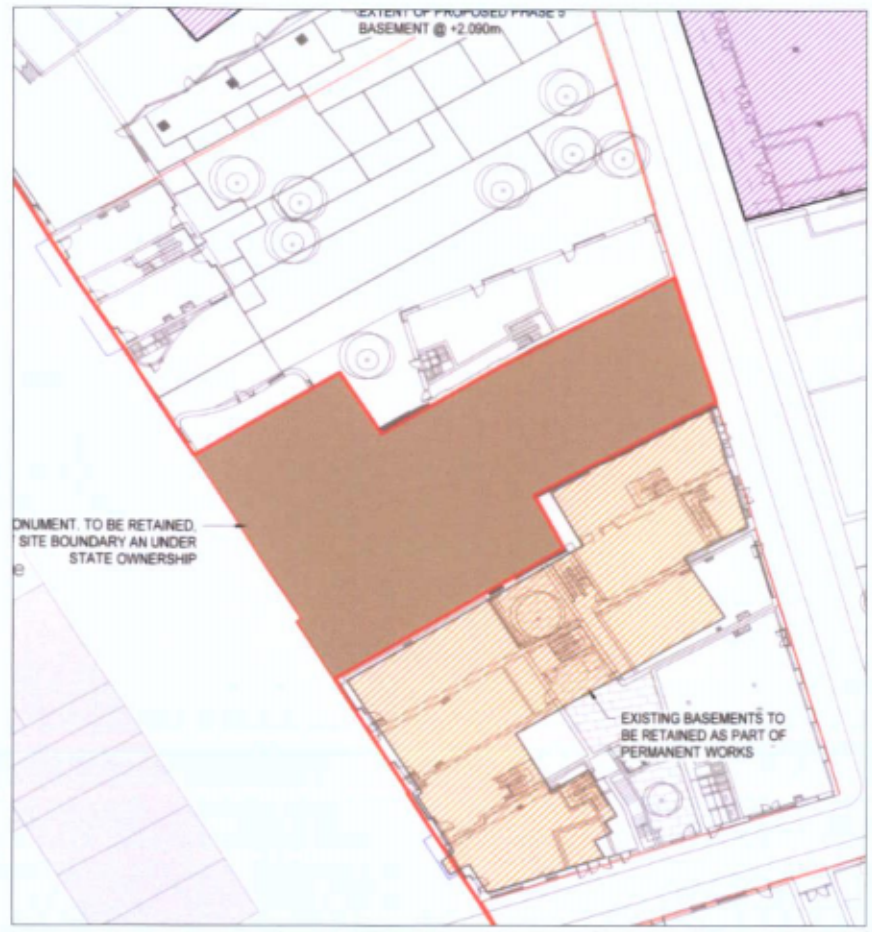


Figure 16.33: Existing basement being retained as part of the permanent works.

New basements in the Proposed Development are minimised and will be in the location of the existing basements (Figure 16.34, Figure 16.35, Figure 16.36). They will be used to house plant for the residential and retail units above and remove the requirement for area above ground to be allocated to plant. The existing basement at No. 5a Moore Lane (also known as 15-16 Henry Place), adjacent to the retained No. 6-7 basement, is to be infilled to provide the new ground level. Beneath the retained buildings at No. 10 Moore Street and No. 6-7 Moore Lane the basements are to be retained and used for residential storage and a café/restaurant respectively. The retail unit at No. 11 Moore Street will also have an accessible basement for use with the retail store.

Site 4 requires 124m^3 of attenuation through the combination of blue roofs and an attenuation tank. The tank is to be constructed from 300mm thick concrete walls and slab and positioned below ground. A lift pit will also be required lift will be constructed from the basement slab on the higher level of the attenuation tank (Figure 16.34).

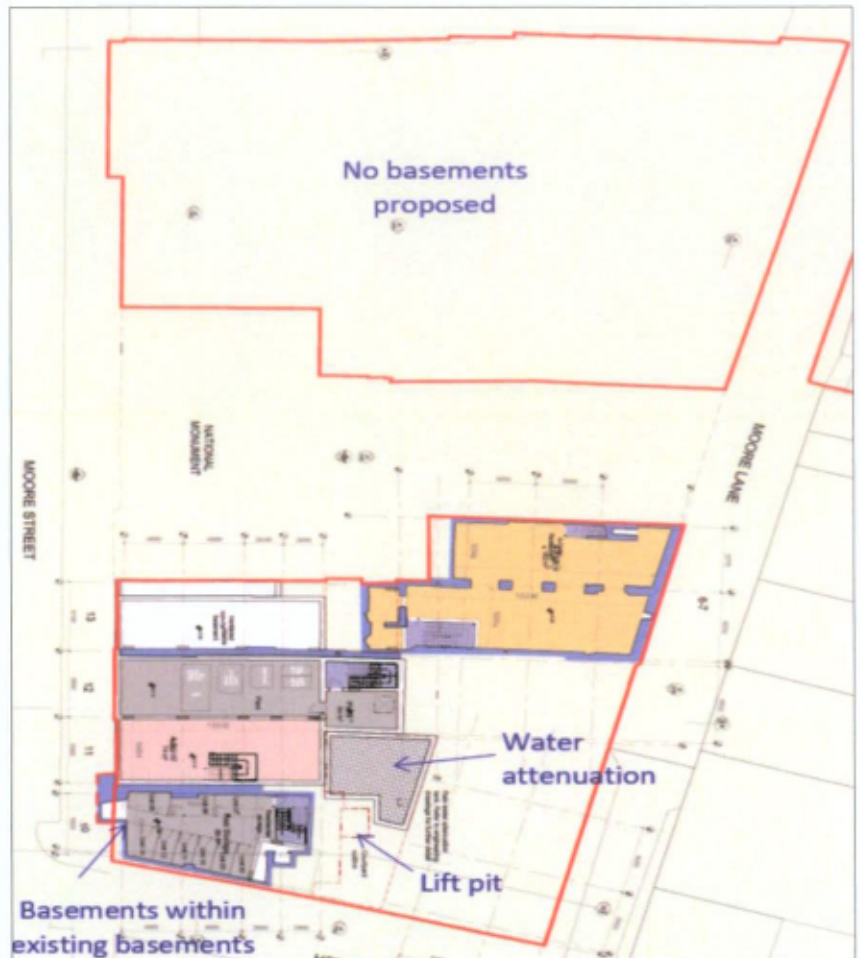


Figure 16.34: Site 4, proposed basement slabs, walls and columns (blue shows existing fabric).

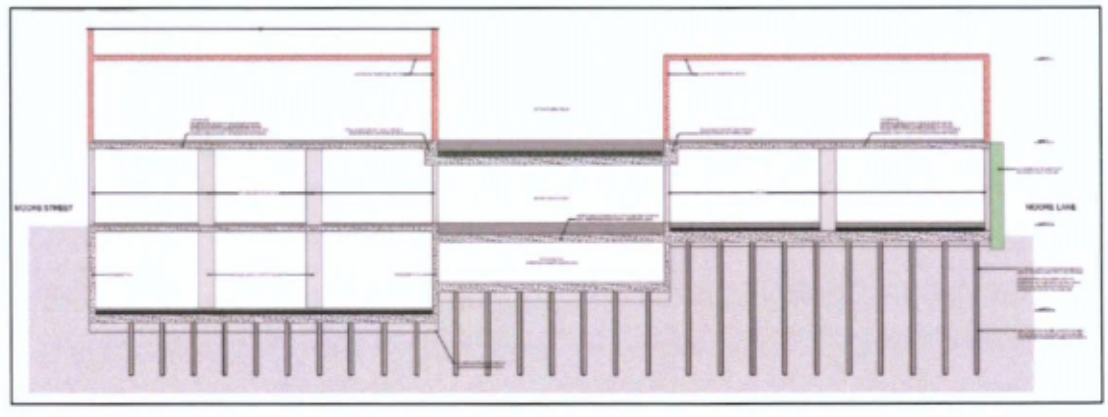
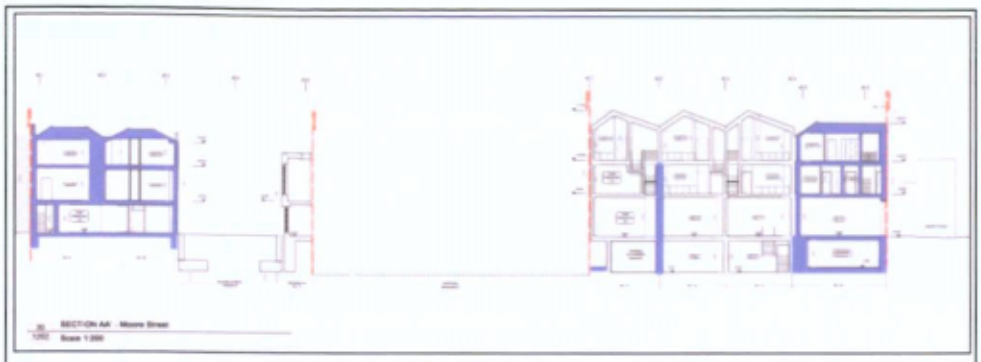


Figure 16.35: Section through Site 4 (Moore Street to Moore Lane) showing mini pile foundation strategy and basement levels.



Section AA' from N of the site to Henry Place (existing fabric is shown in blue) through the W side of the site



DCC PLAN NO. 2861/21
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BB' from N of the site to Henry Place through the E side of the site (existing fabric is shown in blue)

Figure 16.36: Typical cross sections across Site 4.

There will be a direct impact on any subsurface archaeological features that might be encountered during earthmoving works within Site 4. The predicted impact of the construction phase on potential intact archaeological remains will be Negative. The as yet undiscovered archaeological features within the ZAP are of Medium sensitivity value and the magnitude of the impact is medium resulting in an overall **moderate** and **permanent impact** on the archaeological resource which may survive below ground.

The 'Outline Construction & Demolition Management Plan – Site 4', prepared by Waterman Moylan is provided in Appendix 3.3 of the EIAR.

16.6.2.4 Site 5

16.6.2.4.1 National Monument

Site 5 is located to the north of the National Monument of Nos. 14 – 17 Moore Street (located c.20m from No. 17 Moore Street and to 31m to No. 9 Moore Lane). The development will have no impact on the properties.

O'Rahilly Parade, previously named Sackville Place bounds Site 5 to the north. It was renamed after Michael Joseph O'Rahilly. 'The O'Rahilly', as he was known, was shot down close to the corner of Sackville Lane as he tried to take Moore Street. The historic identity and layout of the streetscape is at the heart of the public realm plans for the Dublin Central Masterplan area. It acknowledges that Moore Street, Moore Lane, Henry Place and O'Rahilly Parade are a significant aspect of the historic character of the area, contributing to the legibility of the events of the last movements of the rebels before their retreat to 14–17 Moore Street from the GPO.

The implementation of the Dublin Central Masterplan area preserves the grid of laneways within the block and as such the key views that support the interpretation of the 1916 Easter Rising events i.e., the existing sight lines along Moore Lane and the lack thereof along Henry Place. A detailed account of this is provided in Chapter 15: (Cultural Heritage (Architectural)) which examines the 1916 battle site and its relationship to the historic structures.

The retention of these historic elements will have an overall positive effect on the National Monument and its future use as a commemorative centre. They will enhance the experience of the public realm and will assist in the legibility of the 1916 events and how they unfolded, thus reinforcing the interpretation and experience of the National Monument.

16.6.2.4.2 Impact on Archaeological Potential

Dublin Central Site 5 lies within the designated ZAP for the historic city of Dublin (RMP DU018-020). This is a zone of high archaeological potential relating to the development of the city since the earliest of times. There is the potential that previously unknown archaeological sites or features may survive below ground within this zone.

Based on the information gathered to date from archaeological research, cartographic sources and previous excavations, the archaeological potential of Site 5 is characterised by the following: -

- **Early Medieval and Medieval Potential**
    - The findspots of scattered burials associated with a Viking cemetery site (DU018–020495) is concentrated on the northern side of Parnell Street. The Viking burials have been found at 3.50m below present ground level in subsoil. Topographically the burial site is likely to have taken advantage of a high ridge overlooking the former Liffey estuary and a major routeway that ran along Parnell Street. No such finds have been recorded to the south of Parnell Street. The excavation of two large sites south of Parnell Street and north of O'Rahilly Parade adjacent to the Dublin Central Masterplan area did not identify any human remains.
    - The site lies outside the walled precinct of St. Mary's Abbey, which in medieval times dominated the eastern lands of the northern suburb of the historic core. It is considered unlikely given the distance from the walled precinct that any structural remains associated with the abbey would be identified in the Dublin Central Masterplan area. Should features survive it is likely to be in the form of medieval cultivated soils and / or agricultural features, such as ditches, and boundaries.

Site 5 is located within a former quarry associated with a brickworks. It is likely that any archaeology that may have been located in this area dating to the early Medieval / Medieval period (such as agricultural features or isolated human remains) was removed sometime in the 18th century as part of the brickworks.

- **Post Medieval Potential**

There is a significant archaeological potential for Site 5 to reveal brickfield levels, brickfield quarry infill and 18th century structural remains: -

- The RMP places the 'site of' a Brickworks (DU018-020506) at the junction of Parnell Street and Moore Lane c. 125m to the north. Cartographic sources however indicate that the brickfield was located in the area defined by Moore Lane, Moore Street and Henry Place and extended into Site 5. There is a significant potential that features associated with the 18th century 'site of' a brickworks (DU018-020506) might be encountered during the earthmoving works.

- Unlike the area to the north of O'Rahilly Parade the results of archaeological investigations in Nos. 14 – 17 Moore Street indicate that the area of the former brickfield quarry pit was backfilled in the 18th century to build up the ground for construction. Evidence has shown that part of the former brickfield quarry pit was backfilled in the 18th century with up to 2m of reclamation deposits representing domestic refuse from the city, this infill material was mostly organic but also contained ceramics, glass and metal. It is likely that this is the case other areas within Site 5.
- Basements or complex of house foundations, walls, vaults, drains, cobbled surfaces, and other features dating from the early 18th century and later should be anticipated for the Proposed Development. They are likely to extend across the entire site.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Site 5, Basement and Substructure Design

There is an existing basement beneath No. 22 and 23 Moore Street which extends to No. 13 Moore Lane (Figure 16.37), this basement will be permanently infilled as part of the Proposed Development.

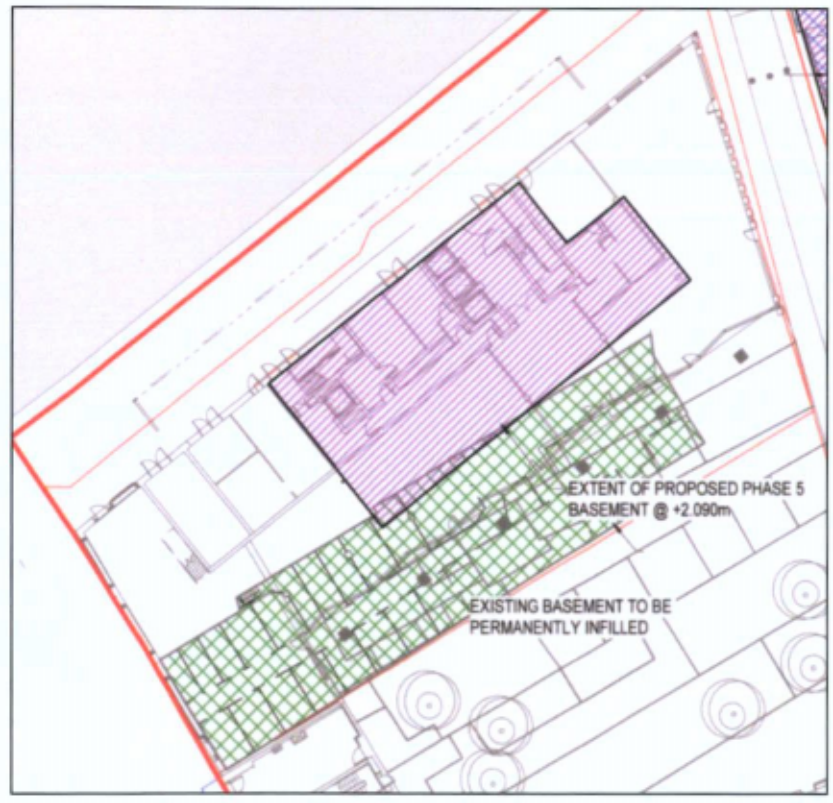


Figure 16.37: Existing basement beneath No. 22 and 23 Moore Street backfilled permanently (green) and proposed basement (pink) in Site 5.

A basement will be required for plant in Site 5, it will be housed in a new single storey basement level (Figure 16.38). The basement will be constructed within a 600mm diameter secant pile wall. The excavation material will generally be made ground (likely to include c.2m of the backfilled brickfield quarry material) down to circa 5m below ground level then Alluvium (Sandy Gravel).

The top of the piled wall will be tied together with a 1050x1000m reinforced concrete capping beam which will allow the transfer of vertical frame and floor loads onto the piles.

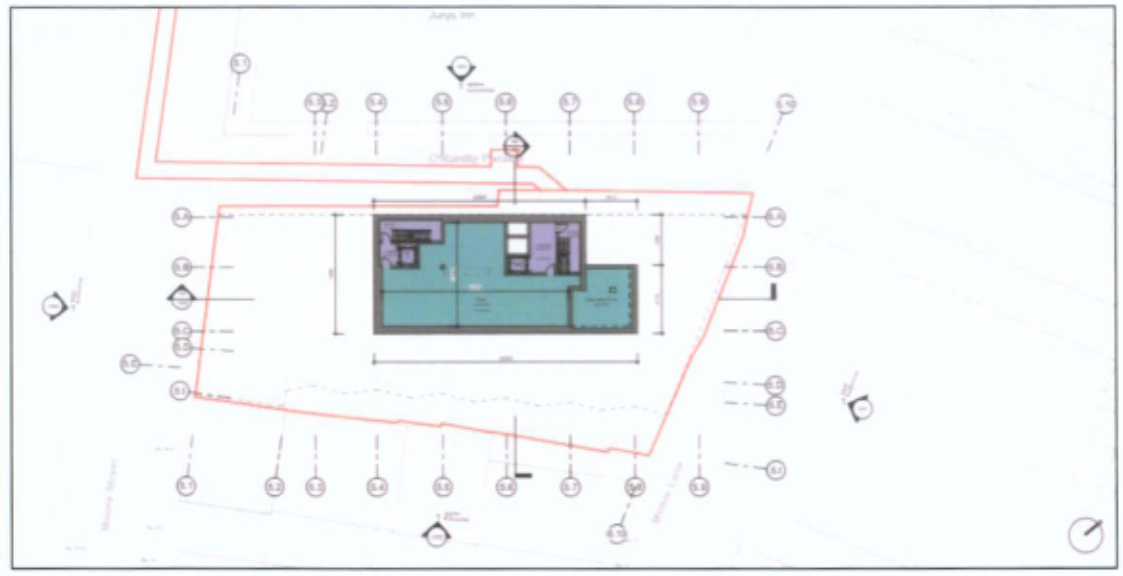


Figure 16.38: Detail of the proposed basement.

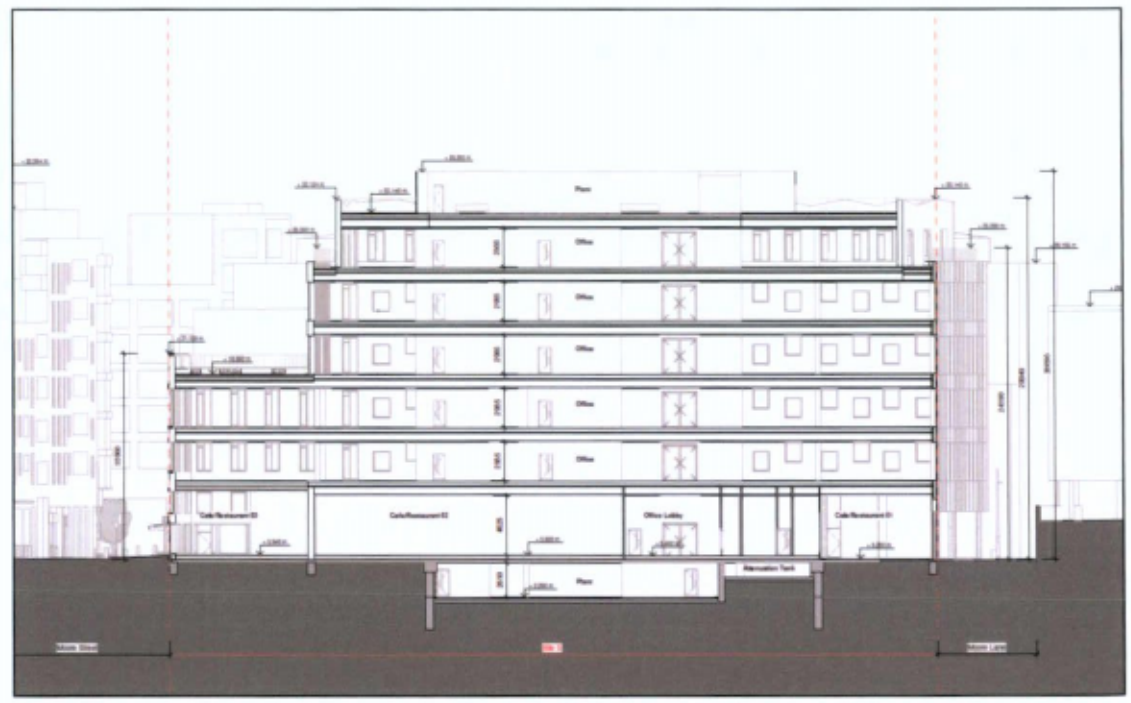
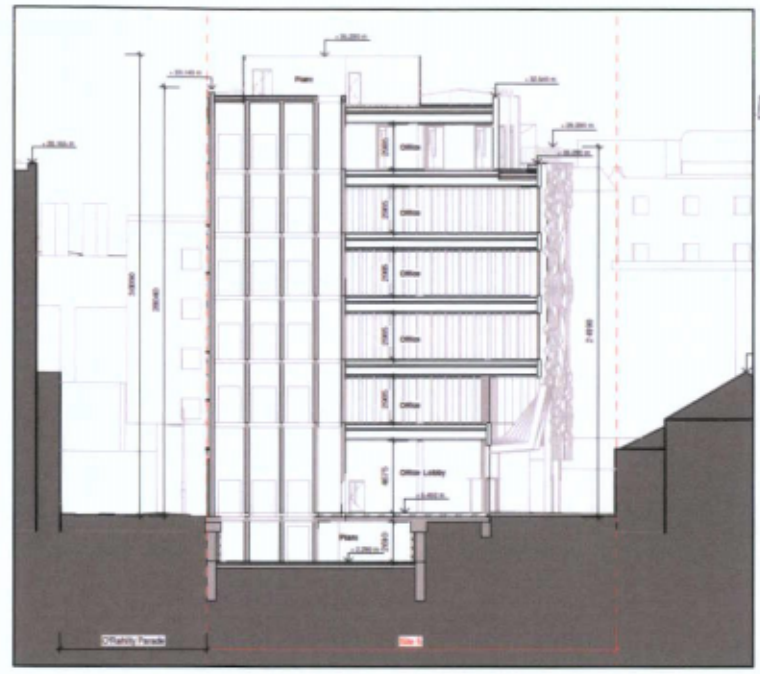


Figure 16.39: Cross section through Site 5 from Moore Street to the west to Moore Lane to the east.



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RECEIVED: 01/06/2021

Figure 16.40: Cross section through Site 5 from O'Rahilly Parade to the north to Site 5 to the south.

Where columns are not located above the secant pile wall of the basement, it is anticipated that the proposed scheme will be supported on piled foundations comprising traditional non-displacement rotary bored piles. Based on the ground conditions identified and the building frame loads, 3 piles are used per column, 1200mm deep pile caps will be used above the piles to support the columns over (Figure 16.41).

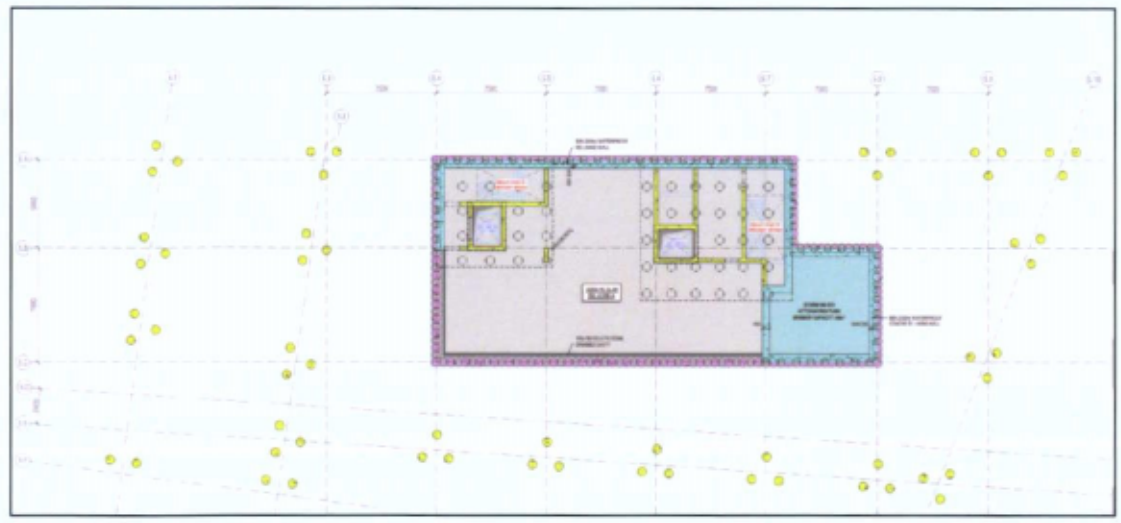

Figure 16.41: Piling layout and basement layout.

There will be a direct impact on any subsurface archaeological features that might be encountered during earthmoving works within Site 5. The predicted impact of the construction phase on potential intact archaeological remains will be Negative. The as yet undiscovered archaeological features within the ZAP are of Medium sensitivity value and the magnitude of the impact is medium resulting in an overall moderate and permanent impact on the archaeological resource which may survive below ground.

The 'Outline Construction & Demolition Management Plan – Site 5', prepared by Waterman Moylan is provided in Appendix 3.4 of the EIAR.

16.6.2.5 Operational Stage

16.6.2.6 Site 3

There is no likely or significant predicted impact during the operational stage of Site 3. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore no potential impacts are envisioned at the operation stage of the development.

The retention of the lanes and properties of historic merit fronting Henry Place will have a significant positive and permanent impact on the setting of the National Monument. The operational stage impacts are most relevant to the upstanding historic buildings and historic fabric (see Chapter 15: Cultural Heritage (Architectural)).

16.6.2.7 Site 4

There is no likely or significant predicted impact during the operational stage of Site 4. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore no potential impacts are envisioned at the operation stage of the development.

The Dublin Central Masterplan proposals include the retention of structures of historic merit that are contemporaneous with the events of the 1916 Easter Rising, the retention of the laneways of the evacuation route from the GPO and the reuse of stone sett pavements and kerbstones. When considered in combination with the anticipated development of Nos. 14 – 17 Moore Street as a commemorative centre the Proposed Development will have a permanent positive impact on the setting of the National Monument. It ensures its protection and appreciation into the future and will bring to the fore the relationship between these structures and laneways and the history and heritage of the Moore Street area. The retention of the lanes and properties of historic merit within the site have a significant positive and permanent impact on the setting of the National Monument.

The operational stage impacts are most relevant to the upstanding historic buildings and historic fabric (see Chapter 15: Cultural Heritage –(Architectural)).

16.6.2.8 Site 5

There is no likely or significant predicted impact during the operational stage of Site 5. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore no potential impacts are envisioned at the operation stage of the development.

The Dublin Central Development proposals include the retention of structures of historic merit that are contemporaneous with the events of the 1916 Easter Rising, the retention of the laneways of the evacuation route from the GPO and the reuse of stone sett pavements and kerbstones. When considered in combination with the anticipated development of Nos. 14 – 17 Moore Street as a commemorative centre the Proposed Development will have a permanent positive impact on the setting of the National Monument. It ensures its protection and appreciation into the future and will bring to the fore the relationship between these structures and laneways and the history and heritage of the Moore Street area. The retention of the lanes and properties of historic merit within the site have a significant positive and permanent impact on the setting of the National Monument.

The operational stage impacts are most relevant to the upstanding historic buildings and historic fabric (see Chapter 15: Cultural Heritage –(Architectural)).

16.6.2.9 Do-Nothing Impact

In the "do-nothing" scenario Sites 3, 4 and 5 would not be redeveloped and therefore there would be no adverse impacts to any as yet undiscovered subsurface archaeological deposits, features or finds. Under the do-nothing scenario, any archaeological features that lie below the existing ground level will remain in- situ. Any information that might enhance our understanding of the eastern development of the city in the early post-medieval and post-medieval period will remain unknown.

16.6.3 Cumulative Dublin Central Masterplan

16.6.3.1 Construction Stage

Potential cumulative impacts may arise during construction and operation, as a consequence of the Proposed Development acting in-combination with other plans and projects. The archaeological sites within the environs of the development are subsurface in nature and do not have an above ground legibility, the below ground surviving remains albeit truncated provide a record of the of the past.

Considering the predicted impacts associated with the implementation of the Dublin Central Masterplan on archaeology, the mitigation measures proposed to identify and record the archaeological resource and the receiving environment, and the protective policies and objectives of the City Development Plans that will direct future development locally, significant cumulative negative effects on archaeology are not predicted.

16.6.3.2 Operational Stage

There is no likely or significant predicted impact during the operational stage of the Dublin Central Masterplan area. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore no potential impacts are envisioned at the operation stage of the development.

The Dublin Central Development proposals include the retention of structures of historic merit that are contemporaneous with the events of the 1916 Easter Rising, the retention of the laneways of the evacuation route from the GPO and the reuse of stone sett pavements and kerbstones. When considered in combination with the development of Nos. 14 – 17 Moore Street as a commemorative centre the Proposed Development will have a permanent positive impact on the setting of the national monument. It ensures its protection and appreciation into the future and will bring to the fore the relationship between these structures and laneways and the history and heritage of the Moore Street area.

The retention of the lanes and properties of historic merit within the site have a significant positive and permanent impact on the setting of the National Monument.

16.6.3.3 Do-Nothing Impact

In the "do-nothing" scenario the Dublin Central Masterplan area would not be redeveloped and therefore there would be no adverse impacts to any as yet undiscovered subsurface archaeological deposits, features or finds. Under the do-nothing scenario, any archaeological features that lie below the existing ground level will remain in- situ. Any information that might enhance our understanding of the eastern development of the city in the early post medieval and post medieval period will remain unknown.

16.7 MITIGATION MEASURES (AMELIORATIVE, REMEDIAL OR REDUCTIVE MEASURES)

16.7.1 Dublin Central Masterplan

16.7.1.1 Construction Stage

16.7.1.1.1 Works in the Vicinity of the National Monument – Nos. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the National Monument (see Chapter 15: Cultural Heritage (Architectural).

The preservation order for Nos. 14 – 17 Moore Street provides the site with the highest level of statutory protection. The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument (Figure 16.23) for the development of Site 4 in the Dublin Central Masterplan area will require Ministerial Consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy.

It is anticipated that the National Monument will be developed as a commemorative centre under Ministerial Consent C495. Consultation with the OPW and their conservation team has and will continue to be carried out to ensure that there is an integrated and collaborative approach for the protection and conservation of the monument and their shared/adjoining boundaries.

The archaeological mitigation in the vicinity of the National Monument will as a minimum include: -

- Archaeological monitoring of site investigation, site preparation and temporary works as required.
- Archaeological monitoring of site clearance (including the clearance of cellars/basements) and of demolition works to identify and record as appropriate, any objects, fixtures or features that can be related to the 1916 Easter Rising.
- Archaeological testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street to establish the depth and nature of the infill material associated with the backfilling of the brickfield quarry.
- Archaeological excavation of archaeological soils or features that are encountered and impacted by the Proposed Development.
- Archaeological monitoring of earthmoving works.

The archaeological works will be carried out under Ministerial Consent. The Minister may attach further conditions in the granting of consent, including conditions requiring archaeological excavation.

Where the Minister has granted a consent under Section 14 of the Act, no other consent or licence under any provision of the National Monuments Act, including an excavation licence, is required for any archaeological work or activity, (e.g., the other works in Site 4 not bounding the National Monument will require an archaeological licence).

16.7.1.1.2 General Mitigation

The following archaeological mitigation measures will be carried out within the Dublin Central Masterplan area under licence to the DHLGH: -

DCC PLAN NO.2861/21
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- **Monitoring**

  A programme of archaeological monitoring will take place at the pre-construction, site preparation and enabling works / early stages of construction where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within the Dublin Central Masterplan area will be resolved in consultation with the relevant authorities during the course of the project.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

  The Applicant is aware of the archaeological potential of the site and its implications for the development and the possibility of a significant design change. The Applicant will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004).

16.7.1.2 Operational Stage

None required.

16.7.2 Proposed Development – Site 3, 4 & 5

16.7.2.1 Construction Stage

16.7.2.2 Site 3

Site 3 is a conglomeration of properties amassed over a period of time. A phased approach to the archaeological investigation and mitigation is suggested: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works / early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place.

  It is anticipated that the following works will be monitored as required: -

  - *Pre-Demolition Investigation Works*

    Including but not limited to the monitoring of: -

    - Site investigation works.
    - Opening up works at basement or ground levels.
    - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
    - Recording of basement vaults beneath Henry Street prior to infilling (where it is safe to do so).

  - *Demolition & Enabling Works*

    Including but not limited to the monitoring of: -

    - Temporary enabling works where they will require opening up works at ground level.
    - Strip footings associated with retention of structures and adjacent basements.
    - Excavation of pile guide.
    - Post-demolition grubbing out of foundations and substructures.
    - All earthmoving works.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required.

  The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 3 will be resolved in consultation with the relevant authorities during the course of the project.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

16.7.2.3 Site 4

16.7.2.3.1 Works in the vicinity of the National Monument – Nos. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the national monument (see Chapter 15: Cultural Heritage (Architectural)).

The preservation order for Nos. 14 – 17 Moore Street provides the site with the highest level of statutory protection. The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument (Figure 16.23) for the development of Site 4 in the Dublin Central Masterplan area will require Ministerial Consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy.

The national monument will be developed as a commemorative centre (a cultural use) under ministerial consent C495. As part of the design process the Dublin Central Team has consulted with the DHLGH, the OPW and their conservation team. Consultation will be an ongoing process to ensure that there is an integrated and collaborative approach for the protection and conservation of the monument and the shared/adjoining boundaries with Site 4. The detailed methodologies for these works will be developed through the Ministerial Consent process. The archaeological mitigation in the vicinity of the National Monument will as a minimum include: -

- Archaeological monitoring of site investigation, site preparation and temporary works as required.

- Archaeological monitoring of site clearance (including the clearance of cellars / basements) and of demolition works to identify and record as appropriate, any objects, fixtures or features that can be related to the 1916 Easter Rising.
- Archaeological testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street.
- Archaeological excavation of archaeological soils or features that are encountered and impacted by the Proposed Development.
- Archaeological monitoring of earthmoving works.

The archaeological works will be carried out under the Ministerial Consent. The consent application will be supported by detailed method statements compiled by the integrated Dublin Central conservation team (comprising a conservation architects, structural conservation engineers, architects and archaeologists). This will include an archaeological strategy for the works for all phases the development i.e., site preparation, demolition and construction. The Minister may attach further conditions in the granting of consent, including conditions requiring archaeological excavation.

Where the Minister has granted a consent under Section 14 of the Act, no other consent or licence under any provision of the National Monuments Act, including an excavation licence, is required for any archaeological work or activity, (the other works in Site 4 not bounding the National Monument will require an archaeological licence).

16.7.2.3.2 General Mitigation

The following archaeological mitigation measures will be carried out within Site 4: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works / early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

  It is anticipated that the following works will be monitored as required: -

  - *Pre-Demolition Investigation Works*

    Including but not limited to the monitoring of: -

    - Site investigation works.
    - Opening up works at basement or ground levels.
    - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
    - Recording of basement prior to infilling.

  - *Demolition & Enabling Works*

    Including but not limited to the monitoring of: -

    - Temporary enabling works where they will require opening up works at ground level.
    - Strip footings associated with retention of structures and adjacent basements.
    - Post-demolition grubbing out of foundations and substructures.
    - All earthmoving works.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required.

  The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 4 will be resolved in consultation with the relevant authorities.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

16.7.2.4 Site 5

General Mitigation

The following archaeological mitigation measures will be carried out within Site 5: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works/ early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place.

  It is anticipated that the following works will be monitored as required: -

- *Pre-Demolition Investigation Works*

  Including but not limited to the monitoring of: -

  - Site investigation works.
  - Opening up works at basement or ground levels.
  - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
  - Recording of basement prior to infilling.

- *Demolition & Enabling Works*

  Including but not limited to the monitoring of: -

  - Temporary enabling works where they will require opening up works at ground level.
  - Strip footings associated with retention of structures and adjacent basements.
  - Post-demolition grubbing out of foundations and substructures.
  - All earthmoving works.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 4 will be resolved in consultation with the relevant authorities.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence, or in the case of the National Monument, Ministerial Consent to excavate.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department HLGH, who may seek additional information or consider alternative strategies.

National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

16.7.2.5 Operational Stage

No further archaeological testing, excavation or monitoring works will be necessary during the operation phase of the development (i.e. Site 3, Site 4 & Site 5).

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

16.8 RESIDUAL IMPACT

16.8.1 Dublin Central Masterplan

16.8.1.1 Construction Stage

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within the Dublin Central Masterplan area lands will be resolved in consultation with the relevant authorities during the course of the project. There will therefore be no residual impacts on the archaeological resource. A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

16.8.1.2 Operational Stage

There will be no residual impact on the archaeological heritage during the operational stage of the development.

16.8.1.3 Worst Case Impact

There is no worst case residual impact on the site

16.8.2 Proposed Development – Site 3, 4 & 5

16.8.2.1 Construction Stage

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 3, Site 4 or Site 5 will be resolved in consultation with the relevant authorities during the course of the project. There will therefore be negligible residual impacts on the archaeological resource. A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

16.8.2.2 Operational Stage

There will be no residual impact on the archaeological heritage during the operational stage of the development.

16.8.2.3 Worst Case Impact

There is no worst case residual impact on the site

16.9 MONITORING

16.9.1 Dublin Central Masterplan

16.9.1.1 Construction Stage

See section 16.5.3.1 above, monitoring is part of the mitigation strategy outlined above.

16.9.1.2 Operational Stage

Not applicable.

16.9.2 Proposed Development – Site 3, 4 & 5

16.9.2.1 Construction Stage

See section 16.6.2.1 above, monitoring is part of a mitigation strategy outlined above.

16.9.2.2 Operational Stage

Not applicable.

16.10 REINSTATEMENT

Not applicable.

16.11 DIFFICULTIES ENCOUNTERED

No difficulties were encountered during the compilation of this chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

17 RISK MANAGEMENT (MAJOR ACCIDENTS AND DISASTERS)

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

17.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) describes the Dublin Central Masterplan and the Proposed Development in respect of its potential vulnerability to major accidents / disasters, and its potential to give rise to the same. The Proposed Development which is the subject of these 3no. concurrent planning applications consists of Site 3, Site 4 and Site 5. Dublin Central is underpinned by a Masterplan (refer to Figure 17.1 below indicating the Dublin Central Masterplan area) which will be assessed also.

The assessment is carried out in compliance with the EIA Directive on the assessment of the effects of certain public and private projects on the environment that entered into force on 16 May 2017 which states the need to assess: -

> *"the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."*

The underlying objective of this assessment is to ensure that appropriate precautionary actions are taken for those projects which *"because of their vulnerability to major accidents and/or natural disasters, are likely to have significant adverse effects on the environment."*

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

17.2 Assessment Methodology

The scope and methodology of this assessment is centred on the understanding that the Proposed Development will be designed, built and operated in line with best international current practice. As such, major accidents resulting from the Proposed Development would be very unlikely.

The scope and methodology presented in the following sections are based on the provisions of the EIA Directive, the draft EPA Guidelines, EU Commission guidance, as well as professional judgement.

A risk analysis-based methodology that covers the identification, likelihood and consequence of major accidents and / or disasters has been used for this assessment (Refer to Section 16.5 for further detail on this approach).

The assessment of the risk of major accidents and / or disasters considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e. population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape.

In the context of this environmental topic, the consideration of impacts for the Dublin Central Masterplan are considered to be the same as for the applications at Sites 3, 4 and 5 of the Dublin Central Masterplan.

17.2.1 Guidance and Legislation

17.2.1.1 Legislative Requirements

The following paragraphs set out the requirements of the EIA Directive in relation to major accidents and / or disasters.

Recital 15 of the EIA Directive states that: -

> *"In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council and Council Directive 2009/71/Euratom, or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met."*

It is clear from the EIA Directive that a major accident and / or disaster assessment is most readily applied to 'Control of Major Accident Hazards involving Dangerous Substances' (COMAH) sites or major industrial / energy installations. Notwithstanding, the assessment of major accidents and disasters for the Proposed Development has been carried out for completeness given the strategic nature of the Proposed Development.

Article 3 of the EIA Directive requires that the EIAR shall identify, describe and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape deriving from (amongst other things) the *"vulnerability of the project to risks of major accidents and / or disasters that are relevant to the project concerned".*

The information relevant to major accidents and/or disasters to be included in the EIAR is set out in Section 8 of Annex IV of the EIA Directive as follows: -

> *"(8) A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies."*

17.2.1.2 Guidance Documents

A number of guidance documents and published plans have been reviewed and considered in order to inform this assessment, as described in the following sections.

- European Commission – Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Draft Environmental Protection Agency Guidelines (2017).
- Guidance on Assessing and Costing Environmental Liabilities (2014).
- A Framework for Major Emergency Management Guidance Document 1-A Guide to Risk Assessment in Major Emergency Management (2010).
- A National Risk Assessment for Ireland 2017 (2017).
- A Guide to Risk Assessment in Major Emergency Management (2010).

17.3 Receiving Environment

The Proposed Development forms part of a Dublin Central Masterplan area c. 2.2 Ha in area and is generally bounded by Parnell Street, O'Rahilly Parade, O'Connell Street Upper, Henry Street, Moore Street, Dublin 1. Both Moore Lane and Henry Place are located within the Dublin Central Masterplan area.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

O'Connell Street is regarded as one of the principal thoroughfares of the Capital and has historic associations with the Easter Rising. Moore Street is well known for its street trader markets and Henry Street is one of the busiest shopping streets in the state. The site is located at the heart of the retail and historic core of Dublin City centre.

O'Connell Street has been identified in several policy documents as a major street of national importance, which has the potential to become the premier street in the state. The Street is regarded as one of the principal thoroughfares of the Capital and links to Henry Street which is one of the busiest shopping streets in the state. The land uses on O'Connell Street largely consist of retail, office, financial institutions and other non-retail uses. The upper floors appear to be or were predominantly used as office space or for storage.

Moore Street (to the west of O'Connell Street) has historic associations with the 1916 Easter Rising and Moore Street is well known for its street trader markets. Moore Lane primarily functions as a service lane serving the rear buildings fronting on to main thoroughfares as well as accommodating some warehousing and small scale offices.

The site is proximate to several well-known cultural, historical and transport landmarks. It is located c. 250m north of O'Connell Bridge and the River Liffey and next to the Spire of Dublin. The Gate Theatre and the Ambassador music venue are also located at Parnell Square, directly across the road from the northern corner of the Dublin Central site. The Hugh Lane Gallery (Charlemont House), the Irish Writer's Museum and the Abbey Presbyterian Church, are located to the north of the site, on Parnell Square North. The Savoy Cinema and Cineworld are both within walking distance of the site and are located on O'Connell Street and Parnell Street, respectively. The James Joyce Centre, the Abbey Theatre and the Liberty Hall Theatre are also located within walking distance of the site. A new City Library and Cultural Quarter has been permitted at Parnell Square North, at the site of the former Scoil Mhuire and adjoining buildings.

In terms of significant open spaces, the site is situated c. 200m from the Garden of Remembrance on Parnell Square, c. 2.4km from Phoenix Park, which is the largest enclosed urban park in Europe, just over 1km from St. Stephen's Green to the south and c. 1.3km from Smithfield Square.

The Dublin Central Masterplan area is highly accessible by public transport as it is located proximate to Bus Aras and Connolly Station. It is served by the red and cross city LUAS lines and bus services on O'Connell Street. The red and cross city LUAS lines serve stops at Heuston Station, O'Connell Street and Parnell Square, which act as termini for numerous Dublin Bus services. A Metrolink Station, as part of the Metrolink Project is to be developed by Transport Infrastructure Ireland, is to be located beneath Site 2AB and Site 2C of the Dublin Central Masterplan.

17.4 Characteristics of the Proposed Development

17.4.1 Dublin Central Masterplan

The Dublin Central Masterplan is divided into six sites. The overall development site is bounded by Henry Street to the south, O'Connell Street Upper to the east, Parnell Street and O'Rahilly Parade to the north-east and north-west respectively, and Moore Street to the west. The development is a mixed use development, and includes office, hotel, residential, café / restaurant and retail spaces. There is also provision made in Site 2AB and Site 2C for a proposed Metrolink station, to be implemented separately by Transport Infrastructure Ireland (TII). A breakdown of the schedule of accommodation is shown in the Table below: -

	Site 1	Site 2AB	Site 2C	Site 3	Site 4	Site 5	Total
Use	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**	**sq. m**
Office	3,610	17,484	17,029	-	295	5,799	**44,217**
Hotel	8,094	-	-	7,175	-	-	**15,270**
Residential	-	-	-	6,452	1,454	-	**7,906**
Retail	-	1,876	1,255	1,954	617	-	**5,672**
Café / Restaurant	-	625	150	138	864	679	**2,456**
Cultural / Gallery / Cafe	-	-	-	123	-	-	**123**
Extension to National Monument for ancillary use to National Monument – a cultural facility	-	-	-	-	60	-	**60**
Metro Enabling Works	-	555	831	-	-	-	**1,386**
Total	**11,704**	**20,541**	**19,235**	**15,842**	**3,290**	**6,478**	**77,090**

Table 17.1: Schedule of Accommodation by Site.

The blocks which form the six sites of the Dublin Central Masterplan are highly interconnected, and as such a holistic approach has been taken in preparing this EIAR.

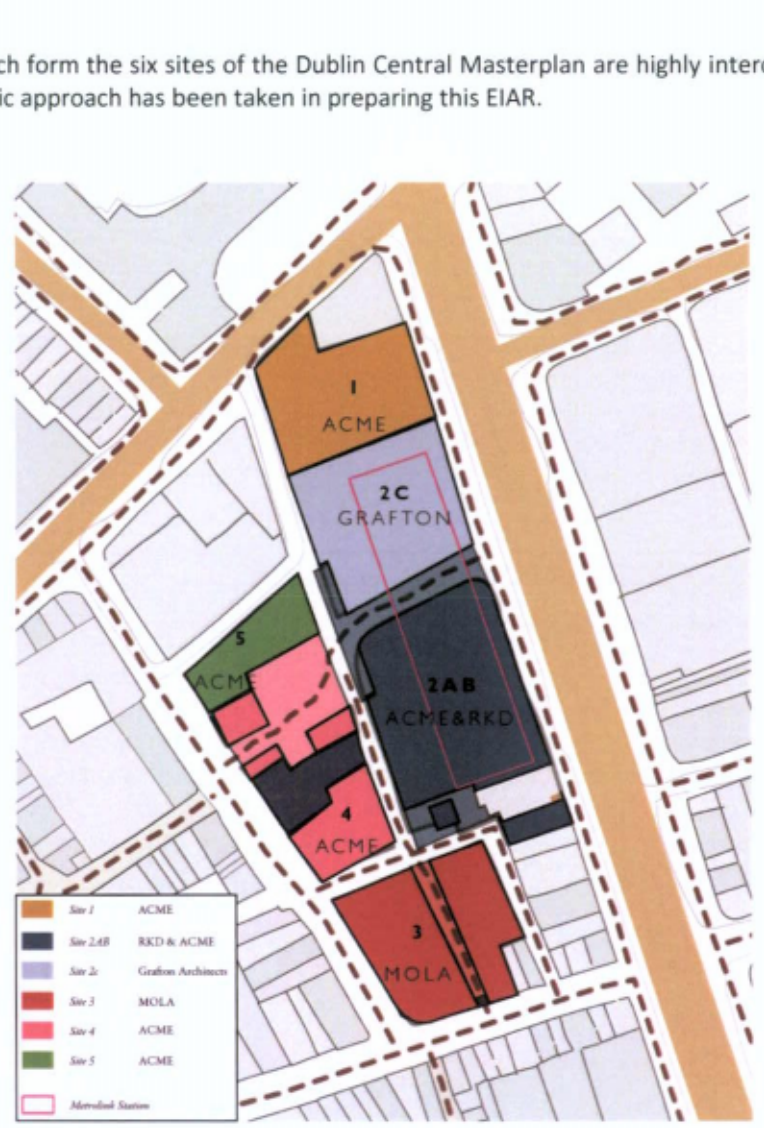


Figure 17.1: Dublin Central Masterplan with each Site identified.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

17.4.2 Proposed Development – Site 3, 4 & 5

17.4.2.1 Site 3

The Proposed Development comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses (c. 15,842 sq. m gross floor area) in 2no. blocks ranging in height from 1 – 9 storeys over 2no. new independent single storey basements. Provision of a new street/laneway linking Henry Street with Henry Place/Moore Lane.

17.4.2.2 Site 4

The Proposed Development comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses (c. 3,290 sq. m gross floor area) in 2no. parts located north and south of the Nos. 14 – 17 Moore Street (a National Monument/Protected Structures) ranging in height from 1 – 3 storeys including retained independent single storey basements. Provision of a part of the new public plaza and archway onto new public square.

17.4.2.3 Site 5

The Proposed Development comprises a mixed-use scheme accommodating office and café / restaurant uses (c. 6,478 sq. m gross floor area) in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

17.5 Potential Impact of the Proposed Development

17.5.1 Dublin Central Masterplan

As discussed above, the scope and methodology of this assessment is centred on the understanding that the Dublin Central Masterplan would be designed, built and operated in line with best international current practice and, as such, the vulnerability of the Proposed Development to risks of major accidents and / or disasters is considered **low**.

Current EIA practice already includes an assessment of some potential accidents and disaster scenarios such as pollution incidents to ground and watercourses as well as assessment of flooding events. These are described in detail in the relevant EIAR assessment Chapters (refer to Chapter 7: Land, Soils & Geology and Chapter 8: Water for further detail).

17.5.1.1 Site Specific Risk Assessment

A site-specific risk assessment identifies and quantifies risks focusing on: unplanned, but possible and plausible events occurring during the construction and operation of the Proposed Development. The approach to identifying and quantifying risks associated with the Proposed Development by means of a site-specific risk assessment is derived from the Environmental Protection Agency (EPA) guidance.

The criteria for categorising impact is derived from the Department of Environment, Heritage & Local Government (DoEHLG) guidance (Refer to below tables).

The following steps were undertaken as part of the site-specific risk assessment: -

- Risk identification.
- Risk classification, likelihood and consequence.
- Risk evaluation.

Risk Identification

The identification of plausible risks has been carried out in consultation with relevant specialists. A Risk Register which was prepared during the design of the Proposed Development was also reviewed in order to inform the identification of risks for this assessment. The identification of risks has focused on non-standard but plausible incidents that could occur at the Proposed Development during construction and operation.

In accordance with the European Commission Guidance risks are identified in respect of the developments: -

1) Potential vulnerability to disaster risks.

2) Potential to cause accidents and / or disasters.

Risk Classification

Having identified the potential risks, the likelihood of occurrence of each risk has been assessed. An analysis of safety procedures and proposed environmental controls was considered when estimating likelihood of identified potential risks occurring. Table 17.1 defines the likelihood ratings that have been applied.

The approach adopted has assumed a 'risk likelihood' where one or more aspects of the likelihood description are met, i.e. any risk to the Proposed Development less than extremely unlikely to occur has been excluded from the assessment. The likelihood rating assigned to each risk has assumed that all proposed mitigation measures and / or safety procedures are in place and have succeeded in reducing or preventing the major accident and / or disaster occurring.

Rating	Classification	Effect Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years.
2	Very Unlikely	Is not expected to occur; and / or no recorded incidents or anecdotal evidence; and / or very few incidents in associated organisations, facilities or communicates; and / or little opportunity, reason or means to occur. May occur once every 100-500 years.
3	Unlikely	May occur at some time; and / or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur; May occur once per 10-100 years.
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years.
5	Very Likely	Very likely to occur; high level of recorded incidents and / or strong anecdotal evidence. Will probably occur more than once a year.

Table 17.2: Risk Classification Table – Likelihood.

Classification of Consequence

The consequence rating assigned to each risk has assumed that all proposed mitigation measures and / or safety procedures have failed to prevent the major accident and / or disaster occurring. The consequence of the impact if the event occurs has been assigned as described in Table 17.2.

The consequence of a risk to the Proposed Development has been determined where one or more aspects of the consequence description are met, i.e. risks that have no consequence have been excluded from the assessment.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Ranking	Consequence	Impact	Description
1	Minor	Life, Health, Welfare Environment Infrastructure Social	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localised effects <€0.5M. Minor localised disruption to community services or infrastructure (<6 hours).
2	Limited	Life, Health, Welfare Environment Infrastructure Social	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Personal support satisfied through local arrangements. Simple contamination, localised effects of short duration €0.5-3M Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare Environment Infrastructure Social	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support. Simple contamination, widespread effects or extended duration €3-10M. Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare Environment Infrastructure Social	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated. Heavy contamination, localised effects or extended duration €10-25M. Community functioning poorly, minimal services available.
5	Catastrophic	Life, Health, Welfare Environment Infrastructure Social	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated. Very heavy contamination, widespread effects of extended duration >€25M. Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

Table 17.3: Risk Classification Table – Likelihood.

Risk Evaluation

In accordance with the DoEHLG Guidelines (2010), the evaluated major accidents and natural disasters (MANDs) will be subject to a risk matrix to determine the level of significance of each risk for each scenario. These have been grouped according to 3 categories: -

- **High Risk**

  Scenarios that have an evaluation score of 12 – 25, as indicated by the Red Zones in Table 17.3.

- **Medium Risk**

  Scenarios that have an evaluation score of 8 – 11 as indicated by the Amber Zone in Table 17.3.

- **Low Risk**

  Scenarios that have an evaluation score 1 – 7, of as indicated by the Green Zones in Table 17.3.

Likelihood						
	5 – V. Likely					
	4 – Likely					
	3 – Unlikely					
	2 – V. Unlikely					
	1 – Ext. Unlikely					
		1 – Minor	2 – Limited	3 – Serious	4 – V. Serious	5 – Catastrophic
		Consequence of Impact				

Table 17.4: Risk Matrix – Levels of Significance.

Significant effects resulting from MANDs are adverse effects that are described as 'Significant', 'Very Significant' or 'Profound' under the Draft EPA Guidelines (2017) and Volume 2, Section 2: The EIA Process of this report. Consequently, MANDs that fall within Amber or Red Zones ('Medium' or 'High' Risk Scenarios) are brought forward for further consideration and assessment for further mitigation.

17.5.1.2 Construction Stage

Risk ID	Potential Risk	Possible Cause	Requirement for further assessment?
Potential Vulnerability to Accidents and / or Disasters			
A	Flooding of site, from the River Liffey.	Proximity to River Liffey. Extreme weather – periods of heavy rainfall, taking into account climate change, strong winds and tidal events	No. The Dublin Central Masterplan area is not at risk of flooding. The Proposed Development will have no impact on floodplain storage and conveyance and will also not increase flood risk off site during construction. Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding. Refer to findings of the Flood Risk Assessment, prepared by Waterman Moylan Consulting Engineers.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Risk ID	Potential Risk	Possible Cause	Requirement for further assessment?
Potential to cause major accidents and / or disasters			
B	Fire / Explosion	• Damage to unmapped services / utilities during earth works. • Vehicle and vehicle collision.	No. The construction phase will be carried out in accordance with all relevant health and safety guidance and legislation, as well as the provisions of the Construction and Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.
C	Unplanned outages / disruption to services	Damage to unmapped services / utilities during earth works.	No. Disruption to services not considered to constitute a 'major accident or disaster' for the purposes of this assessment.
D	Road traffic accidents resulting from construction phase traffic or temporary construction traffic management measures.	• Driver error. • Object on road. • Failure of vehicle control systems. • Public confusion.	No. The construction phase be carried out in accordance with all relevant health and safety guidance and legislation, as well as the provisions of the Construction & Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.
E	Contamination of the groundwater / surface water.	Construction phase spills or leakages.	No. The construction phase of the Proposed Development will be carried out in accordance with construction best-practise and provisions of the Construction & Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.
F	Falling debris from construction vehicles / cranes or cranes striking rail overhead cables or poles	• Inadequate securing. • Overloading of vehicles.	No. The construction phase will be carried out in accordance with construction best-practise and provisions of the Construction & Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.
Risk ID	**Potential Risk**	**Possible Cause**	**Requirement for further assessment?**
G	Release of asbestos fibres to atmosphere or surface water	• Inadequate handling and removal of Asbestos Containing Materials (ACMs). • Removal of un-surveyed ACM.	No. A number of buildings within the Dublin Central Masterplan area which will be demolished contain asbestos. The construction phase will be carried out in accordance with construction best-practise and provisions of the Construction & Demolition Management Plan, prepared by Waterman Moylan Consulting Engineers.

Table 17.5: Risk Register – Construction Stage.

None of the potential construction phase risks considered have been identified as requiring further assessment.

17.5.1.3 Operational Stage

Risk ID	Potential Risk	Possible cause	Requirement for further assessment?
Potential Vulnerability to Disaster Risks			
H	Flooding of site	Extreme weather – periods of heavy rainfall, taking into account climate change, strong winds and tidal events.	No. The site is not at risk of flooding. The Dublin Central Masterplan have no impact on floodplain storage and conveyance. The likelihood of flooding is further minimised with adequate sizing of the on-site surface network and SuDS measures. Refer to findings of the Flood Risk Assessment prepared by Waterman Moylan Consulting Engineers.
I	Incident at nearby SEVESO site resulting in off-site environmental impact	• Fire / Explosion. • Equipment / Infrastructure failure.	No. A "consultation distance" is very broadly defined under Regulation 2 of the COMAH Regulations as "a distance or area relating to an establishment, within which there are potentially significant consequences for human health or the environment from a major accident at the establishment. The consultation distance for some types of COMAH facility ranges from 300m for establishments where the risk is from flammable non-pressurised materials, to 1 km for establishments where chemical processing involving flammable or toxic substances takes place, to 2km for establishments with bulk storage of pressurised or toxic substances, triggering an obligation on the Planning Authority to notify the Health & Safety Authority (HSA). The consultation distance is included in *italics* after each listed SEVESO site below. **Upper Tier Sites in proximity: -** • Indaver Ireland Ltd., Tolka Quay Road, Dublin Port, Dublin 1 *(700m from perimeter)* – c. 2.5 km from the Dublin Central Masterplan area. • Dublin Waste to Energy Ltd., Pigeon House Road, Ringsend, Dublin 4 *(300m from bund wall)* – c. 3 km from the Dublin Central Masterplan area. • National Oil Reserves Agency Ltd., Shellybanks Road, Ringsend, Dublin 4 *(300m from perimeter)* – c. 4 km from the Dublin Central Masterplan area. • Tedcastles Oil Products Yard 2, Tolka Quay Road, Dublin Port, Dublin 1 *(400m from perimeter)* – c. 3.5 km from the Dublin Central Masterplan area. • Valero Energy (Ireland) Ltd., Dublin Joint Fuels Terminal, Alexandra Road, Dublin Port, Dublin 1 *(400m from perimeter)* – c. 4 km from the Dublin Central Masterplan area. • Fareplay Energy Ireland, Tankfarm 1, Alexandra Road and Tankfarm 2, Tolka Quay Road, Dublin Port, Dublin 1 *(400m from perimeter)* – c. 3.5 km from the Dublin Central Masterplan area.

Risk ID	Potential Risk	Possible cause	Requirement for further assessment?
			• Calor Teoranta, Tolka Quay, Dublin 1 *(600 m from perimeter)* – c. 4 km from the Dublin Central Masterplan area. **Lower Tier Site in proximity: -** • Circle K Terminal 1, Alexandra Road, Dublin Port, Dublin 1 *(400m from perimeter)* – c. 4 km from the Dublin Central Masterplan area. • Circle K Yard 3, Alexandra Road, Dublin Port, Dublin 1 *(300m from perimeter)* – c. 4 km from the Dublin Central Masterplan area. • Electricity Supply Board, North Wall Generating Station, Alexandra Road, Dublin *(300m from bund wall)* – c. 4 km from the Dublin Central Masterplan area. • Electricity Supply Board, Poolbeg Generating Station, Ringsend, Dublin 4 *(300 m from bund wall)* – c. 4.8km from the Dublin Central Masterplan area.Iarnrod Eireann, Alexandra Rd, North Wall, Dublin 1 *(300m from bund wall)* – c. 3 km from the Dublin Central Masterplan area. • Iarnrod Eireann Maintenance Works, Inchicore, Dublin 8 *(300m from bund wall)* – c. 4.5 km from the Dublin Central Masterplan area. • Tedcastles Oil Products Yard 1, Promenade Road, Dublin 1 *(400m from perimeter)* – c. 3.5 km from the Dublin Central Masterplan area. • Synergen Power Ltd t/a ESB Dublin Bay Power, Pigeon House Road, Ringsend, Dublin 4 *(300m from bund wall)* – c. 3 km from the Dublin Central Masterplan area. As can be seen from the above list, the nearest COMAH site is 2.5 km from the Dublin Central Masterplan area.
J	Incident at nearby LUAS	• Fire Explosion. • Act of terrorism.	Yes.

Risk ID	Potential Risk	Possible cause	Requirement for further assessment?
Potential to Cause Accidents and / or Disasters			
K	Fire / Explosion	• Equipment or infrastructure failure. • Act of terrorism. • Electrical problems.	No. The Proposed Development will be designed, built and operated in line with best international current practice, and will be compliant with all relevant Health and Safety and Fire regulation and guidance.
L	Collision of Aircraft	• Failure of air traffic control systems • Act of terrorism	No. The Proposed Development does not include buildings in excess of 9 storeys. There are no active airfields or airports within 15km of the site.

M	Public safety on O'Connell Street / general area.	• Crime • Public negligence	No. Individual accidents / incidents are not considered to constitute a 'major accident / disaster' for the purposes of this assessment
N	Vehicle collisions on site.	• Public negligence. • Failure of vehicular operations.	No. The existing street network will be retained and 2no. new streets will be introduced as part of the Dublin Central Masterplan. Individual accidents / incidents are not considered to constitute a 'major accident / disaster' for the purposes of this assessment.
O	Incident on future MetroLink.	• Act of terrorism • Explosion/fire	Yes.

Table 17.6: Risk Register – Operational Stage.

The potential operation phase risks identified for further assessment include: **J** 'Incident at nearby LUAS' and **O** 'Incident on future MetroLink'.

17.5.1.4 Risk Assessment

Risk ID	Potential Risk	Possible cause	Environmental Effect	Likelihood Rating	Consequence Rating	Risk Score (Consequence x Likelihood)
J	Incident at nearby LUAS	• Fire / explosion • Act of terrorism	• Illness, injury or death • Air quality effects	2	4	8
Basis of Likelihood Whilst the *National Risk Assessment 2019* has identified the risk to Ireland from both domestic and international terrorism, such an incident is considered 'very unlikely' in that there are no similar 'recorded incidents or anecdotal evidence' of an attack of this magnitude in Ireland. The city centre location makes the LUAS stops on O'Connell Street a potential target notwithstanding the highly unlikely potential for occurrence. **Basis of Consequence** Such an attack in Ireland could have significant impact in terms of public safety and security in the short term. Likewise, a breakdown in international peace and security arising from inter-state wars or other armed conflicts could have significant repercussions for Ireland and the EU, including potential impacts on energy supplies, transport routes or the environment. Thus, a 'very serious' consequence is identified in that such an even would result in numerous injuries and possibly fatalities, and there would be 'localised effects for an extended duration.'						
O	Incident on future MetroLink	• Fire / explosion • Act of terrorism	• Illness, injury or death Air quality effects	2	4	8
Basis of Likelihood Whilst the *National Risk Assessment 2019* has identified the risk to Ireland from both domestic and international terrorism, such an incident is considered 'very unlikely' in that there are no similar 'recorded incidents or anecdotal evidence' of an attack of this magnitude in Ireland. The city centre location makes the future MetroLink stops on O'Connell Street a potential target notwithstanding the highly unlikely potential for occurrence.						

Basis of Consequence
Such an attack in Ireland could have significant impact in terms of public safety and security in the short term. Likewise, a breakdown in international peace and security arising from inter-state wars or other armed conflicts could have significant repercussions for Ireland and the EU, including potential impacts on energy supplies, transport routes or the environment. Thus, a 'very serious' consequence is identified in that such an even would result in numerous injuries and possibly fatalities, and there would be 'localised effects for an extended duration.'

Table 17.7: Risk Assessment – Operational Stage.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

This risk assessment in Table 17.6 categorises each of the potential risks by their 'risk score'. A corresponding risk matrix is provided in Table 17.7 which is colour coded in order to provide an indication of the critical nature of each risk. As outlined in Section 17.5.1.1, the red zone represents 'high risk scenarios', the amber zone represents 'medium risk scenarios' and the green zone represents 'low risk scenarios'.

Likelihood						
	5 – V. Likely					
	4 – Likely					
	3 – Unlikely					
	2 – V. Unlikely					
	1 – Ext. Unlikely					
		1 – Minor	2 – Limited	3 – Serious	4 – V. Serious	5 – Catastrophic
		Consequence of Impact				

Table 17.8: Risk Matrix – Levels of Significance.

17.5.1.5 Do-Nothing Impact

In the event that the Dublin Central Masterplan does not proceed, the site would remain in its current underutilised, brownfield state. In absence of an increased number of people residing, working or visiting the site, there would be **no increase** in the risk of major accidents occurring due to human interaction, should a disaster take place.

17.5.1.6 Construction Stage

None of the potential risks to be noted during the construction phase were identified as requiring further assessment.

17.5.1.7 Operational stage

From examining the plausible risks presented in Table 17.7, the scenario with the highest risk score in terms of a major accident and / or disaster was identified as being 'Incident at nearby LUAS' and 'Incident on Future MetroLink'.

This risk was given a score of 8 indicating a scenario that is **'very unlikely'** to occur, but which would have **'very serious'** consequences should it do so. According to the risk matrix in Table 17.7, this indicates a **'medium risk scenario'**.

The Global Terrorism Index (GTI) is a comprehensive study analysing the impact of terrorism for 163no. countries and which covers 99.7 per cent of the world's population. In 2018, Ireland ranked as the 65th country most impacted by terrorism of the 163no. countries. Whilst the National Risk Assessment 2019 has identified the risk to Ireland from both domestic and international terrorism, there are no similar 'recorded incidents or anecdotal evidence' of attacks of this magnitude in Ireland.

17.5.2 Cumulative

As outlined in sections 17.5.1.6 and 17.5.1.7 above, **no likely risks** of a major accident / disaster occurring are identified during construction stage. A **medium risk** of major accident / disaster is identified during the operational phase. No cumulative effects are identified.

17.5.3 Proposed Development

17.5.3.1 Construction Stage

The potential risk during the construction phase of the Proposed Development is the same as described under 17.5.1.6.

17.5.3.2 Operational Stage

The potential risk during the operational phase of the Proposed Development is the same as described under 17.5.1.6.

17.5.3.3 Do-Nothing Impact

The 'do-noting' impact of the Proposed Development will be the same as described under 17.5.1.5.

17.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

17.6.1 Rating of Major Accidents and Disasters without Mitigation

17.6.1.1 Construction Phase

The mitigation measures relevant to each environmental factor outlined in chapters 5 – 16 of the EIAR, as well as in the Construction Management Plan, will be implemented during the construction phase and will collectively mitigate the risk of major accidents and disasters during this time.

The construction phase will be carried out in accordance with best practice site management measures relating to health and safety and emergency response. These measures are described in the Outline Construction Management Plan, prepared by Waterman Moylan Consulting Engineers.

17.6.1.2 Operational Stage

No mitigation or monitoring measures are proposed specific to reducing the risk of major accident / disaster during operation.

17.7 Residual Impact of the Proposed Development

The risk of a major accident and / or disaster during the construction phase of the Dublin Central Masterplan and the Proposed Development is considered **low**.

The risk of a major accident and / or disaster during the operational phase of the Dublin Central Masterplan and the Proposed Development is considered **medium**.

17.8 Monitoring

No monitoring associated with risks of major accidents and / or disaster is proposed during construction or operational phases.

17.9 Reinstatement

No reinstatement measures are necessary during the construction or operational phases of this development.

17.10 Difficulties Encountered

No difficulties were encountered during the assessment process.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

18 SUMMARY OF MITIGATION MEASURES

18.1 Introduction

This Chapter of the EIAR collates and summarise the mitigation measures recommended for each of the environmental topics examined in Chapters 5 – 17 of this EIAR.

These mitigation measures and any associated monitoring comprise what would be implemented during the Demolition, Construction and Operational Phase to reduce the potential for significant adverse impact of the proposed development on the environment.

This Chapter does not expand on the reasoning or expected effectiveness of the proposed mitigation or monitoring measures. For such descriptions, we refer to each of the individual chapters of the EIAR.

A number of the recommended mitigation measures would be expected to be required as a condition of any grant of permission by Dublin City Council.

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years' professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

18.2 Proposed Mitigation Measures

18.2.1 Population and Human Health (Chapter 5)

18.2.1.1 Dublin Central Masterplan

Construction Stage

Prior to the commencement of construction, the appointed contractor will be required to obtain formal agreement from the Local Authority on pollution prevention measures as well the overall approach and emergency procedures for all construction stages. All demolition works are to be in accordance with the following guidelines: -

- BS 6187:2000 '*Code of Practice for Demolition*'.
- Health and Safety Executive Guidance Notes GS 29 / 1, 2, 3 & 4.
- S.I. 504 Safety, Health & Welfare at Work (Construction) regulations 2013.
- Air Pollution Act 1987.
- Environmental Protection Agency Act 1992.
- BS 5228:2009 Part 1 '*Noise Control on Construction & Open Sites*'.

Prior to the works commencing, detailed photograph surveys (condition schedules) of adjoining walls, roads, footpaths, grass verges etc. are to be prepared. Copies of the relevant parts are to be made available to adjoining owners and Dublin City Council. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause.

Roadways are to be kept clean of dirt and other debris. A road sweeping truck is to be provided if necessary, to ensure that this is so.

The Contractor will be responsible for the security of the site. The Contractor will be required to: -

- Operate a site induction process for all site staff.
- Ensure all site staff shall have current 'safe pass' cards.
- Install adequate site hoarding to the site boundary.

- Maintain site security staff at all times.
- Separate pedestrian access from construction at the main site entrance off the Naas Road and provide a safe walkway for pedestrians along the main access road into the site.
- Ensure restricted access is maintained to the works.

The construction works will be hoarded off or fenced off from the public at all times. A 2.4 m minimum high plywood painted timber hoarding will be provided along the long-term boundaries at the entrance, and at other areas around the site where the perimeter fence/wall is not deemed sufficient for safety and security reasons. Heras type fencing will be used on short term site boundaries where appropriate to suit the works.

Controlled access points to the site, in the form of gates or doors / turnstiles, will be kept locked any time that these areas are not monitored (e.g., outside working hours). During working hours, a gates person will control traffic movements and deliveries at any active site access to ensure safe access and egress to and from site onto the public roads.

A Traffic Management Plan will be prepared by the contractor and agreed with Dublin City Council's Transportation Department and An Garda Siochana, to mitigate any impact of construction on the surrounding road network (Further details are provided in Chapter 13: Material Assets (Transportation) of this EIAR). A Preliminary Construction Traffic Management Plan prepared by Waterman Moylan accompanies each planning application.

As detailed in Chapter 7: Land, Soils & Geology of this EIAR, there is no evidence of a significant soil hazard on site or requirement for dewatering of groundwater.

Chapter 8: Water of this EIAR states that there is no potential for flooding and the proposed design incorporates attenuation measures to ensure development will not result in increased flooding off site. In order to mitigate the potential dust-related health impacts during the construction phase, a dust minimisation plan will be formulated. This plan will draw upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible. Further detail is provided in Chapter 9: Climate (Air Quality & Climate Change) of this EIAR.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 will be complied with. Further details are provided in Chapter 11: Air (Noise & Vibration).

Operational Stage

In light of the fact that any of the impacts associated with the operation of the Dublin Central Masterplan on Human Health and Population are either not significant or positive, no further mitigation measures are required. Notwithstanding the lack of need for mitigation measures, Section 11.6.2 of Chapter 11: Air (Noise & Vibration) of this EIAR outlines a number of noise mitigation measures which will further reduce the likely noise impacts arising from entertainment noise and internal building façade noise.

18.2.1.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The mitigation measures of the Proposed Development (Sites 3, 4 and 5) are the same as the mitigation measures of the Proposed Masterplan Development described in Section 5.2.1.1.

Operational Stage

The mitigation measures of the Proposed Development (Sites 3, 4 and 5) are the same as the mitigation measures of the Proposed Masterplan Development described in Section 5.2.1.1.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

18.2.2 Biodiversity (Chapter 6)

18.2.2.1 Dublin Central Masterplan

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the proposed development on KERs. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

Mitigation Measures for Designated Sites during Construction Stage

European Sites

As set out in the Appropriate Assessment Screening Report, in concluding that the proposed development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the proposed development on European sites were not required or taken into account.

National Sites

As there is no risk of the proposed development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the proposed development on nationally designated sites were not required or taken into account.

Mitigation Measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value)) arising from the proposed development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings may also be undertaken well in advance of breeding bird season. This includes measures such as:

- Kite hawks to discourage birds from the site.
- A specialist bird proof net to restrict access and prevent gulls from nesting.[1]

These measures must be undertaken by a specialist, and before any birds begin to nest on the buildings.

Operational Stage

Mitigation Measures for Birds during Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the proposed development will be short-term and not significant.

[1] Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland.

18.2.2.2 Proposed Development – Site 3, 4 & 5

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the proposed development on KERs. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

Mitigation Measures for Designated sites during Construction Stage

European Sites

As set out in the Appropriate Assessment Screening Report, in concluding that the proposed development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the proposed development on European sites were not required or taken into account.

National Sites

As there is no risk of the proposed development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the proposed development on nationally designated sites were not required or taken into account.

Mitigation measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value) arising from the proposed development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings may also be undertaken well in advance of breeding bird season. This includes measures such as: -

- Kite hawks to discourage birds from the site.
- A specialist bird proof net to restrict access and prevent gulls from nesting.[2]

These measures must be undertaken by a specialist, and before any birds begin to nest on the buildings.

Mitigation measures for birds Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the proposed development will be short-term and not significant.

[2] Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

18.2.3 Land, Soils and Geology (Chapter 7)

18.2.3.1 Dublin Central Masterplan

Construction Stage

To reduce the quantity of soil to be removed from or imported into the site, the floor levels of the proposed buildings and roads are designed to match existing levels and minimise the cut and fill balance. The number of vehicle movements offsite will be minimised by this optimisation. However, given that there are significant basement areas proposed, including the proposed underground Metrolink station, it is anticipated that there will be a significant surplus of soil to be removed from the site.

Surplus subsoil and rock that may be required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill. A Construction Management Plan will need to include protocols for soil removal and should be implemented by the development's main contractor during the construction stage.

Where contaminated soils are encountered during the works, they will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998-2006, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

The provision of wheel wash facilities at the construction entrances to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from the development site on the existing public roads.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding of standing water within the basement and other excavations.

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing combined drainage system which discharges to the Dublin Wastewater Treatment Plant at Ringsend. Straw bales will be used at the outfall to filter surface water to remove contaminants.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

After implementation of the above measures, the Proposed Development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction stage to control the above remedial measures.

Operational Stage

No mitigation measures for soils or geology will required during the operational stage.

18.2.3.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The mitigation measures for the Proposed Development (Sites 3, 4 and 5) are the same as the mitigation measures set out for the Dublin Central Masterplan described in Section 7.2.3.1.

Operational Stage

No mitigation measures for soils or geology will required during the operational stage.

18.2.4 Water (Chapter 8)

18.2.4.1 Dublin Central Masterplan

Mitigation measure will be implemented on a site by site basis in line with best practice standards. The relevant mitigation measures for Site 3, 4 & 5 are set out in Section 8.2.4.2 below. The same standards will be implemented as part of the development of the remaining sites within the Dublin Central Masterplan area.

18.2.4.2 Proposed Development – Site 3, 4 & 5

Water Supply

Construction Stage

A method statement setting out in detail the procedures to be used when working in the vicinity of existing watermains will be produced by the contractor for any construction works within the vicinity of watermains and for roads or services crossing watermains.

All watermains will be cleaned and tested in accordance with Irish Water guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out by, or under the supervision of, Irish Water.

Potential negative impacts during construction stage will be short term only.

Operational Stage

Water meters will be installed at connection points, with locations to be agreed and approved by Irish Water, and these meters will be linked to Irish Water's monitoring system by telemetry. These meters will facilitate the early detection of unusual water usage in the network and identify potential leaks in the system.

All plumbing fixtures and fittings and sanitary wear to be installed within the development should be to the current best practice for water consumption to minimise future water usage.

It is not envisaged that any further remedial or reductive measures will be necessary on completion.

Foul Water Drainage

Construction Stage

In order to reduce the risk of defective or leaking foul sewers, the following remedial measures will be implemented: -

- All new foul sewers will be tested by means of an approved air test during the construction stage in accordance with Irish Waters Code of Practice and Standard Details.
- All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements.

- Foul sewers will be surveyed by CCTV to identify possible physical defects.
- The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.
- Prior to commencement of excavations in public areas, all utilities and public services will be identified and checked, to ensure that adequate protection measures are implemented during the construction stage.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Operational Stage

All foul drains will be tested and surveyed prior to connection to the public sewers to minimise the risk of uncontrolled ground water penetration or leakage of the foul water to ground water on the site.

Otherwise, no remedial or reductive measures are deemed to be necessary after completion of the development of the Dublin Central Masterplan, other than normal maintenance of the foul sewer system.

Surface Water Drainage

Construction Stage

The contractor will prepare and implement a Construction Management Plan which will outline the requirements for the storage and handling of fuel, including the refuelling of vehicles in designated refuelling zones to minimise the risk of spillages, and the impact of spillages should they occur.

The Construction Management Plan will also utilise sedimentation controls, including silt traps, tailings ponds and silt fences during the construction period.

All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and Building Control (Amendment) Regulations (BCAR) requirements. This will reduce the possibility of any cross connections being constructed.

Operational Stage

Surface water will be attenuated privately within each site of the Dublin Central Masterplan, and will discharge to the public network at a controlled rate limited to 2l/s from each site.

In addition, the SuDS devices outlined in Section 8.4.1.3 in chapter 8 of the EIAR, will reduce and slow down the rate of surface water runoff from each site within the Dublin Central Masterplan. This will minimise peak flows in the downstream system during major storm events. Gullies and the flow control devices shall be regularly maintained to avoid blockages.

The SuDS treatment train will also treat the surface water discharging to the public network, removing pollutants form the surface water runoff. Maintenance of these SuDS devices will be required to ensure that they continue to treat the surface water as designed.

18.2.5 Climate (Air Quality and Climate Change) (Chapter 9)

18.2.5.1 Dublin Central Masterplan

Construction Stage

A detailed dust minimisation plan associated with a high level risk of dust impacts is outlined in Appendix 9.2. This plan draws on best practice mitigation measures from Ireland, the UK and the USA in order to ensure the highest level of mitigation possible. Care has specifically been paid to the requirements and recommendations within the Dublin City Council's guidance entitled *"Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition"*.

In summary some of the measures which will be implemented will include: -

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Public roads and footpaths outside the site will be regularly inspected for cleanliness and cleaned as necessary. If sweeping using a road sweeper is not possible due to the nature of the surrounding area then a suitable smaller scale street cleaning vacuum will be used.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Hoarding or screens shall be erected around works areas to reduce visual impact. This will also have an added benefit of preventing larger particles of dust from travelling off-site and impacting receptors.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Operational Stage

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no additional site-specific mitigation measures are required beyond the incorporated design mitigation as described in Section 9.5.1.2.2 and 9.5.2.2.2 in chapter 9 of this EIAR.

18.2.5.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The mitigation measures outlined in Section 9.2.5.1 and Appendix 9.2 will be applied across the site for each phase of the development.

Operational Stage

No mitigation is required for the operational phase of the development as no significant impacts to air quality or climate are predicted.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

18.2.6 Climate (Sunlight & Daylight) (Chapter 10)

No mitigation measures are proposed as the impact of Sunlight and Daylight is relatively insignificant and considered consistent with development within a city centre environment.

18.2.7 Air, Noise and Vibration (Chapter 11)

18.2.7.1 Dublin Central Masterplan

Construction Stage

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted design goals for noise and vibration. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

Noise Mitigation Measures

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that: -

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 *-1:2009+A1 2014* includes guidance on several aspects of construction site practices, which include, but are not limited to: -

- Selection of quiet plant.
- Control of noise sources.
- Screening.
- Hours of work.
- Liaison with the public.

Further comment is offered on these items in the following paragraphs.

Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring. The contractor will be required to conduct construction noise predictions prior to works taking place and put in place the most appropriate noise control measures depending on the level of noise reduction required at any one location.

Selection of Quiet Plant

The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

For static plant such as compressors and generators used at work areas such as construction compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where possible.

General Comments on Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant, or the application of improved sound reduction methods in consultation with the supplier or the best practice use of equipment and materials handling to reduce noise.

In practice, a balance may need to be struck between the use of all available techniques and the resulting costs of doing so. It is therefore proposed to adopt the concept of *"Best Available Techniques"* as defined in EC Directive 96/61. In this context *"best"* means *"the most effective in achieving a high general level of protection of the environment as a whole"*.

Proposed techniques will also be evaluated in light of their potential effect on occupational health and safety. The following outline guidance relates to practical noise control at source techniques which relate to specific site considerations: -

- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
- For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights and drop chutes/dump trucks are lined with resilient materials, where relevant.
- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact.
- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

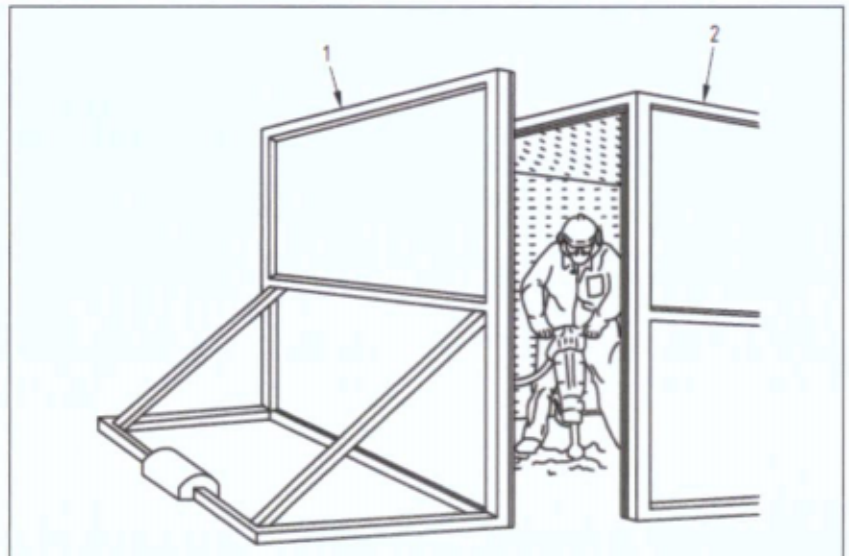
Screening

Typically screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source. BS 5228 - *1:2009+A1* states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice, screens constructed of materials with a mass per unit of surface area greater than 10kg/m^2 will give adequate sound insulation performance.

Construction noise calculations have assumed a partial line of sight (-5dB) is achieved using a solid 2.4m high standard construction site hoarding. It will be a requirement for works occurring immediately in proximity to the closest noise sensitive locations along the site boundary, that the line of sight is further blocked such that a reduction of at least 10dB is achieved between the noise sensitive façade and construction activities. A reduction of this order can be achieved using a higher perimeter screen or using localised screening around specific items of plant.

Annex B of *BS 5228-1:2009+A1:2014* (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on site from standard materials.



Key
1 Acoustic screen 2 m wide and 2.7 m high
2 Acoustic shed 2 m square and 2.7 m high

Table B.4 **Measured sound reduction given by types of partial enclosure**

Type of enclosure (see Figure B.3)	Reduction dB(A)		
	Facing the opening(s)	Sideways	Facing rear of shed
Open-sided shed lined with absorbent material; no screen	1	9	14
Open-sided shed lined with absorbent material; with reflecting screen in front	10	6	8
Open-sided shed lined with absorbent material; with absorbent screen in front	10	10	10

Figure 18.1: Typical Acoustic Screen / Shed Detail.

In addition, careful planning of the site layout will also be considered. The placement of temporary site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening during the phasing of works.

Hours of Work

Construction activity will mostly take place during daytime hours Monday to Friday and a half day on Saturdays. In the event of it being deemed necessary to undertake works outside these, it will be necessary to obtain prior written approval from Dublin City Council. Such approval would typically only be granted on submission of details of the activity accompanied by an assessment of potential noise impact.

Consideration should be given to the scheduling of activities in a manner that reflects the location of the site and the nature of neighbouring properties. Each potentially noisy event/activity should be considered on its individual merits and scheduled according to its noise level, proximity to sensitive locations and possible options for noise control.

Depending on the noise emission levels experienced and associated noise impact, the contractor should be flexible and able to conduct certain works at hours which reflect periods when the neighbouring properties have lower sensitivities to noise.

Liaison with the Public

Clear forms of communication will be established between the contractor and noise sensitive areas in proximity so that residents or building occupants are aware of the likely duration of activities likely to generate higher noise or vibration.

The duration of piling, excavation and other high noise or vibration activities works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to sensitive areas can represent only a part of the overall period. Subjective impacts during these phases can be significantly reduced if timelines and potential impacts are known in advance.

Noise Control Audits

It is recommended that noise control audits be conducted at regular intervals throughout the demolition/construction programme. In the first instance, it is recommended that such audits take place on a monthly basis. This is subject to review, however, and the frequency of audits may be increased if deemed necessary.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration should be given to issues such as the following (note that this list is not intended to be exhaustive): -

- Hours of operation being correctly observed.
- Opportunities for noise control "at source".
- Optimum siting of plant items.
- Plant items being left to run unnecessarily.
- Correct use of proprietary noise control measures.
- Materials handling.
- Poor maintenance.
- Correct use of screening provided and opportunities for provision of additional screening.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes should be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme should be phased so as to prevent unacceptable disturbance at any time.

During consultation the planner, developer, architect and engineer, as well as the local authority, should be made aware of the proposed method of working of the piling contractor. The piling contractor should in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

It should be remembered that a decision regarding the type of pile to be used on a site will normally be governed by such criteria as loads to be carried, strata to be penetrated and the economics of the system, for example the time it will take to complete the installation and other associated operations such as soil removal. It may not be possible for technical reasons to replace a noisy process by one of the 'quieter piling' alternatives. Even if it is possible, the adoption of a quieter method may prolong the piling operation; the net result being that the overall disturbance to the community will not necessarily be reduced.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

Contributions to the total site noise can also be anticipated from mobile ancillary equipment, such as handling cranes, dumpers, front end loaders etc. These machines may only have to work intermittently, and when safety permits, their engines should be switched off (or during short breaks from duty reduced to idling speed) when not in use.

All mechanical plant should be well maintained throughout the duration of the piling works. When a site is in a residential environment, lorries should not arrive at or depart from the site at times incontinent to residents.

Vibration

On review of the likely vibration levels associated with construction activities, it may be concluded that the construction of the Proposed Development is not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to adjacent buildings.

In the case of vibration levels giving rise to human discomfort, in order to minimise such impacts, the following measures shall be implemented during the construction period: -

- A clear communication programme will be established to inform adjacent building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.
- Appropriate vibration isolation shall be applied to plant, where feasible.
- Monitoring will be undertaken at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

Operational Stage

Mitigation measures for the operational phase are set out to ensure that operational noise sources associated with the Dublin Central Masterplan will operate within the relevant noise criteria so that there is no resultant negative impact on nearby noise sensitive receivers.

Noise Mitigation Measures

Mechanical Plant Noise

During the detailed design of the development, the selection and location of mechanical and electrical plant will be undertaken in order to ensure the noise emission limits set out above are not exceeded. In addition to selecting plant with suitable noise levels, the following best practice measures are recommended for all plant items in order to minimise potential noise disturbance for adjacent buildings: -

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required to reduce noise breakout.
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment.
- The use of perimeter plant screens will be used, where required, for roof top plant areas to screen noise sources.
- The use of attenuators or silencers will be installed on external air handling plant.
- All mechanical plant items e.g. fans, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised.
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document.

Installed plant will have no tonal or impulsive characteristics when in operation

Inward Noise Impact

Inward noise impacts across the development are assessed and appropriate mitigation specified across the Dublin Central Masterplan to ensure that, when window are closed that the internal noise level targets are achieved.

Assessment of Site 1 and Site 2AB and Site 2C will follow the methodology set out in this document once the design is finalised. Measured noise levels across the development will be used to assess the levels of noise intrusion and to ascertain the need for appropriate mitigation.

18.2.7.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The mitigation measures outlined in Section 11.6.1.1 for the construction stage are also applicable for the Proposed Development. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

Operational Stage

Mechanical Plant Noise

The mitigation measures outlined in Section 112.6.1.2 are also applicable to the Proposed Development.

Inward Noise Impact

In the context of the Proposed Development, the facades highlighted in Figure 18.2 will be provided with glazing and ventilators that achieves the minimum sound insulation performance as set out in Table 18.1 below.

The specification applies only to residential units, hotel rooms and office space on the facades indicated. Retail and food & beverage units along these facades do not have a sound insulation requirement. Other facades in the development have no minimum requirement for sound insulation.

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 18.1.

Site	Façade	Glazing Octave Band Centre Frequency (Hz)							Ventilator
		125	250	500	1000	2000	4000	R_w	$D_{n,e,w}$
Site 3	Henry St (RED)	26	27	34	40	38	46	37	39
	Moore St. / Henry Pl (ORANGE)	19	27	34	39	35	40	35	36
Site 4	Moore St (RED)	26	27	34	40	38	46	37	39
	Moore Lane / Henry Place (ORANGE)	19	27	34	39	35	40	35	36
Site 5	Moore St. (RED) **Residential**	26	27	34	40	38	46	37	39
	All Facades (ORANGE) **Office**	20	22	27	32	32	37	30	N/A

Table 18.1: Calculated Construction Traffic Noise Levels at Edge of Road.

Façade specification are marked up in Figure 18.2 below. Ventilator requirements are 39 dB $D_{n,e,w}$ and 36 dB $D_{n,e,w}$ for facades marked up in red and orange respectively.

With respect to the hotel, façade recommendations have been presented here so that the internal noise level requirements set out in BS 8233 are met. It may be the case that the future operator of the hotel will have their own brand standard with associated acoustic considerations that must be achieved. This will be assessed at detailed design stage.

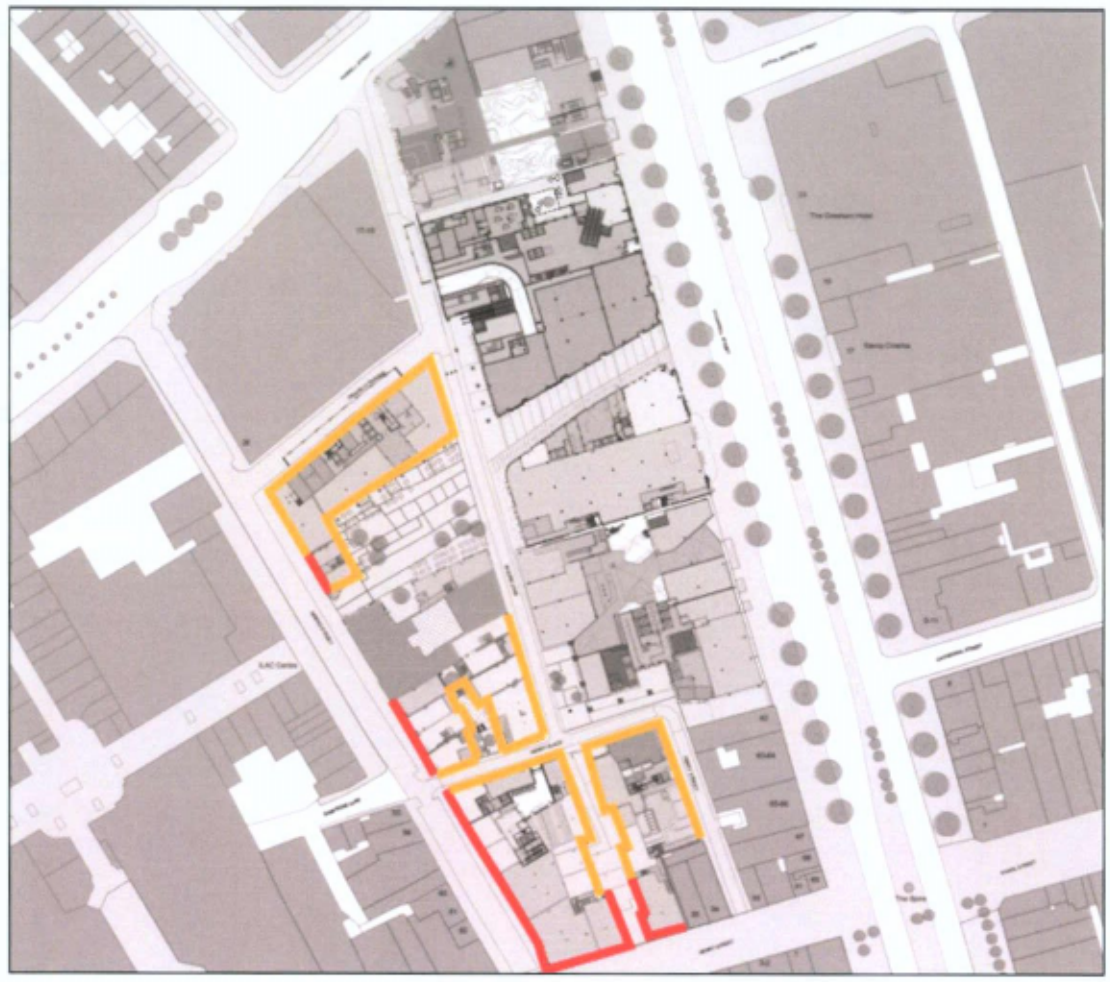


Figure 18.2: Glazing and Ventilator Requirement.

18.2.8 Landscape and Visual Impact (Chapter 12)

18.2.8.1 Dublin Central Masterplan

Not applicable as the Masterplan is still being refined and discussions with the Planning Authority are on-going. Notwithstanding this, as the Masterplan presents an integrated design for a new city quarter, no remedial or reductive measures are likely to be applicable.

18.2.8.2 Proposed Development – Site 3, 4 & 5

Construction Stage

No mitigation measures have been proposed with respect to effects from the construction of the Proposed Development.

Operational Stage

Since the Proposed Development is an integrated design for a new city quarter, no remedial or reductive measures are applicable. In these circumstances, during the construction or operational phases scope for mitigation measures, which would preserve a sustainable level of density, is limited. However, developments already planned, approved or under construction near the site or elsewhere in the city will reduce the potential visibility of the Proposed Development, and thereby mitigate the extent of its visual impact.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

18.2.9 Material Assets (Transportation) (Chapter 13)

18.2.9.1 Dublin Central Masterplan

Construction Stage

The primary mitigation measure during the Construction Stage will be the implementation of the *Construction Traffic Management Plan* and the *Construction Management & Waste Management Plan.*

This will require all deliveries to and collection from the subject site to comply with the DCC requirements for HGV movements including the use of the Designated HGV Routes illustrated in Figure 13.2.

Two construction routes to the site have been identified both to Parnell Street. One will be from Dorset Street via Dominick Street and one from Summerhill via Parnell Street.

Proposal for local traffic management during the various stages of construction have also been prepared and will be incorporated in the detailed *Construction Traffic Management Plan* to be prepared by the appointed Contractor in conjunction with Dublin City Council for approval.

Traffic and other movements on the road network during the Construction Stage will be managed by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

During the Construction Stage, the appointed Contractor will be required to maintain access along Moore Lane and Henry Place to existing properties at the times currently permitted by Dublin City Council or as may otherwise be agreed with the property owners and DCC.

Operational Stage

The primary mitigation measure during the Operational Stage will be the implementation of the Travel Plan for Dublin Central and in particular the Action Plan section of the Travel Plan which will implement the management of travel demand.

Mitigation measures to limit the impact of the future intensification of public transport services through Bus Connects and Metrolink, are outside the control of the Dublin Central project.

18.2.9.2 Cumulative Development

Construction Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 13.6.1.1.1.

Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 13.6.1.1.2.

18.2.9.3 Proposed Development – Site 3, 4 & 5

Construction Stage

The Mitigation Measures for the Proposed Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Mitigation Measures for the Proposed Development (Dublin Central Masterplan) described in Section 13.6.1.1.1.

Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Mitigation Measures for the Proposed Development (Dublin Central Masterplan) described in Section 13.6.1.1.2.

18.2.9.4 Cumulative Development

Construction Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Mitigation Measures for the Cumulative Development (Dublin Central Masterplan) described in Section 13.6.1.2.1.

Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Operational Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Mitigation Measures for the Proposed Development (Dublin Central Masterplan) described in Section 13.6.1.2.2.

18.2.10 Material Assets (Waste) (Chapter 14)

18.2.10.1 Dublin Central Masterplan

Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the requirements of the guidance document issued by the DoEHLG and is included as Appendix 14.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phase of the Proposed Development. Prior to commencement, the contractor(s) will be required to refine / update the C&D WMP or submit an addendum to C&D WMP to DCC to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: -
    - Concrete rubble (including ceramics, tiles and bricks).
    - Plasterboard.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

  - Metals.
  - Glass.
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the demolition and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the demolition and construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the EMR Waste Management Plan (2015 – 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and abiding by the DCC waste bye-laws.

In addition, the following mitigation measures will be implemented: -

- On-site segregation of all waste materials into appropriate categories including (but not limited to): -
  - Organic waste.
  - Dry Mixed Recyclables.
  - Mixed Non-Recyclable Waste.
  - Glass.
  - Waste electrical and electronic equipment (WEEE).
  - Batteries (non-hazardous and hazardous).

- Cooking oil.
- Light bulbs.
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
- Furniture (and from time to time other bulky waste).
- Abandoned bicycles.

- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 – 2021)* and the DCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.2.10.2 Proposed Development – Site 3, 4 & 5

Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the guidance document issued by the DoEHLG and is included as Appendix 14.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phase of the Proposed Development. Prior to commencement, the contractor(s) will be required to refine / update the C&D WMP or submit an addendum to C&D WMP to DCC to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: -
  - Concrete rubble (including ceramics, tiles and bricks).
  - Plasterboard.
  - Metals.
  - Glass.
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the demolition and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the demolition and construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the EMR Waste Management Plan (2015 – 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and abiding by the DCC waste bye-laws.

In addition, the following mitigation measures will be implemented: -

- On-site segregation of all waste materials into appropriate categories including (but not limited to): -
  - Organic waste.
  - Dry Mixed Recyclables.
  - Mixed Non-Recyclable Waste.
  - Glass.
  - Waste electrical and electronic equipment (WEEE).
  - Batteries (non-hazardous and hazardous).
  - Cooking oil.
  - Light bulbs.
  - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
  - Furniture (and from time to time other bulky waste).
  - Abandoned bicycles.

- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 – 2021)* and the DCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.2.11 Cultural Heritage (Architectural) (Chapter 15)

18.2.11.1 Masterplan

Construction Stage

Potential cumulative impacts are envisaged as arising at demolition, excavation and construction stages where the development sequence for multiple Masterplan plan sites occur in tandem. It is envisaged over a prolonged period, that construction will be active to one or more development sites, with common road networks and site compound areas outside designated 'Sites' in correspondingly active use. As all works occur within or in the vicinity of the ACA and neighbouring protected and historic fabric, the cumulative impact of the proposed development is likely to be experienced by this architectural heritage.

Operational Stage

Cumulative construction stage impacts are envisaged as being short term, and whilst disruptive, will, on completion provide an enhanced urban environment in which all structures and spaces of architectural and cultural heritage interest can collectively thrive.

18.2.11.2 Mitigation Measures for the Development of Site 3

Construction Stage

<u>Qualification of the Composition of the Existing Building Range</u>

Construction strategies for Site 3 were designed to accommodate a range of unknown conditions within the extent of retained building fabric, with numerous scenarios factored into the development of the structural design.

It is proposed to distil construction strategies prior to commencement of works, under the direction of Waterman Moylan's and the architectural and structural heritage teams.

The intended outcome of future investigations will be to frame a precise structural analysis of the buildings, which in turn will directly and accurately inform demolition and protection strategies.

<u>Qualification of Protection Strategies</u>

The preparation of a detailed construction plan for the demolition of building fabric will inform a correspondingly detailed protection plan for retained fabric, which in turn, will safeguard the architectural heritage characteristics of retained fabric, and also reduce physical impacts for the enclosing ACA.

Operational Stage

Continued Protection of Retained Fabric

All of the retained fabric within Site 3 is included in the designated boundary of the ACA. A significant factor in maintaining the integrity of the ACA at operational stage is the continued maintenance and good presentation of retained fabric. It is envisaged the estate will be under a single Management Company, rather than a fragmented ownership meaning that a higher level of integrity can be maintained.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

18.2.11.3 Mitigation Measures for the Development of Site 4

Construction Stage

Primary risks in developing Site 4 are associated with construction impacts in proximity to the National Monument. It is intended, following submission of planning applications and easing of Covid restrictions, to embark on a range of agreed conservation-led investigative works. In conjunction with statutory stakeholders, a detailed design strategy for all stages of the construction process will be developed to ensure that all risks are identified and mitigated. Ministerial Consent will be sought for the expanded construction strategies.

As a principle, it is intended to observe a similar level of detailing to mitigate construction risks for retained fabric within Site 4, on the basis that similar conditions are likely to exist elsewhere requiring a similar level of ameliorative protection and conservation.

Operational Stage

Substantial sections of Site 4 shares boundaries with either protected or retained fabric of heritage significance. Monitoring of boundary conditions into the future will be required to ensure the long term protection of these boundary conditions.

Similarly, building fabric scheduled for retention and conservation within Site 4 merits ongoing monitoring to ensure its long term protection. These buildings are not protected structures, but, in accordance with the Conservation Plan, are treated as if they were, as an integral component of a future maintenance strategy.

18.2.11.4 Mitigation measures for the Development of Site 5

Construction Stage

Key risks for the development of Site 5 are confined to demolition and excavation stages, where risks of vibrations are predicted as occurring for the National Monument.

Mitigations against foreseen potential impacts arising from the demolition, excavation and enabling works of constructing Site 5 are detailed in structural engineering studies carried out by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited, with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA, attached to the planning application for Site 5.

Operational Stage

No mitigations are envisaged as being required for operational stage of Site 5 buildings.

18.2.12 Cultural Heritage (Archaeology) (Chapter 16)

18.2.12.1 Dublin Central Masterplan

Construction Stage

Works in the Vicinity of the National Monument – Nos. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the National Monument (see Chapter 15: Cultural Heritage (Architectural).

The preservation order for Nos. 14 – 17 Moore Street provides the site with the highest level of statutory protection. The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument (**Error! Reference source not found.**) for the development of Site 4 in the Dublin Central Masterplan area will require Ministerial Consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy.

It is anticipated that the National Monument will be developed as a commemorative centre under Ministerial Consent C495. Consultation with the OPW and their conservation team has and will continue to be carried out to ensure that there is an integrated and collaborative approach for the protection and conservation of the monument and their shared/adjoining boundaries.

The archaeological mitigation in the vicinity of the National Monument will as a minimum include: -

- Archaeological monitoring of site investigation, site preparation and temporary works as required.
- Archaeological monitoring of site clearance (including the clearance of cellars/basements) and of demolition works to identify and record as appropriate, any objects, fixtures or features that can be related to the 1916 Easter Rising.
- Archaeological testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street to establish the depth and nature of the infill material associated with the backfilling of the brickfield quarry.
- Archaeological excavation of archaeological soils or features that are encountered and impacted by the Proposed Development.
- Archaeological monitoring of earthmoving works.

The archaeological works will be carried out under Ministerial Consent. The Minister may attach further conditions in the granting of consent, including conditions requiring archaeological excavation.

Where the Minister has granted a consent under Section 14 of the Act, no other consent or licence under any provision of the National Monuments Act, including an excavation licence, is required for any archaeological work or activity, (e.g., the other works in Site 4 not bounding the National Monument will require an archaeological licence).

General Mitigation

The following archaeological mitigation measures will be carried out within the Dublin Central Masterplan area under licence to the DHLGH: -

- **Monitoring**

  A programme of archaeological monitoring will take place at the pre-construction, site preparation and enabling works / early stages of construction where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that

may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within the Dublin Central Masterplan area will be resolved in consultation with the relevant authorities during the course of the project.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

  The Applicant is aware of the archaeological potential of the site and its implications for the development and the possibility of a significant design change. The Applicant will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004).

Operational Stage

None required.

18.2.12.2 Proposed Development – Site 3, 4 & 5

Construction Stage

Site 3

Site 3 is a conglomeration of properties amassed over a period of time. A phased approach to the archaeological investigation and mitigation is suggested: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works / early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place.

  It is anticipated that the following works will be monitored as required: -

  - *Pre-Demolition Investigation Works*

    Including but not limited to the monitoring of: -

    - Site investigation works.
    - Opening up works at basement or ground levels.
    - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
    - Recording of basement vaults beneath Henry Street prior to infilling (where it is safe to do so).

  - *Demolition & Enabling Works*

    Including but not limited to the monitoring of: -

    - Temporary enabling works where they will require opening up works at ground level.
    - Strip footings associated with retention of structures and adjacent basements.
    - Excavation of pile guide.
    - Post-demolition grubbing out of foundations and substructures.
    - All earthmoving works.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required.

  The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 3 will be resolved in consultation with the relevant authorities during the course of the project.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

Site 4

Works in the vicinity of the National Monument – Nos. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the national monument (see Chapter 15: Cultural Heritage (Architectural)).

The preservation order for Nos. 14 – 17 Moore Street provides the site with the highest level of statutory protection. The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument (**Error! Reference source not found.**) for the development of Site 4 in the Dublin Central Masterplan area will require Ministerial Consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy.

The national monument will be developed as a commemorative centre (a cultural use) under ministerial consent C495. As part of the design process the Dublin Central Team has consulted with the DHLGH, the OPW and their conservation team. Consultation will be an ongoing process to ensure that there is an integrated and collaborative approach for the protection and conservation of the monument and the shared/adjoining boundaries with Site 4. The detailed methodologies for these works will be developed through the Ministerial Consent process. The archaeological mitigation in the vicinity of the National Monument will as a minimum include: -

- Archaeological monitoring of site investigation, site preparation and temporary works as required.
- Archaeological monitoring of site clearance (including the clearance of cellars / basements) and of demolition works to identify and record as appropriate, any objects, fixtures or features that can be related to the 1916 Easter Rising.
- Archaeological testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street.
- Archaeological excavation of archaeological soils or features that are encountered and impacted by the Proposed Development.

- Archaeological monitoring of earthmoving works.

The archaeological works will be carried out under the Ministerial Consent. The consent application will be supported by detailed method statements compiled by the integrated Dublin Central conservation team (comprising a conservation architects, structural conservation engineers, architects and archaeologists). This will include an archaeological strategy for the works for all phases the development i.e., site preparation, demolition and construction. The Minister may attach further conditions in the granting of consent, including conditions requiring archaeological excavation.

Where the Minister has granted a consent under Section 14 of the Act, no other consent or licence under any provision of the National Monuments Act, including an excavation licence, is required for any archaeological work or activity, (the other works in Site 4 not bounding the National Monument will require an archaeological licence).

General Mitigation

The following archaeological mitigation measures will be carried out within Site 4: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works / early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

  It is anticipated that the following works will be monitored as required: -

  - *Pre-Demolition Investigation Works*

    Including but not limited to the monitoring of: -

    - Site investigation works.
    - Opening up works at basement or ground levels.
    - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
    - Recording of basement prior to infilling.

  - *Demolition & Enabling Works*

    Including but not limited to the monitoring of: -

    - Temporary enabling works where they will require opening up works at ground level.
    - Strip footings associated with retention of structures and adjacent basements.
    - Post-demolition grubbing out of foundations and substructures.
    - All earthmoving works.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required.

  The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 4 will be resolved in consultation with the relevant authorities.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

Site 5

General Mitigation

The following archaeological mitigation measures will be carried out within Site 5: -

- **Monitoring**

  Archaeological monitoring will take place at the preconstruction, site preparation and enabling works/ early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place.

  It is anticipated that the following works will be monitored as required: -

  - *Pre-Demolition Investigation Works*

    Including but not limited to the monitoring of: -

    - Site investigation works.
    - Opening up works at basement or ground levels.
    - Site survey of existing basements in association with the conservation contractor (as required) to record any early 18th century fabric that might be identified.
    - Recording of basement prior to infilling.

  - *Demolition & Enabling Works*

Including but not limited to the monitoring of: -

- Temporary enabling works where they will require opening up works at ground level.
- Strip footings associated with retention of structures and adjacent basements.
- Post-demolition grubbing out of foundations and substructures.
- All earthmoving works.

- **Test Excavation**

  Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

  Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 4 will be resolved in consultation with the relevant authorities.

- **Excavation**

  In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

  Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

  The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence, or in the case of the National Monument, Ministerial Consent to excavate.

- **Licencing**

  Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

  All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

- **General**

  These proposed strategies do not prejudice any further recommendations made by the Department HLGH, who may seek additional information or consider alternative strategies.

  National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

  All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

Operational Stage

No further archaeological testing, excavation or monitoring works will be necessary during the operation phase of the development (i.e. Site 3, Site 4 & Site 5).

18.2.13 Risk Management (Major Accidents & Disasters) (Chapter 17)

Construction Phase

The mitigation measures relevant to each environmental factor outlined in chapters 5 – 16 of the EIAR, as well as in the Construction Management Plan, will be implemented during the construction phase and will collectively mitigate the risk of major accidents and disasters during this time.

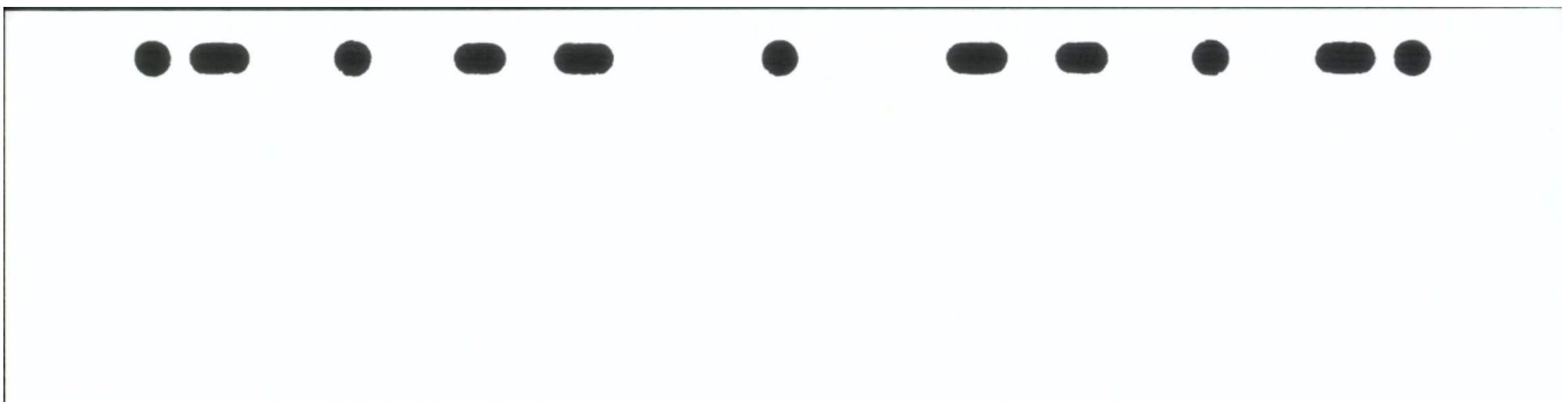
The construction phase will be carried out in accordance with best practice site management measures relating to health and safety and emergency response. These measures are described in the Outline Construction Management Plan, prepared by Waterman Moylan Consulting Engineers.

Operational Stage

No mitigation or monitoring measures are proposed specific to reducing the risk of major accident / disaster during operation.

DCC PL[illegible] NO. 2861/21
REC: 01/06/2021

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

19 ENVIRONMENTAL INTERACTIONS & CUMULATIVE IMPACT

19.1 Introduction

This Chapter of the EIAR identifies the principal interactions between the potential impacts of the environmental factors identified in Chapter 5 to 17 inclusive.

The principal interactions are summarised below, under Table 19.1, and further discussed in Section 19.2 of this Chapter.

The predicted impacts identified in Chapters 5 – 17 have taken into account the principal interactions listed below and associated mitigation measures.

The cumulative impacts arising from the interaction of impacts identified below, is also outlined in this Chapter.

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years' professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

	Population & Human Health	Biodiversity	Land, Soils & Geology	Water	Climate (Air Quality & Climate Change)	Climate (Sunlight & Daylight)	Air (Noise & Vibration)	Landscape & Visual Impact	Material Assets (Transport)	Material Assets (Waste)	Cultural Heritage (Archaeological)	Cultural Heritage (Architectural)
Population & Human Health		X	✓	✓	✓	✓	✓	✓	✓	X	X	X
Biodiversity	X		X	✓	X	X	✓	✓	X	X	X	X
Land, Soils & Geology	✓	✓		✓	✓	X	✓	X	✓	✓	X	X
Water	✓	✓	✓		X	X	✓	X	X	✓	X	X
Climate (Air Quality & Climate Change)	✓	X	✓	X		X	X	X	✓	X	X	X
Climate (Sunlight & Daylight)	X	X	X	X	X		X	X	X	X	X	X
Air (Noise & Vibration)	✓	X	X	X	X	X		X	X	X	X	X
Landscape & Visual Impact	✓	✓	X	X	X	X	X		✓	X	✓	✓
Material Assets (Transport)	✓	✓	X	X	✓	X	✓	X		✓	X	X
Material Assets (Waste)	✓	X	✓	X	X	X	X	X	✓		X	X
Cultural Heritage (Archaeological)	X	X	X	X	X	✓	✓	✓	X	X		✓
Cultural Heritage (Architectural)	X	X	X	X	X	X	X	X	X	X	X	

Where there is an interaction = ✓ No Interaction = X

Table 19.1: Matrix of Interactions between Environmental Factors (During Construction and Operational Phases)

19.2 Interactions

19.2.1 Population and Human Health (Chapter 5)

Land, Soils & Geology

The interaction between Human Health on Soils resulted in baseline soils testing to ensure that there was no potential for spread of contaminant substances due to excavation works, or ground failure.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Water

The interaction between Human Health on Water resulted in baseline water investigations to ensure that there was no potential for contamination of water sources, no flooding risks, or risks of diminished potable water supply.

Climate (Air Quality & Climate Change)

The interaction between Human Health on Air Quality has resulted in controlled construction measures and traffic management plans to curtail air and dust emissions.

Climate (Sunlight & Daylight)

The interaction between Human Health on Sunlight has affected the design of the buildings to reduce sunlight depravation for both residents living in the area and residents living within the proposed development.

Air (Noise & Vibration)

The interaction between Human Health on Noise has resulted in controlled construction measures, traffic management plans and social noise management plans to curtail noise emissions.

Material Assets (Transportation)

The interaction of Human Health on Traffic has resulted in baseline traffic assessments and traffic management plans to ensure that stresses associated with longer waiting times and un-safe junctions do not pose a significant threat.

19.2.2 Biodiversity (Chapter 6)

Biodiversity receptors interact with other environmental items as outlined in Chapter 6 of this EIAR, these are summarised as follows: -

Water

Interactions between water and biodiversity including habitats, flora and fauna could potentially occur through impacts on water quality in the River Liffey either arising from an accidental pollution event during construction or during operation. This interaction has the potential to result in significant effects on hydrologically connected habitats such as those designated for in Dublin Bay European sites, and the sensitive fauna that rely on these habitats. Given the reasons discussed within section 6.5 of Chapter 6 and information based on the Hydrological and Hydrogeological qualitative risk assessment (AWN, 2021), negative effects on biodiversity as a result of the proposed development are not predicted to be significant at any geographic scale.

Air (Noise & Vibration)

Interactions between noise and vibration and sensitive fauna, i.e. breeding birds, could potentially occur owing to increased noise and vibration levels during construction works. This interaction has the potential to result in significant effects on sensitive fauna. Following the implementation of mitigation measures outlines in Section 6.7.3 of Chapter 6, effects on fauna arising from noise and vibration are not predicted to be significant at any geographic scale.

Landscape & Visual Impact Assessment

There are pockets of low value vegetation due for removal within the proposed development site. As a result, there are no effects predicted on biodiversity due to the lack of habitats within the Proposed Development site. Interactions between landscaping and biodiversity could occur due to the enhancement measures proposed within the landscaping design, providing benefits to biodiversity and residents in a predominantly urbanised environment.

19.2.3 Land, Soils and Geology (Chapter 7)

The interactions between Chapter 7 (Lands, Soils and Geology) and the other chapters of the EIAR are set out below: -

Population & Human Health

Dust from the site and from soil spillages on the existing road network around the site may impact human health, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Biodiversity

Accidental oil or diesel spillages from construction plant and equipment may impact local flora and fauna. Such spills will be mitigated in accordance with Chapter 7 of this EIAR.

Water

Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures, including surface water and groundwater. Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages.

Climate (Air Quality & Climate Change)

Dust from the site and from soil spillages on the existing road network around the site may impact air quality, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works. Air Quality will be controlled and monitored as set out in Chapter 9 of this EIAR.

Air (Noise & Vibration)

Heavy machinery used for excavations may impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 12 of this EIAR.

Waste Management

Excess soil excavated during construction works, including any potential contaminated soils, will be managed and disposed of in approved locations as provided for in this EIAR.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Material Assets (Transport)

Excess soil excavated during construction works for Dublin Central will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

19.2.4 Water (Chapter 8)

The interactions between Chapter 8 (Water) and the other chapters of the EIAR are set out below: -

Population & Human Health

There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers, which could impact human health. This risk will be mitigated in accordance with Chapter 8 of this EIAR.

Biodiversity

There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers, which could affect local flora and fauna. Such spills will be mitigated in accordance with Chapter 8 of this EIAR.

Land, Soils & Geology

There is a risk of pollution of groundwater by accidental spillage of foul effluent during connections being made to live sewers. This risk will be mitigated in accordance with Chapter 8 of this EIAR.

Air (Noise & Vibration)

Heavy machinery used for excavations to facilitate watermains, drainage and attenuation may impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 12 of this EIAR.

Waste Management

Excess soil excavated during construction works to facilitate watermains, drainage and attenuation, including any potential contaminated soils, will be managed and disposed of in approved locations as provided for in this EIAR.

19.2.5 Climate (Air Quality and Climate Change) (Chapter 9)

Air quality does not have a significant number of interactions with other topics.

Population & Human Health

The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is short to long term, negative and imperceptible with respect to human health.

Land, Soils and Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

Material Assets (Transportation)

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on the surrounding road network. In this assessment, the impact of the interactions between traffic and air quality are considered to be imperceptible.

No other significant interactions with air quality and climate have been identified.

19.2.6 Climate (Sunlight & Daylight) (Chapter 10)

No potential impacts from other chapters of this EIAR were considered to have the potential to have associated sunlight and daylight impacts.

19.2.7 Air, Noise and Vibration (Chapter 11)

General

In compiling this impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and information relating to mechanical plant provided by the mechanical engineers. Noise emission sources from the proposed development during the construction and operational phases will be from traffic. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Refer to the relevant chapters for additional information.

Human Health

The potential impacts on human beings in relation to the generation of noise and vibration during the construction phases are that high levels of noise and vibration could cause nuisance to people in nearby sensitive locations. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be short-term in nature

Similarly, during the operational phase, designing plant selections to achieve the relevant noise criteria will result in a residual impact that is imperceptible to people in nearby noise sensitive locations. External noise sources acting on the development have been assessed and mitigation to ensure internal noise levels achieve the relevant noise criteria.

19.2.8 Landscape and Visual Impact (Chapter 12)

Introduction

All environmental factors are inter-related to some extent, these relationships can range from the tenuous to highly complex. Landscape and visual impacts often interact with and/or interrelate to the following topics for the proposed development.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

Biodiversity

An interaction between biodiversity and landscape and visual impact during the operation phase of the proposed development is identified.

There is little of ecological interest present within the application site, so during construction there is little potential for loss of features of value. Once operational, the introduction of street trees, planted swales and courtyards in addition to green roofs is likely to have a positive effect on the ecological potential of the site and its setting.

Cultural Heritage

A potential interaction between cultural heritage and landscape and visual impact during both the construction and operational phases of the proposed development is identified.

The area around the site of the proposed development is one of cultural significance, including the surrounding streets and their historical significance and buildings and other elements in these streets. Short term effects derived from hoardings located along the boundary of the application site during construction in addition to cranes and scaffolding have the potential to affect how the cultural significance of the area is perceived. During the operational phase the proposed buildings and changes to the public realm also have the potential to affect the perception of cultural heritage. The design of buildings, landscape and the selection of materials have the potential to contribute to the understanding of, engagement with and perception of the cultural heritage of the area.

Population and Human Health

An interaction between the population and human health and landscape and visual impact during both the construction and operational phase of the proposed development is identified.

Adverse, short term visual impacts will arise for visual receptors located close to or adjoining the application site during construction. These effects will derive from the presence of scaffolding, cranes, hoarding and materials. Once operational, the proposed development will contribute to the structure and functionality of this area of the City. This is principally due to the transformation of disused parts of the development site into useful development and publicly accessible civic spaces. Enhancements to landscape and visual amenity have the potential to positively impact on population and human health by increasing footfall to the area.

Transport

An interaction between transport and landscape and visual impact during both the construction and operational phases of the proposed development is identified.

Adverse, short term impacts will arise for receptors located close to or adjoining the application site during construction. These effects will derive from the increased movement of vehicles both using the public road network delivering and removing materials and within the application site. Once operational, positive effects such as pedestrian and cyclist movements and activity deriving from the proposed development will enliven and animate the streetscape.

19.2.9 Material Assets (Transportation) (Chapter 13)

The interactions between Chapter 13 Material Assets (Transport) and the other chapters of the EIAR are set out below: -

Population and Human Health

Traffic diversions during the Construction Stage could result in a temporary slight negative impact on population and human health. Diversions will be managed in accordance with the Construction Traffic Management Plan.

Lands, Soil & Geology

Material excavated during the construction of the will be transported by road for disposal in approved locations as provided for in Chapter 7 of this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

Climate –(Air Quality & Climate Change)

The generation of traffic during the Construction Stage has the potential to impact on Air Quality. Air Quality will be controlled and monitored as set out in Chapter 9 of this EIAR.

Air (Noise and Vibration)

The traffic generated during the Construction Stage has the potential to impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 12 of this EIAR.

Material Assets (Waste)

Excess material excavated during construction works for Dublin Central will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

19.2.10 Material Assets (Waste) (Chapter 14)

Dublin Central Masterplan

Adherence to the mitigation measures outlined in Section 14.6 in chapter 14 will ensure that there are no significant impacts on resource or waste management from the proposed development. The management of waste during the construction phase in accordance with the Construction &Demolition Waste Management Plan and during the operational phase in accordance with the Operational Waste Management Plan will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy.

Land, Soils & Geology

During the construction phase excavated soil, stone, clay and made ground (c. 163,490m^3) will be generated from the excavations required to facilitate site levelling and construction of foundations. It is estimated that all of excavated material will need to be removed offsite due to limited opportunities for reuse. Where material has to be taken off site it will be taken for reuse or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 14 and Construction &Demolition Waste Management Plan in Appendix 14.1 will ensure the effect is long-term, imperceptible and neutral.

Material Assets (Transportation)

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 13 Material Assets Transportation. Provided the mitigation measures detailed in Chapter 13 and the requirements of the Operational Waste Management Plan (included as Appendix 14.2) are adhered to, the effects should be short to long-term, imperceptible and neutral.

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Population & Human Health

The potential impacts on human beings in relation to the generation of waste during the demolition, construction and operational phases are that incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific Construction & Demolition Waste Management Plan and Operational Waste Management Plan, will ensure appropriate management of waste and avoid any negative impacts on the local population. long-term, imperceptible and neutral.

Site 3, 4 & 5

Adherence to the mitigation measures outlined in Section 14.6 in chapter 14 will ensure that there are no significant impacts on resource or waste management from the proposed development. The management of waste during the construction phase in accordance with the Construction & Demolition Waste Management Plan and during the operational phase in accordance with the Operational Waste Management Plan will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy.

Land, Soils & Geology

During the construction phase excavated soil, stone, clay and made ground (Site 3: c. 15,165m3, Site 4: c.132m^3 & Site 5: 5,593m^3) will be generated from the excavations required to facilitate site levelling and construction of foundations. It is estimated that all of the excavated material will need to be removed offsite due to the limited opportunities for reuse onsite. Where material has to be taken off site it will be taken for reuse or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 14 and the Construction & Demolition Waste Management Plan in Appendix 14.1 will ensure the effect is long-term, imperceptible and neutral.

Material Assets (Transportation)

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 13 Material Assets Transportation. Provided the mitigation measures detailed in Chapter 13 and the requirements of the Operational Waste Management Plan (included as Appendix 14.2) are adhered to, the effects should be short to long-term, imperceptible and neutral.

Population & Human Health

The potential impacts on human beings in relation to the generation of waste during the demolition, construction and operational phases are that incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific Construction &Demolition Waste Management Plan and Operational Waste Management Plan, will ensure appropriate management of waste and avoid any negative impacts on the local population. long-term, imperceptible and neutral.

19.2.11 Cultural Heritage (Architectural) (Chapter 15)

The existing Cultural Heritage character of retained historic building fabric within and historic building fabric external to the masterplan site is identified and informed by interactions with the following chapters of the EIAR: -

Climate (Sunlight & Daylight)

The interaction between cultural heritage and sunlight/ daylight has influenced the design of Sites 3, 4 and 5 in particular to reduce consequential daylight impacts for historic building fabric and historic streetscapes in the vicinity of the combined development.

Air (Noise & Vibration)

Retained structures of significance within the combined development Sites 3, 4 and 5, and in particular immediately adjoining historic buildings have benefited from a comprehensive review of the likely effects of vibration due to heavy machinery at demolition, excavation and construction stages, and mechanisms to control and monitor these effects, as cited in the various construction and management Chapters 3.1 -3.4 of this EIAR.

Landscape and Visual Impact

Operational stage impacts for the setting of retained historic fabric within and historic fabric enclosing Sites 3, 4 and 5 are demonstrated in Chapter 12 of the EIAR, following consideration and tempering of impacts at design stage.

Cultural Heritage (Archaeological)

Chapter 16 of the EIAR has influenced consideration of impacts for the inherent and adjoining architectural cultural heritage of Sites 3, 4 and 5 insofar as its predictions for impacts at excavation stage, which have in turn informed methodologies for protection of architectural heritage, expanded at design stage and reflected in mitigations cited in the various construction and management Chapters 3.1 -3.4 of this EIAR.

19.2.12 Cultural Heritage (Archaeological) (Chapter 16)

No significant interactions with Archaeology are envisioned as the mitigation measures proposed are incorporated into the design, construction, or operation of the proposed development. Archaeological monitoring is recommended for all earthmoving works required within the Dublin Central Masterplan area which will have the potential to reveal in-situ archaeological remains. The implementation of the archaeological mitigation measures during site preparation and construction works will ensure that all interactions are mitigated appropriately.

19.2.13 Risk Management (Major Accidents and Disasters) (Chapter 17)

As outlined in sections 17.5.1.6 and 17.5.1.7 above, no likely risks of a major accident / disaster occurring are identified during construction stage. A medium risk of major accident / disaster in respect of the proposed development during the operational phase. No cumulative effects are identified.

19.3 Cumulative Impacts

Where cumulative impacts were considered to arise, these have been outlined in the relevant Chapters of this EIAR. The below sections outline the cumulative impacts as raised in each relevant Chapter.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

19.3.1 Population and Human Health (Chapter 5)

19.3.1.1 Proposed Development – Site 3, 4 & 5

Construction Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessments that have contributed to section 5.5.1 in chapter 5 of this EIAR.

Operational Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessment that have contributed to section 5.5.2 in chapter 5 of this EIAR.

19.3.2 Biodiversity (Chapter 6)

19.3.2.1 Dublin Central Masterplan

The Dublin Central Masterplan site is currently zoned as Z5 "City / Town / Village Centre, Central Area" with the zoning objective *"to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity"* within the Dublin City Development Plan 2016 – 2022.

This section of the chapter assesses the potential for any other Proposed Developments to act cumulatively with the development of the Dublin Central Masterplan, to give rise to likely significant effects on biodiversity.

Based on a search of active or recent planning applications in the immediate environs of the Dublin Central Masterplan site[1], most applications relate to minor additions or amendments to existing buildings, including installation of platform lifts, improved access facilities etc. The exception to this is the planning application directly east of the site, on Moore Lane / Parnell Street, which will consist of the provision of additional nine bedrooms to the existing hotel. Planning permission for construction of the building was granted in July 2019, and works on this development are currently ongoing.

Potential cumulative impacts may arise during construction and operation, as a consequence of the development of the Dublin Central Masterplan acting in-combination with other plans and projects, on water quality in the downstream surface water environment, and on disturbance and habitat loss to birds.

There is potential for cumulative impacts to arise with other local developments that would also result in increased noise, vibration, and human presence. However, as any disturbance effects from other such local developments are likely to be or a minor nature, temporary, localised and over a short-duration, they are not likely to cumulatively affect the local breeding bird populations in conjunction with the implementation of the Dublin Central Masterplan.

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[1] Planning applications accessed via myplan.ie on 23 February 2021. Only planning applications that have been granted permission within the last five years were considered.

Considering the predicted impacts associated with the implementation of the Dublin Central Masterplan, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

19.3.2.2 Proposed Development – Site 3, 4 & 5

The Dublin Central Masterplan site, and subsequently the Proposed Development, is currently zoned as Z5 "City / Town / Village Centre, Central Area" with the zoning objective "to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity" within the Dublin City Development Plan 2016 – 2022.

This section of the chapter assesses the potential for any other Proposed Developments to act cumulatively with the development of the Proposed Development, to give rise to likely significant effects on biodiversity.

Based on a search of active or recent planning applications in the immediate environs of the Dublin Central site, most applications relate to minor additions or amendments to existing buildings, including installation of platform lifts, improved access facilities etc. The exception to this is the planning application directly east of the site, on Moore Lane / Parnell Street, which will consist of the provision of additional nine bedrooms to the existing hotel. Planning permission for construction of the building was granted in July 2019 and works on this development are currently ongoing.

Potential cumulative impacts may arise during construction and operation, as a consequence of the development of the Proposed Development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, and on disturbance and habitat loss to birds.

There is potential for cumulative impacts to arise with other local developments that would also result in increased noise, vibration, and human presence. However, as any disturbance effects from other such local developments are likely to be or a minor nature, temporary, localised and over a short-duration, they are not likely to cumulatively affect the local breeding bird populations in conjunction with the development of the Proposed Development.

Considering the predicted impacts associated with the development of the Proposed Development, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

19.3.3 Land, Soils and Geology (Chapter 7)

19.3.3.1 Dublin Central Masterplan

No cumulative impacts are noted for land, soils and geology.

19.3.3.2 Proposed Development – Site 3, 4 & 5

No cumulative impacts are noted for land, soils and geology.

19.3.4 Water (Chapter 8)

19.3.4.1 Dublin Central Masterplan

No cumulative impacts are noted for water.

19.3.4.2 Proposed Development – Site 3, 4 & 5

No cumulative impacts are noted for water.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

19.3.5 Climate (Air Quality and Climate Change) (Chapter 9)

19.3.5.1 Proposed Development – Site 3, 4 & 5

Construction Stage

The proposed Dublin Central Masterplan development will be constructed in a number of sites (Site 1 – 5), the construction stage for the individual phases will overlap with each other thus leading to cumulative construction dust emissions. However, a high level of dust control will be implemented across the full Dublin Central Masterplan site which will control dust emissions from each phase of the development. Therefore, cumulative dust emissions associated with the full Dublin Central Masterplan development will be short-term, localised, negative and imperceptible.

According to the IAQM guidance (2014) should the construction phase of the Proposed Development or Dublin Central Masterplan development coincide with the construction phase of any other development within 350m then there is the potential for cumulative construction dust impacts. However, as stated above a high level of dust control will be implemented across the full Dublin Central Masterplan site which will avoid significant dust emissions. Provided these mitigation measures are in place for the duration of the demolition and construction phase cumulative dust related impacts to nearby sensitive receptors are not predicted to be significant. Cumulative impacts to air quality will be short-term, localised, negative and imperceptible.

Due to the short-term duration of the construction phase and the low potential for significant CO_2 and N_2O emissions cumulative impacts to climate are considered neutral.

There are no significant cumulative impacts to air quality or climate predicted for the construction phase.

Operational Stage

The traffic data reviewed for the operational stage impacts to air quality and climate included the cumulative traffic associated with other existing and permitted developments in the local area as well as traffic associated with the full Dublin Central Masterplan development. Therefore, the cumulative impact is included within the operational stage impact for the Proposed Development. The impact is predicted to be long-term, neutral and imperceptible with regards to air quality and climate.

In addition, the proposed Dublin Central Masterplan development will facilitate the development of the proposed Metrolink with a station located within the development. The development of the Metrolink, if permitted, will provide for an alternative, more sustainable method of transport in comparison to personal passenger cars. This will result in a positive impact to air quality and climate by reducing emissions associated with cars.

19.3.6 Climate – (Sunlight & Daylight) (Chapter 10)

19.3.6.1 Masterplan

No cumulative impacts are noted for sunlight and daylight.

19.3.6.2 Proposed Development – Site 3, 4 & 5

No cumulative impacts are noted for sunlight and daylight.

19.3.7 Air, Noise and Vibration (Chapter 11)

19.3.7.1 Dublin Central masterplan

Construction Phase

The construction stages of the Dublin Central Masterplan will occur on a phased basis. There are no expected cumulative impacts associated with external construction works to the Dublin Central Masterplan. The closest construction work relative to the site is more than 40m from the closest site boundary. As illustrated in Table 11.22**Error! Reference source not found.**, the contribution from any secondary site external to the Dublin Central Masterplan is likely to be more than 10 dB below noise contribution from the closest site within the Dublin Central Masterplan and will not add to the noise impact at the nearest sensitive receptor.

Notwithstanding the above, any cumulative construction activities undertaken will be required to operate below the recommended noise and vibration criteria set out in Section 11.5.1.1.1 Section 11.5.1.1.3. Mitigation measures and recommended good practices have been outlined in Section 11.6.1.1.

Operational Phase

The different sites within the Dublin Central Masterplan will be designed so that the cumulative noise emissions from processes and activities are within the relevant noise criteria set out. In the same way, Proposed Developments external to the Dublin Central Masterplan site will in turn be designed in order to comply with appropriate noise criteria.

Any major Proposed Development in close proximity to the Dublin Central Masterplan site will be required to prepare an EIAR wherein cumulative impacts will also be considered.

19.3.7.2 Proposed Development – Site 3, 4 & 5

Construction Phase

The similar magnitude of residual noise and vibration impacts discussed in Section 11.7.1 for the Dublin Central Masterplan are relevant to the cumulative assessment of construction works external to the proposed site given it is anticipated that the same construction noise and vibration criteria would apply to these external construction sites.

Operational Phase

The different sites within the Proposed Development will be designed so that the cumulative noise emissions from processes and activities are within the relevant noise criteria set out. In the same way, Proposed Developments external to the Proposed Development will in turn be designed in order to comply with appropriate noise criteria.

Any major proposed development in close proximity to the Proposed Development will be required to prepare an EIAR wherein cumulative impacts will also be considered.

19.3.8 Landscape and Visual Impact (Chapter 12)

19.3.8.1 Masterplan

No cumulative impacts are noted for landscape and visual impact.

19.3.8.2 Proposed Development – Site 3, 4 & 5

No cumulative impacts are noted for landscape and visual impact.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

19.3.9 Material Assets (Transportation) (Chapter 13)

19.3.9.1 Masterplan

Construction Phase

The Potential Impact of the Cumulative Development arising from the Construction Stage is the same as the Potential Impact of the Proposed Development described in Section 13.5.1.1.

Operational Phase

The Potential Impact of the Cumulative Development arising from the Operational Stage is the same as the Potential Impact of the Proposed Development described in Section 13.5.1.2.

Do Nothing Impact

In the event that the Dublin Central development and the Metrolink Station do not proceed, the transportation environment in the surrounding area will remain as existing.

In this scenario, there will be no Metrolink Station in O'Connell Street Upper nor will there be a public plaza between O'Connell Street Upper and Moore Street.

The existing lanes at O'Rahilly Parade, Moore Lane and Henry Place will remain in their current dilapidated state with inadequate carriageways and no footpaths.

Finally, public transport services including Dublin Bus and the Luas Green Line should continue to operate as at present.

Overall, the do-nothing impact will be to retain the existing poor environment for cyclists and pedestrians between O'Connell Street Upper and Moore Street.

19.3.9.2 Proposed Development – Site 3, 4 & 5

Construction Phase

The Potential Impact of the Cumulative Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Potential Impact of the Proposed Development (Dublin Central Masterplan Site) described in Section 13.5.1.3.1.

Operational Phase

The Potential Impact of the Cumulative Development arising from the Operational Stage of the Proposed Development will be the same as the Potential Impact of the Dublin Central Masterplan described in Section 13.5.1.3.2.

Do Nothing Impact

The Do-Nothing Impact of the Cumulative Development arising from the non-development of the Proposed Development (Sites 3, 4 and 5) will be the same as the Do-Nothing Impact of the Dublin Central Masterplan described in Section 13.5.1.3.3.

19.3.10 Material Assets (Waste) (Chapter 14)

19.3.10.1 Proposed Development – Site 3, 4 & 5

Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development. Due to the high number of waste contractors in the Dublin region there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative effects associated with waste generation and waste management. As such the effect will be short-term, not significant and negative.

Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a long-term, imperceptible and neutral.

Do Nothing Impact

If the Proposed Development was not to go ahead there would be no demolition, construction or operational waste generated at this site. There will would be a neutral effect on the environment.

19.3.11 Cultural Heritage (Architectural) (Chapter 15)

19.3.11.1 Masterplan

Construction Stage

The masterplan site contains complete or almost complete streetscapes, each element of which both encloses the masterplan site and fulfils an important role in characterising the immediate and wider receiving urban landscape. At construction stage, each terraced streetscape will be temporarily screened with scaffolds and hoarding to facilitate the development and protect both users and built fabric in the vicinity of the masterplan site.

Methodologies for consolidation and repair of shared boundaries will be executed in order to maintain their integrity and mitigate risks arising from the works, as cited in the various construction and management Chapters 3.1 – 3.4 of this EIAR.

The observation of mitigations to protect the wider character of the receiving environment at construction stage, will reduce cumulative impacts potentially arising from the development.

Operational Stage

On completion, the cumulative impact of the combined masterplan area redevelopment on its enclosing urban environs will be considerable. The masterplan site has, since its origins, not known a period of decline as it has experienced since the early 1980s, particularly in the context of the rest of

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

the city, which has, in the round, improved markedly over the intervening period. That same environment has withstood the perceived hostility of urban decay as now defining its urban character.

Notwithstanding the inevitable change in character, other large-scale schemes have been constructed in the vicinity of the masterplan area, all contributing collectively to the increasingly 20th century character of the townscape which has proven that it can tolerate and indeed embrace structures of scale and contrasting design.

It follows that the site's redevelopment, whilst maintaining the urban character will seek to exploit its scale, street frontage and historical pattern of diverse and successive redevelopment, in the generation of a more ambitious scheme than presently exists.

The masterplan site's changing chronology over time introduced, at each successive stage of development, buildings of scale, density and architectural treatment, radically contrasting with the smaller scale residential character of 18th and 19th century buildings in the vicinity. At each stage, the enclosing urban environs have evolved to embrace these changes in morphological character.

The cumulative impact of building on a tradition of ambitious development on this site is thus held to be lessened on account of the site's existing and past morphological character, and how that same character was accommodated by its enclosing environs on account of the proportions of the enclosing streets and internal laneways, and a passive interaction with same.

Do Nothing Impact

If the proposed masterplan development were not to proceed, no demolition, construction or more importantly urban conservation would occur. Whilst presenting a neutral impact, a 'do nothing impact' could also be interpreted as presenting a 'worst case' impact for building fabric of significance in the masterplan area, together with its interaction with its receiving environment. Prolonging or potentially abandoning its development would essentially continue the prevalent cycle of dereliction and urban decay with long-term adverse consequences for presently retainable and conservable structures and that of their receiving historic environment.

19.3.11.2 Proposed Development – Site 3, 4 & 5

Construction Stage

Cumulative temporary and permanent construction stage impacts for the combined development of Sites 3,4 and 5 will be reduced in the observance of mitigating strategies summarised in Chapter 15.7 of this EIAR, as cited in the various construction and management Chapters 3.1 -3.4 of this EIAR.

Operational Stage

The existing contribution of the combined Sites 3,4 and 5 to their receiving environment is adversely impacted by dominance of under-functioning or vacant buildings with far- reaching consequences for the character of their enclosing urban environment. Cumulative impacts following the completion of the development are considered to be positive, both for the purposeful occupancy and conservation of retained structures, and the positive engagement of the scheme with its context.

Do-Nothing Impact

A 'do nothing' impact for Sites 3, 4 and 5 equates to a 'worst case impact'. Whilst the combined sites' interaction with the ACA would remain static, delaying or not proceeding with their redevelopment, would, in time create a challenge for the presentation of the heritage significance of Moore Street and its National Monument that might not be possible to overcome in isolation of the development of these sites.

19.3.12 Cultural Heritage (Archaeology) (Chapter 16)

19.3.12.1 Dublin Central Masterplan

Construction Stage

Potential cumulative impacts may arise during construction and operation, as a consequence of the Proposed Development acting in-combination with other plans and projects. The archaeological sites within the environs of the development are subsurface in nature and do not have an above ground legibility, the below ground surviving remains albeit truncated provide a record of the of the past.

Considering the predicted impacts associated with the implementation of the Dublin Central Masterplan on archaeology, the mitigation measures proposed to identify and record the archaeological resource and the receiving environment, and the protective policies and objectives of the City Development Plans that will direct future development locally, significant cumulative negative effects on archaeology are not predicted.

Operational Stage

There is no likely or significant predicted impact during the operational stage of the Dublin Central Masterplan area. All physical archaeological impact issues will be resolved at the pre-construction stage of the development and therefore no potential impacts are envisioned at the operation stage of the development.

The Dublin Central Development proposals include the retention of structures of historic merit that are contemporaneous with the events of the 1916 Easter Rising, the retention of the laneways of the evacuation route from the GPO and the reuse of stone sett pavements and kerbstones. When considered in combination with the development of Nos. 14 – 17 Moore Street as a commemorative centre the Proposed Development will have a permanent positive impact on the setting of the national monument. It ensures its protection and appreciation into the future and will bring to the fore the relationship between these structures and laneways and the history and heritage of the Moore Street area.

The retention of the lanes and properties of historic merit within the site have a significant positive and permanent impact on the setting of the National Monument.

Do Nothing Impact

In the "do-nothing" scenario the Dublin Central Masterplan area would not be redeveloped and therefore there would be no adverse impacts to any as yet undiscovered subsurface archaeological deposits, features or finds. Under the do-nothing scenario, any archaeological features that lie below the existing ground level will remain in- situ. Any information that might enhance our understanding of the eastern development of the city in the early post medieval and post medieval period will remain unknown.

19.3.13 Risk Management (Major Accidents and Disasters) (Chapter 17)

As outlined in sections 17.5.1.6 and 17.5.1.7, no likely risks of a major accident / disaster occurring are identified during construction stage. A medium risk of major accident / disaster is identified during the operational phase. No cumulative effects are identified.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021



DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

20 SUMMARY OF RESIDUAL IMPACTS

20.1 Introduction

This Chapter of the EIAR collates the predicted residual impacts on the environment as identified in Chapters 5 to 17, arising from the Dublin Central Masterplan and Proposed Development, during Construction and Operational Phases.

Residual Impacts, according to the Draft EPA Guidelines (2017, p.3) are: -

> *"The final or intended effects which occur after the proposed mitigation measures have been implemented."*

A summary of the Proposed Mitigation Measures are outlined under Chapter 18: Summary of Mitigation Measures.

This chapter has been prepared by Stephen Little, Managing Director and Michael O'Sullivan, Senior Planner, of Stephen Little & Associates. Stephen has 29 years' professional experience of town planning in Ireland, is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute and holds a Diploma in EIA Management (UCD). Michael has 7 years' professional experience in the planning in both the public sector and private consultancy in Ireland, has a MPlan – Master in Planning & Sustainable Development and is a Corporate Member of the Irish Planning Institute.

20.2 Proposed Residual Impacts

20.2.1 Population and Human Health (Chapter 5)

20.2.1.1 Dublin Central Masterplan

Construction Stage

Residual Impacts on Business and Residences

Taking into account the mitigation measures outlined in Section 5.6.6.1 in Chapter 5 of this EAIR it is predicted that there will be no likely significant effect with regard to the construction phase on business and residences.

Residual Impacts on Human Health from Air Quality

The greatest residual impact on air quality during the demolition and construction phase of the Dublin Central Masterplan is from construction dust emissions and the potential for nuisance dust. Taking into account the mitigation measures in Section 9.4.3 (and Appendix 9.2 'Dust Minimisation Plan' of Chapter 9: Climate (Air Quality & Climate Change) this EIAR, there will be no residual impact to human health arising from air quality impact.

Residual Impacts on Human Health from Noise & Vibration

Taking into account the mitigation measures and design recommendations outlined in Section 11.6.1 of Chapter 11: Air (Noise & Vibration) of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

Residual Impacts on Local Amenities and Tourism

It is predicted that there will be no likely significant effect of the residual impacts of the construction of the Proposed Masterplan Development on material assets.

Residual Impacts from Additional Traffic

Taking into account mitigation measures there will be no residual impact to human health arising from additional traffic.

Unplanned Events/Impacts on Health and Safety

Taking into account the mitigation measures outlined in Section 5.2.6 it is predicted that there will be no likely significant effect arising from the predicted residual impacts with regard to the construction phase for unplanned events and human health and safety.

Operational Stage

Residual Impacts on Businesses and Residences

Taking into account the mitigation measures outlined in Section 5.2.6 the predicted residual impacts with regard to the operational phase on business and residences is concluded to be positive and significant.

Residual Impacts on Human Health from Air Quality

It is predicted that there will be no likely significant effect of the residual impact of air quality on Human Health.

Residual Impacts on Human Health from Noise & Vibration

Taking into account the mitigation measures and design recommendations outlined in section 11.6.2 of Chapter 11: Air (Noise & Vibration) of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

Residual Impacts on Local Amenities and Tourism

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Proposed Dublin Central Masterplan Development on local amenities and tourism.

Residual Impacts on Material Assets

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Proposed Dublin Central Masterplan Development on material assets.

Residual Impacts from Additional Traffic

Taking into account the mitigation measures and design recommendations outlined in section 13.6.2 of Chapter 13: Material Assets (Transportation) of this EIAR, there will be no residual impact to human health arising from noise and vibration impact.

Unplanned Events/Impacts on Health and Safety

It is predicted that there will be no likely significant effect of the residual impact of the operational phase of the Proposed Dublin Central Masterplan Development on unplanned events and human health and safety.

Worst Case Effect

The precautionary principle has been applied throughout this assessment.

DCC PLAN NO. 2861/21
RECEIVED: 01/06/2021

20.2.1.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The residual impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the remedial impacts of the Proposed Masterplan Development described in Section 5.7.1.1.

Operational Stage

The residual impacts of the Proposed Development (Sites 3, 4 and 5) are the same as the remedial impacts of the Proposed Masterplan Development described in Section 5.7.1.2.

Worst Case Impact

The precautionary principle has been applied throughout this assessment.

20.2.1.3 Cumulative

Construction Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessments that have contributed to section 5.5 in chapter 5 of this EIAR.

Operational Stage

The cumulative impact of other potential impacts on human health from air quality, noise quality and traffic have been incorporated into the various models and assessment that have contributed to section 5.5 in chapter 5 of this EIAR.

20.2.2 Biodiversity (Chapter 6)

20.2.2.1 Dublin Central Masterplan

Designated Sites

European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any European site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any European sites.

National sites

There is no risk of the Proposed Development to affect the integrity of any nationally designated site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

Birds

The effects of the proposed development on breeding birds have been considered within Section 6.6.2.5 of chapter 6. Measures to avoid, reduce and mitigate effects on breeding birds have been provided in Section 6.6.3.2. Following the implementation of these measures, residual effects on breeding birds arising from the proposed development will be reduced to levels not considered to be significant.

Worst Case Impact

Construction and operational activities are assessed under the best and worst-case operating conditions, to determine all potential impacts associated with the Dublin Central Masterplan

20.2.2.2 Proposed Development – Site 3, 4 & 5

Designated Sites

European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any European site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any European sites.

National Sites

There is no risk of the Proposed Development to affect the integrity of any nationally designated site, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

Birds

The effects of the proposed development on breeding birds have been considered within Section 6.7.2.3. Measures to avoid, reduce and mitigate effects on breeding birds have been provided in Section 6.7.3.2. Following the implementation of these measures, residual effects on breeding birds arising from the proposed development will be reduced to levels not considered to be significant.

Worst Case Impact

Construction and operational activities are assessed under the best and worst-case operating conditions, to determine all potential impacts associated with the Proposed Development.

20.2.3 Land, Soils and Geology (Chapter 7)

20.2.3.1 Dublin Central Masterplan

Construction Stage

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will be minimised.

The Proposed Development will result in a surplus of excavated material, which may contain contaminants. Any contaminated material will be exported to an approved licensed waste facility.

No significant adverse impacts on the soils and geology of the subject lands are envisaged.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Operational Stage

During the operational stage, the buildings and public realm will be an urban environment, largely covered in roof and hard standing. Some areas with permeable paving, tree pits and green planting will allow for some surface water to permeate the soil. These SuDS devices treat and improve water quality by trapping suspended solids and filtering pollutants before they enter the soil.

No likely significant adverse impacts are predicted on soils or geology.

Worst Case Impact

The worst case scenario would be for contaminated soils to be encountered during the works. As noted above, any contaminated soils encountered will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998 – 2006, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the worst case scenario, subsoil may be exposed to inclement weather during construction and may result in the erosion of soils. However, with the proposed mitigation measures the quantity of soils exposed and the duration of that exposure will be minimised.

20.2.3.2 Proposed Development – Site 3, 4 & 5

Construction Stage

The residual impacts for the Proposed Development (Sites 3, 4 and 5) are the same as the residual impacts described for the Dublin Central Masterplan described in Section 7.7.1.1.

Operational Stage

The residual impacts for the Proposed Development (Sites 3, 4 and 5) are the same as the residual impacts described for the Dublin Central Masterplan described in Section 7.7.1.2.

Worst Case Impact

The worst case impact for the Proposed Development (Sites 3, 4 and 5) are the same as the worst case impact described for the Dublin Central Masterplan described in Section 7.7.1.3.

20.2.4 Water (Chapter 8)

20.2.4.1 Dublin Central Masterplan

Water Supply

Construction Stage

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction stage of the implementation of the Dublin Central Masterplan on the water supply network.

Operational Stage

There will be a water demand for the implementation of the Dublin Central Masterplan of approximately 800m^3 per day. Irish Water will confirm whether the existing network has sufficient capacity, or alternatively will outline any upgrades required to facilitate the development.

Foul Water Drainage

Construction Stage

During the construction stage of implementation of the Dublin Central Masterplan some short term negative impacts as identified above may result. However, if the proposed remedial and reductive measures are implemented, the impact of the implementation of the Dublin Central Masterplan during the construction stage will be minimised and **no significant long term impacts** will result from the construction works.

Operational Stage

By removing surface water flows from the combined network, the implementation of the Dublin Central Masterplan will result in a net decrease in the wastewater flows discharging to the existing combined drainage system.

Surface Water Drainage

Construction Stage

During the construction stage of implementation of the Dublin Central Masterplan some short term negative impacts as identified above may result. However, if the proposed remedial and reductive measures are implemented, the impact of the implementation of the Dublin Central Masterplan during the construction stage will be minimised and **no significant long term impacts** will result from the construction works.

Operational Stage

With the implementation of the SuDS treatment train, attenuation and flow control, there will be a net improvement in the quality and a net reduction in the quantity of surface water discharging from the individual site within the Dublin Central Masterplan. The proposal to discharge Site 5 to the existing surface water network, rather than the combined network, will result in a significant decrease in flows to the combined network and a net increase in flows to the surface water network.

No significant adverse impacts are envisaged.

Worst Case Impact

In the worst case scenario, there could be some surface water ingress into the foul water drainage system due to poor workmanship. Leakage from sewers and drains could result in local contamination of soil and ground waters in the area. The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts, to the surface water system which might result in polluting of the surface water network. However, with the mitigation measures set out above, the likelihood of these impacts will be minimised, and **no significant long term impacts** will result from the development.

20.2.4.2 Proposed Development – Site 3, 4 & 5

Water Supply

The potential impacts on water supply of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.1.

Foul Water Drainage

The potential impacts on foul water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.2.

Surface Water Drainage

The potential impacts on surface water drainage of the Proposed Development (Sites 3, 4 and 5) are the same as the potential impacts of the Dublin Central Masterplan described in Section 8.7.1.3.

Worst Case Impact

The worst case impact of the Proposed Development (Sites 3, 4 and 5) is the same as the do noting impact of the Dublin Central Masterplan described in Section 8.5.1.4.

20.2.5 Climate (Air Quality and Climate Change) (Chapter 9)

20.2.5.1 Dublin Central Masterplan

Construction Stage

Air Quality

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a dust minimisation plan which will be incorporated into the construction environmental management plan (CEMP) for the site. Provided the dust minimisation measures outlined in the plan (see Appendix 9.2 and Section 9.6.1.1) are adhered to, the air quality impacts during the construction phase will be short-term, negative, localised and imperceptible.

Construction traffic emissions will have a **long-term, localised, negative** and **imperceptible** impact on air quality.

Climate

According to the IAQM guidance (2014) site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term**.

Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 9.1). Therefore, the impact of construction of the proposed development is likely to be **negative, short-term** and **imperceptible** with respect to human health.

Operational Stage

Air Quality

As the traffic generated by the proposed development does not meet the criteria detailed in Section 9.2.2.1, for requiring a detailed air quality assessment the impact to air quality from traffic emissions during the operational stage is **neutral, long-term** and **imperceptible**.

Climate

The traffic associated with the operational phase of the proposed development is below the criteria requiring a detailed climate assessment. The impact to climate as a result of traffic emissions is predicted to be **long-term, neutral** and **imperceptible**.

In addition, the proposed development has been designed to reduce the impact to climate where possible through incorporated design measures. Full details of all measures included are outlined within the Energy & Sustainability Statement submitted as part of this planning application.

Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **long-term, neutral** and **imperceptible**.

Worst Case Impact

In terms of construction phase impacts, worst-case assumptions regarding volumes of excavation materials and number of vehicle movements have been used in order to determine the highest level of mitigation required in relation to potential dust impacts (see Section 9.5.1.1). The Masterplan development is the worst-case scenario in terms of dust emissions, emissions from each individual phase will be lower than the cumulative masterplan development.

Worst-case traffic data was used in the assessment of construction and operational phase impacts. In addition, conservative background concentrations were used in order to ensure a robust assessment. Thus, the predicted results of the construction and operational stage assessment are worst-case and the significance of effects is most likely overestimated.

20.2.5.2 Proposed Development – Site 3, 4 & 5

Construction Stage

Air Quality

Once the dust minimisation measures outlined in Section 9.6.1.1 and Appendix 9.2 are adhered to, the air quality impacts during the construction phase will be **short-term, negative, localised** and **imperceptible**.

Climate

According to the IAQM guidance (2014) site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the potential impact on climate is considered to be **imperceptible** and **short-term**.

Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 9.1). Therefore, the impact of construction of the proposed development is likely to be **negative, short-term** and **imperceptible** with respect to human health.

Operational Stage

Air Quality

As the traffic generated by the proposed development does not meet the criteria detailed in Section 9.2.2.1 for requiring a detailed air quality assessment the impact to air quality from traffic emissions during the operational stage is **neutral, long-term** and **imperceptible**.

DCC PLAN NO.2861/21
RECEIVED: 01/06/2021

Climate

The traffic associated with the operational phase of the proposed development is below the criteria requiring a detailed climate assessment. The impact to climate as a result of traffic emissions is predicted to be **long-term, neutral** and **imperceptible**.

In addition, the proposed development has been designed to reduce the impact to climate where possible through incorporated design measures. Full details of all measures included are outlined within the Energy & Sustainability Statement submitted as part of this planning application.

Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **long-term, neutral** and **imperceptible**.

Worst Case Impact

The worst case impact described in Section 9.7.1.3 for the development of the Dublin Central Masterplan is also applicable to the proposed development.

20.2.5.3 Cumulative

Construction Stage

The proposed masterplan development will be constructed in a number of phases sites (Site 1 – 5), the construction stage for the individual phases will overlap with each other thus leading to cumulative construction dust emissions. However, a high level of dust control will be implemented across the full masterplan site which will control dust emissions from each phase of the development. Therefore, cumulative dust emissions associated with the full masterplan development will be short-term, localised, negative and imperceptible.

According to the IAQM guidance (2014) should the construction phase of the proposed development or masterplan development coincide with the construction phase of any other development within 350m then there is the potential for cumulative construction dust impacts. However, as stated above a high level of dust control will be implemented across the full masterplan site which will avoid significant dust emissions. Provided these mitigation measures are in place for the duration of the demolition and construction phase cumulative dust related impacts to nearby sensitive receptors are not predicted to be significant. Cumulative impacts to air quality will be short-term, localised, negative and imperceptible.

Due to the short-term duration of the construction phase and the low potential for significant CO_2 and N_2O emissions cumulative impacts to climate are considered neutral.

There are no significant cumulative impacts to air quality or climate predicted for the construction phase.

Operational Stage

The traffic data reviewed for the operational stage impacts to air quality and climate included the cumulative traffic associated with other existing and permitted developments in the local area as well as traffic associated with the full masterplan development. Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to be long-term, neutral and imperceptible with regards to air quality and climate.

In addition, the proposed masterplan development will facilitate the development of the proposed MetroLink with a station located within the development. The development of the MetroLink, if permitted, will provide for an alternative, more sustainable method of transport in comparison to personal passenger cars. This will result in a positive impact to air quality and climate by reducing emissions associated with cars.

Worst Case Impact

The worst case impact described in Section 9.7.1.3 for the development of the Dublin Central Masterplan is also applicable to the cumulative development.

20.2.6 Climate (Sunlight & Daylight) (Chapter 10)

The scale of the development at Sites 3, 4 & 5 will have a minor impact on the shadow environment but the consequences of this will not be noticeable due to the site orientation and existing urban density of the area.

20.2.7 Air, Noise and Vibration (Chapter 11)

20.2.7.1 Dublin Central Masterplan

Construction Stage

Noise

All cumulative Dublin Central Masterplan construction activities are predicted to exceed the noise threshold value when they occur at the closest proximity to the residential, commercial and clinical receptors closest to the proposed site boundary. However, it should be noted that the assessment can be considered highly worst case and it is unlikely that all items of plant assessed will be in operational simultaneously, or that two adjoining sites of the development will be under construction simultaneously. Additionally, the predictions only indicate a potential significant effect (based on a worst-case scenario) when working at the closest location to the dwellings, with lesser impacts predicted at all other locations across site.

The implementation of the mitigation measures outlined in Section **Error! Reference source not found.**, and detailed in Appendix 11.2, will aim to minimise impact of construction noise experienced at nearby residential, commercial and clinical receivers.

Due to the nature of construction noise and the proximity of noise sensitive receivers, it is predicted the residual construction noise levels will be at or above the relevant noise criteria while works are within 15m of commercial receptors and less than 20m of residential receptors during initial site works. There will be a **negative, moderate to significant** and **short-term** residual noise impact during the initial site works activities at commercial and residential receptors within 10m and 15m respectively.

As the initial construction works move greater than 15m and 20m from commercial and residential receptors respectively, the predicted residual noise levels are at or below the relevant noise criteria but above the existing baseline noise levels, there will be a **negative, slight to moderate** and **short-term** noise impact. As the works move further away than 30m, the predicted noise levels are below the relevant noise criteria and existing baseline noise levels there will be a **neutral, not significant** and **short-term** noise impact.

All commercial receptors are predicted to have residual construction noise levels below the relevant noise criteria during utilities and structural construction works. The closest residential receptors are at 15m distance, which have residual noise levels below the relevant noise criteria during works but above the existing baseline noise level. There will be a **negative, slight to moderate** and **short-term** residual noise impact during the utilities and structural construction works at the commercial and residential receptors within 15m. As the works move further away than 20m from commercial and residential receptors, the predicted residual noise levels are below the relevant noise criteria and existing baseline noise levels there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during general construction work activities and below the existing baseline noise levels. At all commercial and residential receptors there will be a **neutral, not significant** and **short-term** impact during general construction work activities.

The closest clinical receptor is at 20m distance with an existing baseline noise level above 70 dB $L_{Aeq,T}$, therefore there will be a **neutral, not significant** and **short-term** residual noise impact during all works activities at closest boundaries to the clinical receptors.

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Vibration

No predicted significant adverse impact arising from vibration during construction provided works are carried out so as to fall under the relevant vibration criteria.

Worst Case Impact

In terms of potential noise and vibration impacts, the assessment has considered a range of worst case scenarios to determine the potential impacts of the proposed development.

During the construction phase, a range of worst case scenarios have been assessed assuming all plant items are operating along the closest noise sensitive boundaries. The assessment has determined impacts associated with these scenarios can be controlled through the best practice measures outlined in 11.6.

Operational Stage

Noise

Mechanical Plant Noise

Once cumulative plant noise emissions from the various sites of the Dublin Central Masterplan are designed to achieve the appropriate noise criteria the cumulative noise impact will be **neutral, imperceptible** and **permanent.**

Entertainment Noise

Once entertainment noise is designed and managed to achieve the criteria set out, i.e. inaudibility, the residual noise impact will be **neutral, imperceptible** and **permanent.**

Delivery and Servicing Traffic

Delivery activity has been considered in the context of the existing environment of a serviced, city centre location. The cumulative noise impact will be **neutral, not significant** and **permanent.**

Inward Noise Impact

With respect to inward noise impacts, the specification of noise mitigation has been recommended so that the internal noise criterion will be met. The residual noise impact will be **neutral, not significant** and **permanent.**

Vibration

There are no significant sources of vibration associated with the operational phases of the Dublin Central Masterplan. There is therefore a **neutral, imperceptible** and **permanent** cumulative impact associated.

20.2.7.2 Proposed Development – Site 3, 4 & 5

Construction Stage

Noise

The implementation of the mitigation measures outlined in Section **Error! Reference source not found.**, and detailed in Appendix 11.2, will aim to minimise impact of construction noise experienced at nearby residential, commercial and clinical receivers.

Due to the nature of construction noise and the proximity of noise sensitive receivers, it is predicted the residual construction noise levels will be at or above the relevant noise criteria while works are within 10m of commercial receptors and 15m of residential receptors during initial site works. There will be a **negative, moderate to significant** and **short-term** residual noise impact during the initial site works activities at commercial and residential receptors within 10m and 15m respectively. When the initial construction works are between 10m to 15m of the commercial receptors the residual noise levels are below the relevant noise criteria but above the existing baseline noise levels, there will be a **negative, slight to moderate** and **short-term** noise impact. As the works move more than 20m from commercial and residential receptors the predicted residual noise levels are below the relevant noise criteria and below the existing baseline noise levels, there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during utilities and structural construction works. At commercial receptors within 10m of the works, the residual construction noise level is predicted above the existing baseline noise level. There will be a **negative, slight to moderate** and **short-term** residual noise impact during works at the commercial receptors within 10m. As the works move further away than 10m from commercial receptors and 15m from the closest residential receptors, the predicted residual noise levels are below the relevant noise criteria and existing baseline noise levels, therefore there will be a **neutral, not significant** and **short-term** noise impact.

All commercial and residential receptors are predicted to have residual construction noise levels below the relevant noise criteria during general construction work activities and below the existing baseline noise levels. At all commercial and residential receptors there will be a **neutral, not significant** and **short-term** impact during general construction work activities.

The closest clinical receptor is at 20m distance with an existing baseline noise level above 70 dB $L_{Aeq,T}$, therefore there will be a **neutral, not significant** and **short-term** residual noise impact during all works activities at closest boundaries to the clinical receptors.

Vibration

No predicted significant adverse impact arising from vibration during construction provided works are carried out so as to fall under the relevant vibration criteria.

Operational Stage

Noise

Mechanical Plant Noise

Once cumulative plant noise emissions from the various sites of the Dublin Central Masterplan are designed to achieve the appropriate noise criteria the cumulative noise impact will be **neutral, imperceptible** and **permanent.**

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Entertainment Noise

Once entertainment noise is designed and managed to achieve the criteria set out, i.e. inaudibility, the residual noise impact will be **neutral, imperceptible** and **permanent.**

Delivery and Servicing Traffic

Delivery activity has been considered in the context of the existing environment of a serviced, city centre location. The cumulative noise impact will be **neutral, not significant** and **permanent.**

Inward Noise Impact

With respect to inward noise impacts, the specification of noise mitigation has been recommended so that the internal noise criterion will be met. The residual noise impact will be **neutral, not significant** and **permanent.**

Vibration

There are no significant sources of vibration associated with the operational phases of the Dublin Central Masterplan. There is therefore a **neutral, imperceptible** and **permanent** cumulative impact associated.

20.2.7.3 Cumulative

Construction Stage

The similar magnitude of residual noise and vibration impacts discussed in Section 11.7.1 for the Dublin Central Masterplan are relevant to the cumulative assessment of construction works external to the proposed site given it is anticipated that the same construction noise and vibration criteria would apply to these external construction sites.

Operational Stage

The different sites within the proposed development will be designed so that the cumulative noise emissions from processes and activities are within the relevant noise criteria set out. In the same way, proposed developments external to the proposed development will in turn be designed in order to comply with appropriate noise criteria.

Any major proposed development in close proximity to the proposed development will be required to prepare an EIAR wherein cumulative impacts will also be considered.

20.2.8 Landscape and Visual Impact Assessment (Chapter 12)

20.2.8.1 Dublin Central Masterplan

Not applicable as the Masterplan is still being refined and discussions with the Planning Authority are on-going. Notwithstanding this, as the Masterplan presents an integrated design for a new city quarter, no remedial or reductive measures are likely to be applicable.

20.2.8.2 Proposed Development – Site 3, 4 & 5

Since remedial and reductive measures do not apply, residual impacts will, initially, be as tabulated for potential impacts, above. Reduction in the visibility of the Proposed Development, resulting from the construction of other development, will gradually reduce its visibility and thereby its impacts, whether positive, negative or neutral in character.

Worst Case Impact

The effects considered above represent the 'worst case' scenario.

20.2.9 Material Assets (Transportation) (Chapter 13)

20.2.9.1 Dublin Central Masterplan

Construction Stage

Car Parking

During the Construction Stage, there will be a permanent loss of 160 car parking spaces on the subject site currently accessed from O'Rahilly Parade and Moore Lane. The reduction in car parking is predicted to be a **permanent long-term slight** impact which will be ameliorated by the high provision of public transport in the surrounding area.

Traffic Flow/Speed

The presence of construction traffic on the surrounding streets during the Construction Stage is not expected to lead to significant delays to vehicular traffic including public transport. Construction traffic is predicted to generate a temporary **slight negative, short term** impact during the construction site.

Diversion of Traffic

No traffic diversions are proposed on Parnell Street or O'Connell Street Upper. Local traffic diversions could occur on O'Rahilly Parade, Moore Lane and Henry Place which could lead to a temporary **slight negative, short term** impact during the Construction Stage.

Delays to Public Transport

No delays or disruption to bus or Luas services are predicted. Some delays may occur to bus or Luas services on Parnell Street and O'Connell Street Upper northbound due to construction traffic for Dublin Central using Parnell Street to access the development site. This impact is expected to be **temporary, short-term, slight,** and **negative.**

Capacity of Public Transport

Due to the proposed non-provision of car parking on-site, there is likely to be an increased demand for public transport from construction workers. The impact of the additional passenger demand is expected to be **temporary, short-term, slight,** and **negative.**

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Cycle and Pedestrian

During construction works for the installation of underground services on the public streets, temporary facilities will be required to be provided by the main contractor to maintain cycle connectivity and pedestrian access. These facilities will be provided in accordance with the Construction Management & Waste Management Plan and the Construction Traffic Management Plan. The impact is predicted to be **temporary, short-term, slight,** and **negative**.

Overall

Overall, the impact of the Construction Stage on the transportation environment in the area of the subject site is predicted to be **temporary, short-term, slight,** and **negative.**

Operational Stage

Car Parking

The loss of 160 car parking spaces on Moore Lane will result in the permanent loss of car parking revenue to the operators together with an increased demand on other car parking in the surrounding area, primarily off-street. The loss of car parking is likely to be a **permanent, long-term, slight**, and **negative impact** which will be ameliorated by the high provision of public transport in the surrounding area.

Traffic Flow / Speed

No works are proposed to the carriageways or junctions on O'Connell Street Upper, Parnell Street or Moore Street. The results of the traffic modelling undertaken demonstrates that the surrounding street network will operate without any material or significant impact on the road infrastructure. As a result, the Proposed Development is predicted to have a **permanent, neutral, long term slight** and **impact** on traffic flows and speeds on O'Connell Street Upper and Parnell Street.

Diversion of Traffic

No traffic diversions are proposed on Parnell Street or O'Connell Street Upper. Permanent reversal of traffic flow from one-way southbound to one-way northbound is proposed on the northern section of Moore Lane. Pedestrianisation is proposed on Henry Place and on the southern section of Moore Lane. These changes are predicted to have a **permanent, long term, moderate** and **positive impact** on the transportation network.

Delays to Public Transport

No delays or disruption to bus or Luas services are predicted. The impact of the development is predicted to be **permanent, long term, imperceptible** and **neutral.**

Capacity of Public Transport

The commissioning of Metrolink and the high level of public transport usage by staff, guests, and residents at Dublin Central are predicted to **create a permanent, long term, significant** and **positive impact** on public transport in the City Centre.

Cycle and Pedestrian

The proposed pedestrian area on Moore Lane and Henry Place in conjunction with the extensive provision of cycle parking are predicted to create **a permanent, long term, significant** and **positive impact** on the pedestrian and cycle environment in the City Centre.

Overall

Overall, the impact of the Operational Stage on the transportation environment in the area of the subject site is predicted to be **permanent, long-term, slight**, and **positive.**

20.2.9.2 Cumulative Development

Construction Stage

The Residual Impact for the Cumulative Development arising from the Construction Stage will be the same as the Residual Impact for the Proposed Development described in Section 13.7.1.1

Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage will be the same as the Residual Impact for the Proposed Development described in Section 13.7.1.2.

Worst Case Impact

Where the various mitigation measures (ameliorative, remedial, reductive, and monitoring) described in Section 13.6 are not implemented correctly or fail, the proposal is likely to have to be a **negative short-term moderate impact** on the transportation environment during the Construction Stage and **a negative long term slight impact** on the transportation environment during the Operational Stage.

20.2.9.3 Proposed Development – Site 3, 4 & 5

Construction Stage

The Residual Impact for the Proposed Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Residual Impact for the Proposed Development (Dublin Central Masterplan) described in Section 13.7.1.1.

Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Residual Impact for the Proposed Development (Dublin Central Masterplan) described in Section 13.7.1.2.

20.2.9.4 Cumulative Development

Construction Stage

The Residual Impact for the Cumulative Development arising from the Construction Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Residual Impact for the Cumulative Development (Dublin Central Masterplan) described in Section 13.7.1.1.

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Operational Stage

The Residual Impact for the Cumulative Development arising from the Operational Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Residual Impact for the Proposed Development (Dublin Central Masterplan) described in Section 13.7.1.2.

Worst Case Impact

The Worst-Case Impact for the Cumulative Development arising from the Operational Stage of the Proposed Development (Sites 3, 4 and 5) will be the same as the Worst-Case Impact for the Proposed Development (Dublin Central Masterplan) described in Section 13.7.1.4.

20.2.10 Material Assets (Waste) (Chapter 14)

20.2.10.1 Dublin Central Masterplan

Construction Stage

A carefully planned approach to waste management as set out in Section 14.6 and adherence to the C&D WMP during the demolition, excavation and construction phase will ensure that the effect on the environment will be **short-term, imperceptible** and **neutral.**

Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 14.6 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term**, **imperceptible** and **neutral**.

Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 in chapter 14 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in section 14.5.

20.2.10.2 Proposed Development – Site 3, 4 & 5

Construction Stage

A carefully planned approach to waste management as set out in Section 14.6 and adherence to the C&D WMP during the demolition, excavation and construction phase will ensure that the effect on the environment will be **short-term, imperceptible** and **neutral.**

Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 14.6 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, imperceptible** and **neutral.**

Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in section 14.5.

20.2.10.3 Cumulative

Construction Stage

During the demolition, excavation and construction phase waste management will be carefully managed as set out in Section 14.6 and the C&D WMP. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be short-term, imperceptible and neutral.

Operational Stage

During the Operational phase waste management will be carefully managed as set out in Section 14.6 and the OWMP. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be long-term, imperceptible and neutral.

Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in section 14.5.

20.2.11 Cultural Heritage (Architectural) (Chapter 15)

20.2.11.1 Dublin Central Masterplan

Construction Stage

A key residual impact is the possibility of accidental/ unforeseen permanent loss during the construction stage, of architectural heritage cited as having significance and intended to be retained as part of the proposed development.

A less tangible residual impact following the commencement of the development of the Masterplan is economic uncertainty or a continuing Covid pandemic-scenario arising in the temporary or prolonged cessation of works, leaving historic fabric more vulnerable than it is currently.

The proposed development has been designed so that on commencement of the Masterplan development, both risks are mitigated against in the certainty of funding and in the natural elimination of the pandemic.

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

Worst Case Impact

A worst-case scenario would be the permanent loss of architectural heritage of significance as a consequence of the development.

A further detriment for the delivery of the Masterplan would be for the works to permanently cease as a consequence of long-term economic impacts.

Operational Stage

The viability of the Masterplan development at operational stage is dependent on the prosperity of the community for which it is intended to be delivered. In the event of a recession, and piecemeal occupancy – the vitality of the scheme and long term securing of its architectural heritage would be impacted. A positive residual impact, even in the event of a future recession, would be the securing of that same architectural heritage at construction stage, overcoming the current status of incremental decline.

Worst Case Impact

A worst case impact for the Masterplan is partial, yet incomplete development, arising in further incremental erosion of the character of the ACA and its architecturally significant buildings.

20.2.11.2 Residual Impacts Envisaged for the Development of Site 3

Construction Stage

A final stage of recording the building ranges following clearance of each building is proposed. Residual impacts, following this second stage of recording is limited to the physical removal of fabric identified for demolition and disruption arising therefrom, which has been anticipated in the Construction Management Plan accompanying this submission prepared by Waterman Moylan Consulting Engineers Limited and Waterman Structures Limited with inputs by Ms. Lisa Edden, specialist conservation engineer of CORA.

As careful management of the demolition process will ensure the protection of the adjoining retained fabric, no further residual impacts are envisaged.

Worst Case Impact

No worst case residual impact is envisaged as arising at construction stage, if all mitigation measures proposed are adopted.

Operational Stage

The impact of an altered external urban context is offset against the benefit of a much needed renewal of this urban block.

It is possible that material impacts arising from the generation of infill fabric to the rear of retained facades might emerge over time, such as cracking of masonry or the build-up of condensation at interstitial layers, arising in efflorescence in masonry.

Worst Case Impact

A detailed analysis of the building fabric will be possible prior to construction, by which time a site specific design for the provision of new structures behind existing, provision of insulation and breather membranes can be resolved- all mitigating against the risk of a residual impact arising from the technical detailing of retained facades.

20.2.11.3 Residual Impacts Envisaged for the Development of Site 4

Construction Stage

The sensitivity of constructing this development will not easily tolerate residual impacts. As a consequence, it is hoped that additional future impacts for the National Monument and retained structures of heritage significance within Site 4 can be predicted at Ministerial Consent stage, or immediately following commencement of work, where carefully considered amendments to a future consent can be sought, if necessary. As a consequence of an avoidance of residual impacts, none are envisaged as arising.

Operational Stage

The terraced, multi-occupancy context of buildings north and south of the National Monument will inevitably arise in a possible residual risk of damage occurring from within properties adjacent. Every effort must be taken to secure the long term integrity of boundary conditions to mitigate against operational stage risks, by way of quality alarm systems and regular maintenance.

The same conditions will arise in respect of retained fabric, within Site 4, where buildings will be occupied by multiple tenants of differing profiles. It is essential that all properties within the development at Site 4 are subject to strictly observed and implemented monitoring, inspections and maintenance to ensure that all historic fabric within and adjoining the site is safeguarded.

Worst Case Impact

A worst case impact for fabric of heritage significance within and abounding the development site is the occurrence of damage spreading from one property to another. As cited for the Operational Stage of Site 4, above, it is imperative that an effective management plan for the future occupancy of the development is implemented, to mitigate risks of emergence of worst case impacts.

20.2.11.4 Residual Impacts Envisaged for the Development of Site 5

Construction Stage

No architectural heritage residual impacts are envisaged as arising from the construction stage development of Site 5.

Operational Stage

No architectural heritage residual impacts are envisaged as arising from the operational stage development of Site 5.

Worst Case Impact

No architectural heritage worst case residual impacts are envisaged as arising from the development of Site 5.

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

20.2.11.5 Cumulative

Construction Stage

At construction stage, existing streetscapes offered by the combined sites, that presently define the architectural setting of the site from within the public realm will be temporarily supplemented with hoarding to overcome possible environmental changes arising from the works. Methodologies for consolidation and repair of shared boundaries will be executed in order to maintain their integrity and mitigate risks arising from the works.

Operational Stage

On completion of the development, the cumulative impact of the combined development on the enclosing urban environs will be considerable. The Masterplan site has, since its origins, not known a period of decline as it has experienced since the early 1980s, particularly in the context of the rest of the city, which has, in the round, improved markedly over the intervening period. That same environment has withstood the perceived hostility of urban decay as now defining its urban character.

Notwithstanding the inevitable change in character, other large-scale schemes have been constructed in the vicinity of the Masterplan area, all contributing collectively to the increasingly 20th century character of the townscape which has proven that it can tolerate and indeed embrace structures of scale and contrasting design.

It follows that the site's redevelopment, whilst maintaining the urban character will seek to exploit its scale, street frontage and historical pattern of diverse and successive redevelopment, in the generation of a more ambitious scheme than presently exists.

The Masterplan site's changing chronology over time introduced, at each successive stage of development, buildings of scale, density and architectural treatment, radically contrasting with the smaller scale residential character of 18th and 19th century buildings in the vicinity. At each stage, the enclosing urban environs embraced an evolving character.

The cumulative impact of building on a tradition of ambitious development on this site is thus held to be lessened on account of the site's existing and past morphological character, and how that same character was accommodated by its enclosing environs on account of the proportions of the enclosing streets and internal laneways, and a passive interaction with same.

Worst Case Impact

A worst case impact for the development of Sites 3, 4 and 5 would be in prolonging their development further, which in time would create a challenge for the presentation of the heritage significance of Moore Street and its National Monument that might not be possible to overcome in isolation of the development of these sites.

20.2.12 Cultural Heritage (Archaeology) (Chapter 16)

20.2.12.1 Dublin Central Masterplan

Construction Stage

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within the Dublin Central Masterplan area lands will be resolved in consultation with the relevant authorities during the course of the project. There will therefore be no residual impacts on the archaeological resource. A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

Operational Stage

There will be no residual impact on the archaeological heritage during the operational stage of the development.

Worst Case Impact

There is no worst case residual impact on the site.

20.2.12.2 Proposed Development – Site 3, 4 & 5

Construction Stage

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 3, Site 4 or Site 5 will be resolved in consultation with the relevant authorities during the course of the project. There will therefore be negligible residual impacts on the archaeological resource.

A beneficial residual impact will be the increased knowledge of the archaeology of this part of Dublin City.

Operational Stage

There will be no residual impact on the archaeological heritage during the operational stage of the development.

Worst Case Impact

There is no worst case residual impact on the site.

20.2.13 Risk Management (Major Accidents & Disasters) (Chapter 17)

The risk of a major accident and / or disaster during the construction phase of the 'Masterplan' and the Proposed Development is considered **low.**

The risk of a major accident and / or disaster during the operational phase of the 'Masterplan' and the Proposed Development is considered **medium.**

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

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DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

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DCC PLAN NO: 2861/21
RECEIVED: 01/06/2021

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