KPMG Future Analytics

Environmental Report - Addendum to Approved Phase 1 Parent EIAR

Addendum to the Environmental Impact Assessment submitted for the scheme approved planning permission under ABP Ref. 318607-23, located on lands at Cherry Orchard, Dublin 10.

February 2025

Contents

List of Figures

List of Tables

Non-Technical Summary

A Non-Technical Summary of this Environmental Report has been prepared and submitted along with this volume. The EIA Directives include the requirement for a non-technical summary, as one of the fundamental objectives of the EIA process is to ensure that the public is made fully aware of the environmental implications of any decisions about whether to allow new projects to take place. The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022) (the EPA Guidelines) note that the non-technical summary of the Environmental Report should cover the issues that arose in sufficient detail so that the key issues and their implications can be clearly understood. The EPA Guidelines also note that, in the case of larger projects it can be useful to present the non-technical summary as a separate document, which can be widely distributed to the public who are likely to be affected by the project.

In that regard a document containing the non-technical summary of all the updated chapters and subsequent details on any key issues and their implications arising from the Proposed Development on land located in Cherry Orchard, Dublin 10 (known as Development Site 4 and 5 in the Park West Cherry Orchard Local Area Plan 2019 or Cherry Orchard Phase 2) has been submitted along with this Environmental Report. This Environmental Report is an addendum to the Parent Environmental Impact Assessment Report (EIAR) submitted with the application for the now approved Cherry Orchard Phase 1 development. This planning application relates to Phase 2 of the overall Cherry Orchard development on Sites 4 and 5 of the Park West Cherry Orchard Local Area Plan area. Therefore, this Environmental Report sets out any relevant updates / review of the surveys, baseline analysis, impacts and mitigation measures assessed and proposed under the Parent EIAR as a result of Phase 2 of the scheme. The updates within this Environmental Report mainly focus on the environmental impacts and subsequent mitigation measures identified for Phase 2 of the scheme.

The structure of the non-technical summary follows a similar structure to this Environmental Report. All likely significant effects, where relevant have been detailed and included.

1 Introduction

1.1 Introduction

This Environmental Report, addendum to the Parent Environmental Impact Assessment Report (EIAR), has been prepared on behalf of Dublin City Council, In Partnership with The Land Development Agency (LDA), in respect of a Proposed Development on land located in Cherry Orchard, Dublin 10 (known as Development Sites 4 and 5 in the Park West Cherry Orchard Local Area Plan 2019). The Proposed Development represents Phase 2 of the overall planned development for Development Sites 4 and 5 of the LAP lands.

1.1.1 The Overall Planned Development for Cherry Orchard

The Proposed Development site forms part of Development Site 4 of the Park West Cherry Orchard Local Area Plan 2019 (the Cherry Orchard Development Sites). The Cherry Orchard Development Sites 4 and 5 comprise approximately 11.5 hectares in area and are located on lands at Park West Avenue, Cherry Orchard, Dublin 10. Development site 4 (including the approved Phase 1 and proposed Phase 2 lands) is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, Park West Cherry Orchard Rail Station to the southeast, the rail line to the south, and the M50 motorway to the west Figure 1.1 below demarcates the Cherry Orchard Development Sites in context of the surrounding area.

A breakdown of the total residential units under - cost rental, social and affordable units proposed for Phases 1-3 is provided in the below **Error! Reference source not found.**.

Table 1.1 Break down of typology of residential units proposed in Phases 1 to 3 of the Overall Site Development

Phase	Cost Rental	Social and Affordable	Total Units
1	547	161	708
2		137	137
3	203	51	254
Total			**1,099**

The Application Site (or 'Subject Site') is part of Site 4 in Cherry Orchard, Dublin 10 (known as Key Development Site 4 in the Park West Cherry Orchard Local Area Plan 2019).

The proposed scheme represents Phase 2 of the overall planned development and is proposed on the northern part of Site 4, covering an area of 3.185 hectares (red line boundary). Phase 2 will comprise of a total 137 no. dwellings in a mix of houses, duplex units, and own-door apartments ranging in height from two to three storeys.

Figure 1.1 Site Layout Plan of the Application Site under Phase 2 of the Scheme (demarcated in red)

1.1.2 Phase 1 Development

Planning approval (Bord. Ref: ABP-318607-23) was approved on 9th July 2024 under Section 175 of the Planning and Development Act 2000 (as amended) for the construction of a residential-led scheme comprising 708no. social affordable and cost rental units across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys (the Phase 1 Approval). That application was accompanied by an Environmental Impact Assessment Report (Parent EIAR) which assessed the Cherry Orchard Development Sites in their entirety on the basis that these lands are in the single ownership of Dublin City Council and that the future development intent for the entire development site was generally known. This enabled a comprehensive cumulative impact assessment of future phases of development to be undertaken as part of that assessment. This was also to enable future applications (such as this proposal) to rely on the Parent EIAR with updates to surveys and baseline analysis where appropriate and confine mitigation measures within the red line boundary of the specific phase of development. This approach was put to An Bord Pleanála in the Scoping Request and deemed acceptable in their assessment of the Phase 1 application.

1.1.3 Proposed Development

The proposed development to which this Environmental Report relates comprises:

The proposed development on a site of c. 3.185 hectares, located on lands at Cherry Orchard, Dublin 10 (known as Development Site 4 in the Park West Cherry Orchard Local Area Plan 2019). The site is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west. The development will consist of the construction of a residential scheme containing 137no. residential dwellings (comprising 31no. 2-bedroom units, and 106no. 3-bedroom units) through a mixture of houses, duplex units and own-door apartments. The proposed development will include a new access road connecting to the entrance point at Park West Avenue as approved under the Phase 1 scheme, new internal streets, landscaped public and communal open space, a new pedestrian connection to Cloverhill Road and all associated site and development works. The proposed development represents Phase 2 of the overall planned development for Development Sites 4 and 5 of the LAP lands. Phase 1 of the overall planned development was approved permission in July 2024 (Bord. Ref: ABP-318607-23).

The proposed development (GFA of c. 13,280sqm) involves the construction of 137no. dwellings in a mix of houses, duplexes and own-door apartments ranging in height from 2 to 3 storeys comprising 31no. two-bed units (9no. two-bed three-person and 22no. two-bed four-person) and 106no. three-bed units (13,015 sqm total residential floor area), and all ancillary accommodation including bike and bin stores and ESB substation (265sqm total GFA). The proposed development also includes the provision of 2,133sqm landscaped public open space, in addition to 2,050sq.m of public open space as approved under the Phase 1 permission (Bord. Ref: ABP-318607-23). The total public open space provided for Phase 2 totals 4,183 sqm (12.34% of the net site/development area (3,390ha) of Phase 2 lands). Communal open space for the duplex and apartment units is provided across three dedicated communal amenity areas (602sq.m in total area) with private open space to serve the proposed units to be delivered through a mixture of rear gardens and terraces.

The proposed development will also involve the provision of 141no. car parking spaces at curtilage and street level throughout the development, of which 7no. are accessible spaces and 71no. EV charging points (representing 50% of the total parking spaces). A total of 306no. bicycle parking spaces, of which 18no. are visitor spaces accommodated through a mixture of bike stores and external cycle parking stands. A total of 7no. motorbike parking spaces are also provided. Vehicular, pedestrian and cycle access routes to serve the proposed development are provided via the approved Phase 1 entrance to the east of the site along Park West Avenue with further connections provided to the north and to the south to the approved Phase 1 scheme. Provision is also made for the installation of a signalised access junction with associated traffic lights and below ground infrastructure and the relocation of bus stop and shelter along Park West Avenue. The need to provide a signalised junction requires minor alterations to the entrance to the development including adjustment to the paving as previously approved under the Phase 1 scheme (no further amendments to that permission are proposed under this application.) The proposed development also includes the provision of off-street cycle lanes along Park West Avenue that will provide direct connectivity to the Rail Station to the southeast and Cherry Orchard Park to the east.

The development will also provide for all associated ancillary site development works including site clearance, boundary treatment, associated public lighting, internal roads and pathways, bin and bike stores, ESB substation, hard and soft landscaping, play equipment, and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

1 *Figure 1.2 Development Sites in the context of the surrounding area*

As set out in the Parent EIAR, the overall development spanning Sites 4 and 5 is expected to provide approximately 1,100 homes, c. 4,790 sq. m. of retail uses on Park West Avenue, a creche facility, and up to c. 16,300 sq. m. of commercial / enterprise uses adjacent to the M50 corridor.

This will be delivered across four Phases (see Figure 1.3)1.

Figure 1.3 1 *Phasing Plan for the delivery of the Proposed Development on Key Site 4 under the Park West Cherry Orchard Local Area Plan 2019 (Source: Van Dijk Architects and Conroy Crowe Kelly Architects).*

The proposed phasing plan divides the overall site lands into four distinct sections, with Phases 1, 2 and 4 within Site 4 of the Local Area Plan and Phase 3 within Site 5 lands.

Phase 1: Approved Scheme

The Phase 1 Development was approved planning permission by An Bord Pleanála ('the Board') on 9th July 2024, subject to 24 conditions and represents Phase 1 of the wider development of Sites 4 and 5 of the LAP lands. The approved scheme principally involves the construction of a residential led mixed use development comprising c. 708 residential apartments comprising 547 cost rental and 161 social / affordable units together with a convenience retail supermarket, 7 retail / commercial units and 13 community, arts and cultural spaces including external event spaces and community gardens, and a childcare facility with associated external playing space. 1 below illustrates the site layout plan that was submitted as part of the Phase 1 Development.

1*Figure 1.4 Map showing the Phase 1 Application Site (edged in red) – as approved by the Board in July 2024. (Source: Approved Phase 1 Application Architectural Design Statement)*

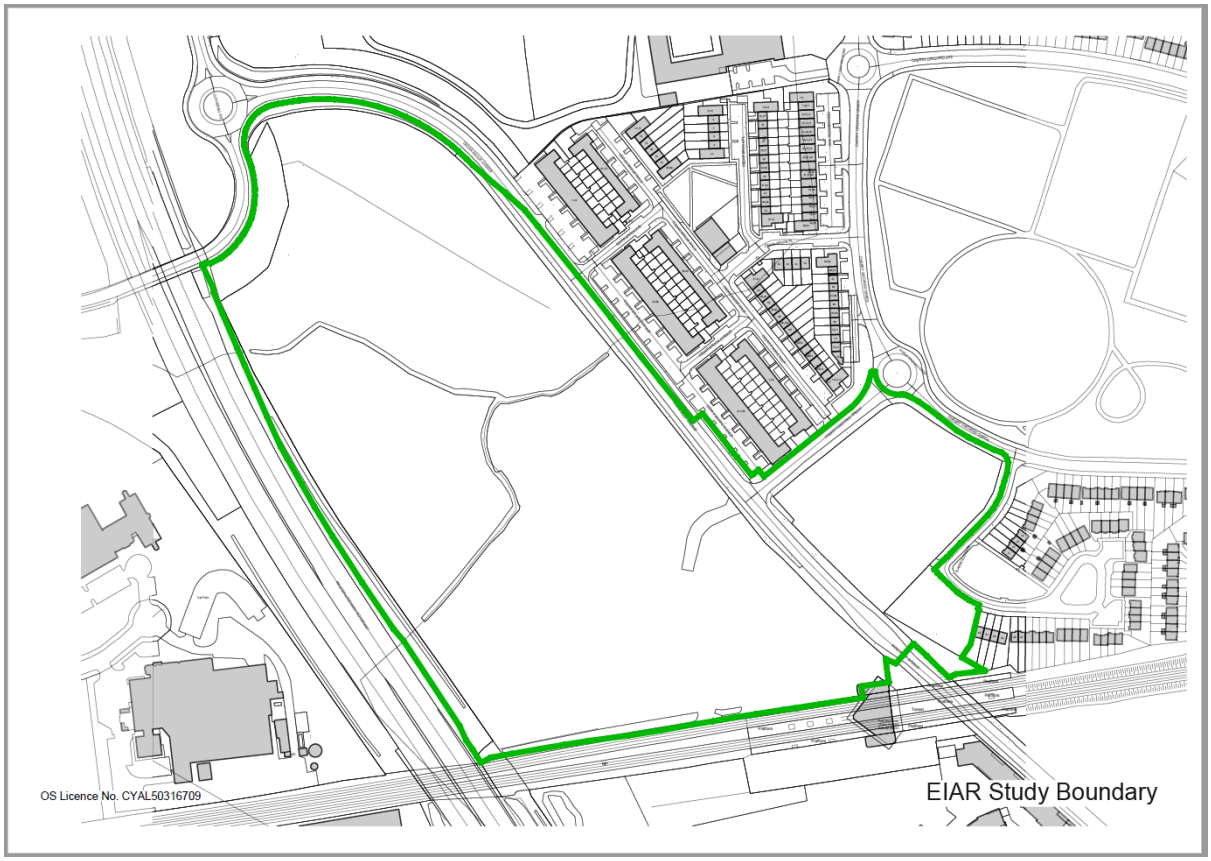
The Phase 1 application was accompanied by the Parent EIAR. The Parent EIAR followed a holistic approach, in that it considered the entirety of the Cherry Orchard Development lands (Sites 4 and 5), in particular the potential cumulative impacts of each of the 4 planning phases of development. and

The Board, in making its decision to approve permission for the Phase 1 Development considered that, *"I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR is up to date, adequately identifies and describes the direct, indirect, and cumulative effects of the proposed development on the environment, and complies with article 94 of the Planning & Development Regulations, 2001 (as amended)".*

A brief overview of the approach to the Parent EIAR carried out as part of the Phase 1 application has been set out in Section 1.1.4 above.

1.1.4 Parent EIAR

An Environmental Impact Assessment Report was prepared for Sites 4 and 51. This was on the basis that the development sites fall under a single ownership and hence, will be a single scheme, delivered in phases to align with the delivery of essential infrastructure, services and amenities. In this regard, the overall impacts of the entire Cherry Orchard Development scheme on the receiving environment was considered. The Parent EIAR also assessed the effects on the environment of the proposed development and subsequent mitigation measures to address said impacts.



1 *Figure 1.5 Parent EIAR Site Boundary.*

All Chapters of the Parent EIAR considered the study area as shown in Figure 1.5 above, in carrying out assessments of impacts, risks and in proposing any subsequent mitigation measures to address the same.

1.2 11 Structure and Content of this Report

The structure of this Environmental Report is consistent with that of the Parent EIAR submitted as part of the Phase 1 approved application.

The content of the Parent EIAR was prepared in accordance with the requirements of Article 5(1) and Annex IV of the EIA Directive and the EPA Guidelines. The information to be contained in an EIAR is as follows:

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.*

The EPA Guidelines describe the inclusion of the following, as good practice in the preparation of an EIAR:

- Key alternatives considered;
- Proposed project;
- Receiving environment;
- Likely significant effects; and
- Mitigation and monitoring measures and residual effects.

This Environmental Report updates the chapters of the Parent EIAR where relevant in the context of the Phase 2 Development This Environmental Report is to be read in conjunction with, and as a consolidated Addendum to, the Parent EIAR. Each Chapter, where relevant, sets out updates to the assessments carried out in the Parent EIAR, following a review of initial assessment in the Parent EIAR. The updated Chapters also review and clearly set out proposed mitigation measures, where applicable and considered necessary, for the Phase 2 Development.

The remaining Chapters of this Report are as follows:

Chapter 2 provides an overview / background to the proposed Phase 2 development.

Chapter 3 sets out relevant updates to the Planning Policy and Context since the Parent EIAR was written, and **Chapter 4** sets out the alternatives considered for Phase 2 of the scheme.

The updates to the environmental topics where there is potential for significant impacts to arise are addressed in Chapters 5 to 16 as follows:

Chapter 5 Air Quality

Chapter 6 Climatic Factors

Chapter 7 Noise and Vibration

Chapter 8 Biodiversity

Chapter 9 Archaeological, Architectural and Cultural Heritage

Chapter 10 Landscape and Visual

Chapter 11 Land, Soil and Geology

Chapter 12 Water

Chapter 13 Population and Human Health

Chapter 14 Material Assets -Traffic & Transportation

Chapter 15 Material Assets – Waste Management

Chapter 16 Material Assets – Utilities

Chapter 17 provides an overview of various interactions across environmental topics.

Chapter 18 provides a Summary of Mitigation Measures and Residual Impacts.

1.3 General EIAR Methodology

The methodology adopted for the preparation of the Parent EIAR comprised a systematic analysis of the impact of the Overall Scheme in relation to the existing environment. The assessment was set out under the following headings:

- Basis for assessment;
- Impact assessment and mitigation; and

- Significance of environmental issues.

The approach adopted for the impact assessment and preparation of the Parent EIAR was based on the *Guidelines on information to be contained in Environmental Impact Assessment Reports (EPA, 2022)*. The proposed design was developed with careful consideration and the Parent EIAR carried out a detailed assessment of the potential impacts as a result of the overall scheme. Subsequent mitigation measures were identified, assessed, and incorporated into the design for the entire Cherry Orchard Development scheme (i.e., across all four phases). The assessment method followed a 'multi-criteria analysis' to evaluate significance – which included the consideration of the magnitude of the predicted effects and the sensitivity of the receiving environment.

Section 1.7 of the Parent EIAR sets out the full details of the assessment and preparation methodology for the EIAR. This Environmental Report will follow the same approach to evaluate the significance of impacts of the proposed development on the receiving environment.

The section on Impact Assessment in each Chapter of this Environmental Report will set out in detail the impacts resulting from the proposed development and the extent of its significance on the receiving environment.

All mitigation measures set out within the Parent EIAR including any additional measures identified in this Environmental Report, which are applicable to construction and operation of the proposed development, will be adhered to. This includes any mitigation measures contained in any such planning permission, as may be approved.

The construction of the proposed development will be undertaken in accordance with the conditions as may be attached to any planning permission approved in respect of the proposed development. The final design and construction will comply with all relevant statutory approvals.

1.4 Contributors/Subject Matter Experts: EIAR Team

This Environmental Report has been prepared by KPMG Future Analytics (Chartered Town Planning and Development Consultants) along with various competent specialist sub-consultants on behalf of The Land Development Agency (LDA). The list below presents the subject matter experts who contributed to the preparation of the report and their qualifications:

Environmental Aspect	Company Name	Person Responsible	Qualification
EIAR Manager	KPMG Future Analytics	Alan Crawford	BA (Hons) MRUP MIPI
EIAR Reviewer	KPMG Future Analytics	Stephen Purcell	BSc. (Hons) MRUP MSc. MIPI FSCSI FRICS
Air Quality	AWN Consulting	Ciara Nolan	BSc Eng, MSc, (MIAQM), (MIEnvSc)
Climate	AWN Consulting	Ciara Nolan	BSc Eng, MSc, (MIAQM), (MIEnvSc)
Noise and Vibration	AWN Consulting	Alistair Maclaurin	BSc. PgDip MIOA
Biodiversity	-	Gerry Tobin	BSc. (Zoo), M.A.
Archaeological, Architecture and Cultural Heritage	Archer Heritage Planning	Maeve McCormick	BA MSc Archaeology
Landscape and Visual Impact	Mitchell + Associates	Feargus McGarvey	BA (Hons) DipLA MILI HMGLDA
Land, Soil, and Geology	Waterman Moylan	Penelope Ingle Ian Worrell	Bachelor's in civil engineering (BEng Civil)
Water	Waterman Moylan	Penelope Ingle Ian Worrell	BScEng DipEng CEng DipPhysPlg MIEI, Chartered Engineer
Population and Human Health	KPMG Future Analytics	Alan Crawford	BA (Hons) MRUP MIPI
Material Assets – Traffic and Transport	Waterman Moylan	Brian McCann	BE, MSc(Eng), DC, FIEI, FICE, MConsEi

Material Assets – Waste Management	AWN Consulting	Chonaill Bradley	BSc Environmental Science, PG Dip Circular Economy, Associate Member of CIWM
Material Assets – Utilities	Waterman Moylan	Penelope Ingle Ian Worrell	Bachelor's in civil engineering (BEng Civil) BScEng DipEng CEng DipPhysPlg MIEI, Chartered Engineer

Further details on the background and experience of the subject matter experts are set out in the introductory sections of the relevant Chapters.

2 Background to the Proposed Development

2.1 Introduction

This section of the Environmental Report sets out the background to the proposed development and site location in accordance with the requirements set out in the EIA Directive and EPA Guidelines on the preparation and content of EIAR. This Chapter has been prepared by KPMG Future Analytics (Chartered Planning and Development Consultants).

2.2 Proposed Development – Phase 2

The proposed application site for Phase 2 is part of 'Key Development Site 4' under the Park West Cherry Orchard Local Area Plan (2019). The application site has been demarcated in red in Figure 2.1.

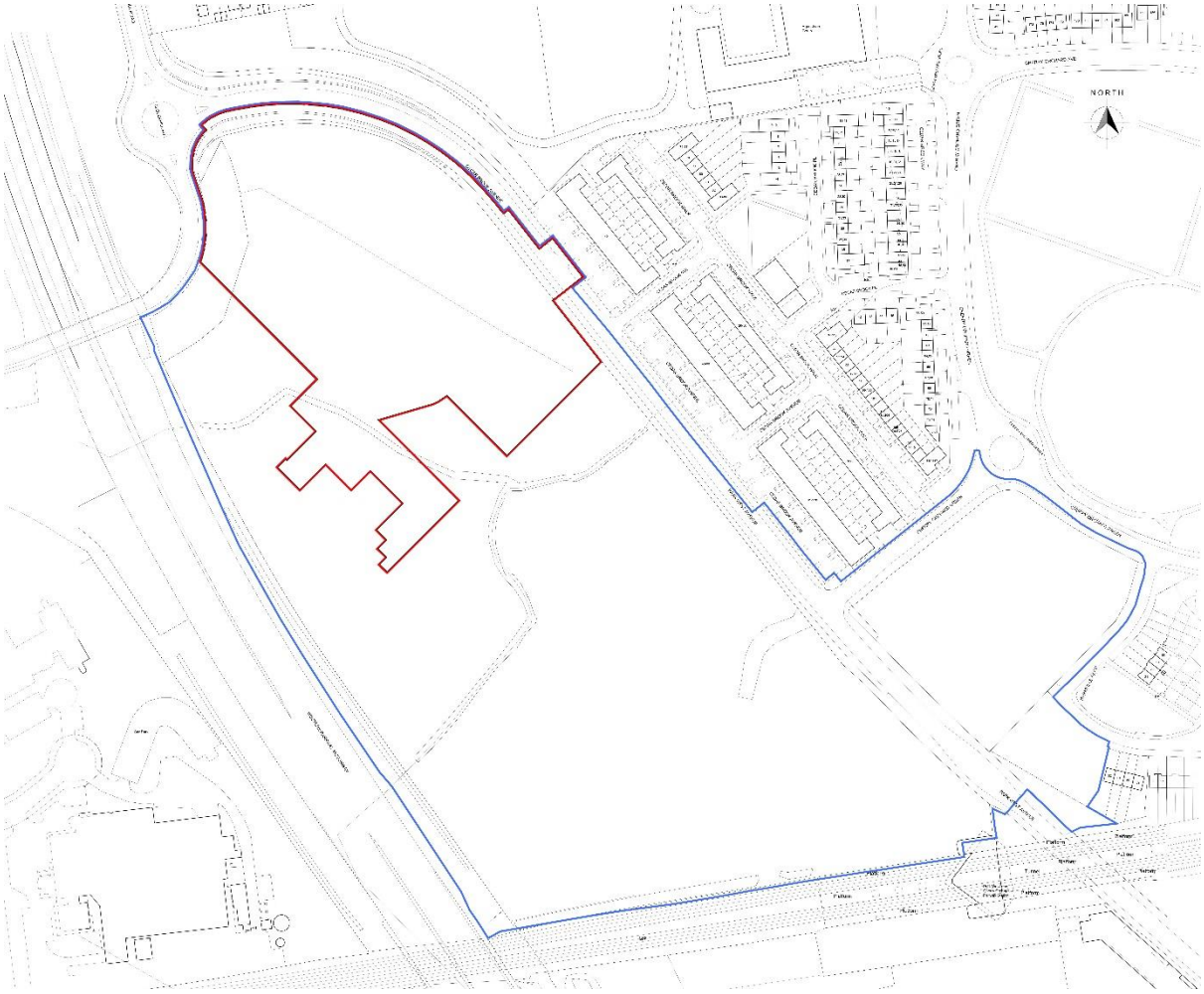


Figure 2.1 Application Site Demarcated in Red and Ownership Boundary in Blue.

The proposed development will comprise the northern part of Site 4. Phase 2 will comprise of medium-low density homes for affordable purchase.

The proposed development site is currently vacant and contains a large expanse of grassed lawn, mature trees, and overgrown vegetation from the northern boundary of the site. The lands are

strategically positioned, bounded by the M50 to the west and the Park West Cherry Orchard rail station to the south which provides excellent accessibility and connectivity opportunities. The site also benefits from direct access via Cedar Brook Avenue which connects with Park West Avenue and is served by the No.60 and G1 bus routes providing direct linkages to Dublin City Centre and the Docklands to the east, and Red Cow Luas to the south which provides access to Tallaght and Saggart.

The proposed development site is part of the wider area identified under the Dublin City Development Plan 2022-2028 for regeneration which is reflected in the lands' designation as a Strategic Development Regeneration Area (SDRA 4). The Park West Cherry Orchard Local Area Plan for the area was adopted in 2019 and identified 8 no. Key Development Sites within the wider LAP lands that offer the potential to deliver approximately 2,000 residential units in tandem with employment and commercial development. The proposed development site represents part of Cherry Orchard Development Site 4 and presents the second of four phases of development aimed at delivering the aspirations of the LAP for the redevelopment of these lands.

The proposed development has a uniform and simple 'grid' layout arranged on both sides of the central neighbourhood park. It is accessed from Park West Avenue by a new internal street that forms part of a 'loop' around the edge of the wider overall development.

The residential blocks comprise of a mix of 2-storey houses and 3-storey duplex units and have active frontages on all four sides.

Figure 2.2 Site Layout Plan for Proposed Phase 2 Scheme

The proposed development comprises 137 no. dwellings with a total floor area of 13,015 sq. m., consisting of 13 no. 2-bedroom houses, 88 no. 3-bedroom houses, 18 no. own-door ground floor 2-bedroom apartments and 18 no. own-door 3-bedroom duplex units. See Table 2.1 for a breakdown of the total units by type.

Table 2.1 Break-down of Total Units Proposed under Phase 2

Unit Type		No. of Units
2 Bed/ 4 Person House	HT A	13
3 Bed/ 5 Person House - 2 storey	HT B	56
3 Bed/ 5 Person House - 2 storey (end terrace)	HT B1	19
3 Bed/ 5 Person House - 2 storey	HT C	13
2 Bed/ 4P Own-Door Apt - mid terrace	Duplex A	7
2 Bed/ 3P Own-Door Apt (UD) - mid terrace	Duplex A (UD)	4
2 Bed/ 4P Own-Door Apt - end terrace/ corner	Duplex A1	2
2 Bed/ 3P Own-Door Apt (UD) - end terrace/ corner	Duplex A1 (UD)	5
3 Bed/5P Own-Door Duplex - end terrace/ corner	Duplex A2	8
3 Bed/5P Own-Door Duplex - mid terrace	Duplex A3	10
Total		**137**

The 2 and 3-bedroom houses are 2-storey buildings, arranged in terraces and the end of terrace houses are designed to turn the corner with entrances and active facades on both sides. The duplex homes over ground floor apartments are arranged in small groups and will share communal open space, bin stores and bicycle stores. There are no internal common areas for any of the proposed dwellings.

An overview of key development statistics is set out in the Table 2.2 below:

Table 2.2 Key Development Statistics

KEY DEVELOPMENT STATISTICS	
Site Area	3.185 ha
Gross Floor Area (Residential)	13,280 sq.m
Density	40 uph
Plot Ratio	.39
Site Coverage	22.46%
Height	2-3 Storeys
Total No. of units	137
OPEN SPACE	
Total Public Open Space (Phase 2)	0.418ha (12.34%)
Communal Amenity Open Space	602sq.m
RESIDENTIAL	
Houses	13 no. 2 bedroom houses 88 no. 3 bedroom houses
Apartments	18 no. 2 bedroom apartments
Duplexes	18 no. 3 bedroom duplexes
PARKING	
Car Parking Provision	141 (of which 7 are accessible and 71 are EV fitted spaces)
Bicycle Parking	306
Motorbike Parking	7

The proposed development represents Phase 2 of the wider vision for the plan led redevelopment of Sites 4 and 5 of the LAP lands in Cherry Orchard. The proposed scheme will contribute to delivering the vision of the Park West Cherry Orchard Local Area Plan, in creating an attractive and identifiable place with a vibrant and active community.

2.2.1 Description of Development in the Statutory Notices

Planning approval is being sought for the following proposal:

In accordance with Section 175(4) of the Planning and Development Act, 2000 (as amended) Dublin City Council, in partnership with The Land Development Agency, gives notice of its intention to make an application for approval to An Bord Pleanála under Section 175(3) of the Planning and Development

Act, 2000 (as amended) to carry out the following proposed development on a site of c. 3.185 hectares, located on lands at Cherry Orchard, Dublin 10 (known as Development Site 4 in the Park West Cherry Orchard Local Area Plan 2019). The site is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west. The development will consist of the construction of a residential scheme containing 137no. residential dwellings (comprising 31no. 2-bedroom units, and 106no. 3-bedroom units) through a mixture of houses, duplex units and own-door apartments. The proposed development will include a new access road connecting to the entrance point at Park West Avenue as approved under the Phase 1 scheme, new internal streets, landscaped public and communal open space, a new pedestrian connection to Cloverhill Road and all associated site and development works. The proposed development represents Phase 2 of the overall planned development for Development Sites 4 and 5 of the LAP lands. Phase 1 of the overall planned development was approved permission in July 2024 (Bord. Ref: ABP-318607-23).

The proposed development (GFA of c. 13,280sqm) involves the construction of 137no. dwellings in a mix of houses, duplexes and own-door apartments ranging in height from 2 to 3 storeys comprising 31no. two-bed units (9no. two-bed three-person and 22no. two-bed four-person) and 106no. three-bed units (13,015 sqm total residential floor area), and all ancillary accommodation including bike and bin stores and ESB substation (265sqm total GFA). The proposed development also includes the provision of 2,133sqm landscaped public open space, in addition to 2,050sq.m of public open space as approved under the Phase 1 permission (Bord. Ref: ABP-318607-23). The total public open space provided for Phase 2 totals 4,183 sqm (12.34% of the net site/development area (3,390ha) of Phase 2 lands). Communal open space for the duplex and apartment units is provided across three dedicated communal amenity areas (602sq.m in total area) with private open space to serve the proposed units to be delivered through a mixture of rear gardens and terraces.

The proposed development will also involve the provision of 141no. car parking spaces at curtilage and street level throughout the development, of which 7no. are accessible spaces and 71no. EV charging points (representing 50% of the total parking spaces). A total of 306no. bicycle parking spaces, of which 18no. are visitor spaces accommodated through a mixture of bike stores and external cycle parking stands. A total of 7no. motorbike parking spaces are also provided. Vehicular, pedestrian and cycle access routes to serve the proposed development are provided via the approved Phase 1 entrance to the east of the site along Park West Avenue with further connections provided to the north and to the south to the approved Phase 1 scheme. Provision is also made for the installation of a signalised access junction with associated traffic lights and below ground infrastructure and the relocation of bus stop and shelter along Park West Avenue. The need to provide a signalised junction requires minor alterations to the entrance to the development including adjustment to the paving as previously approved under the Phase 1 scheme (no further amendments to that permission are proposed under this application.) The proposed development also includes the provision of off-street cycle lanes along Park West Avenue that will provide direct connectivity to the Rail Station to the southeast and Cherry Orchard Park to the east.

The development will also provide for all associated ancillary site development works including site clearance, boundary treatment, associated public lighting, internal roads and pathways, bin and bike stores, ESB substation, hard and soft landscaping, play equipment, and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

2.3 Planning and Development Pipeline

Table 2.3 summarises planning applications for Key Development Sites and other lands in the Cherry Orchard LAP Area.

Table 2.3 Planning History – Residential Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022
	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached	Granted 6/12/2021

		to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018

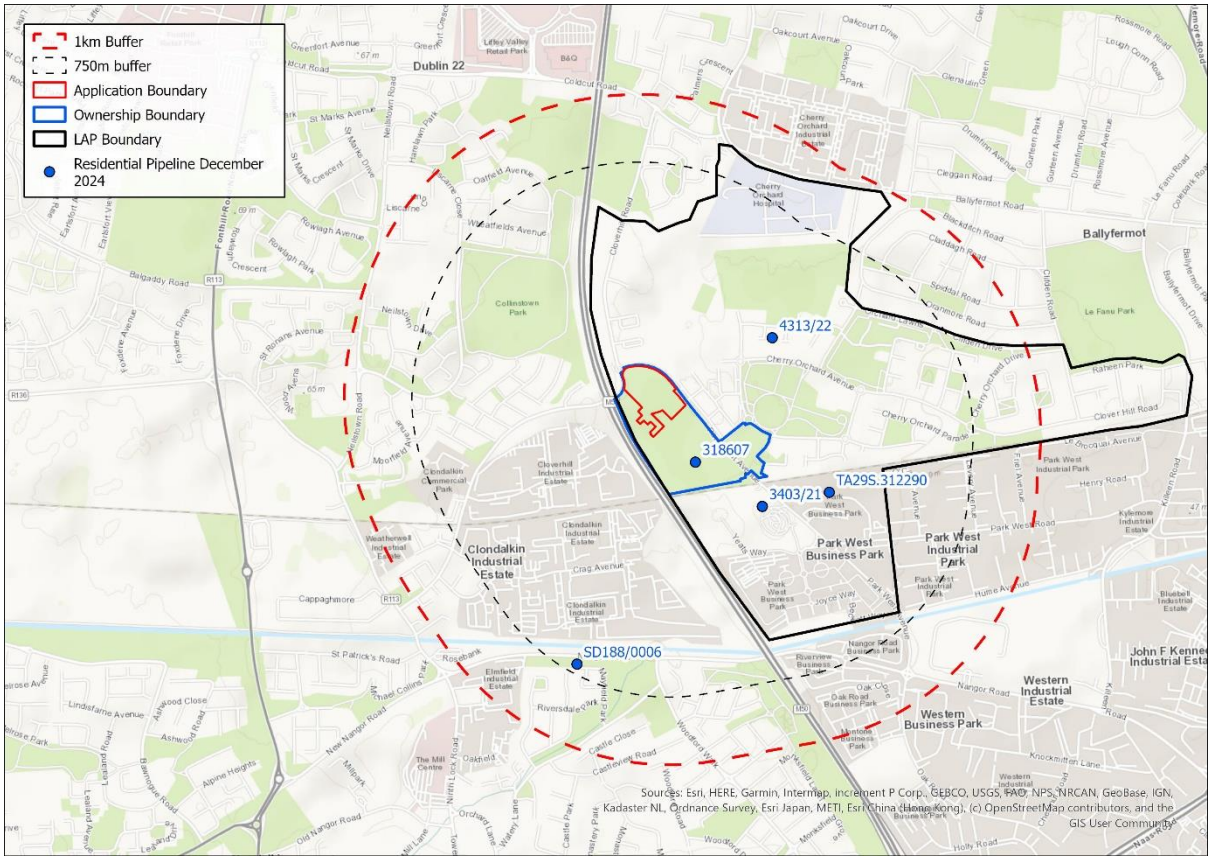


Figure 2.3 Extant Residential Schemes Granted Planning Permission within the LAP (2019) Boundary

Table 2.4 Planning History – Retail / Commercial Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	Granted 16/06/2022
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade	Granted 31 Jul 2019

		fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024
SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

**These applications are South Dublin County Council*

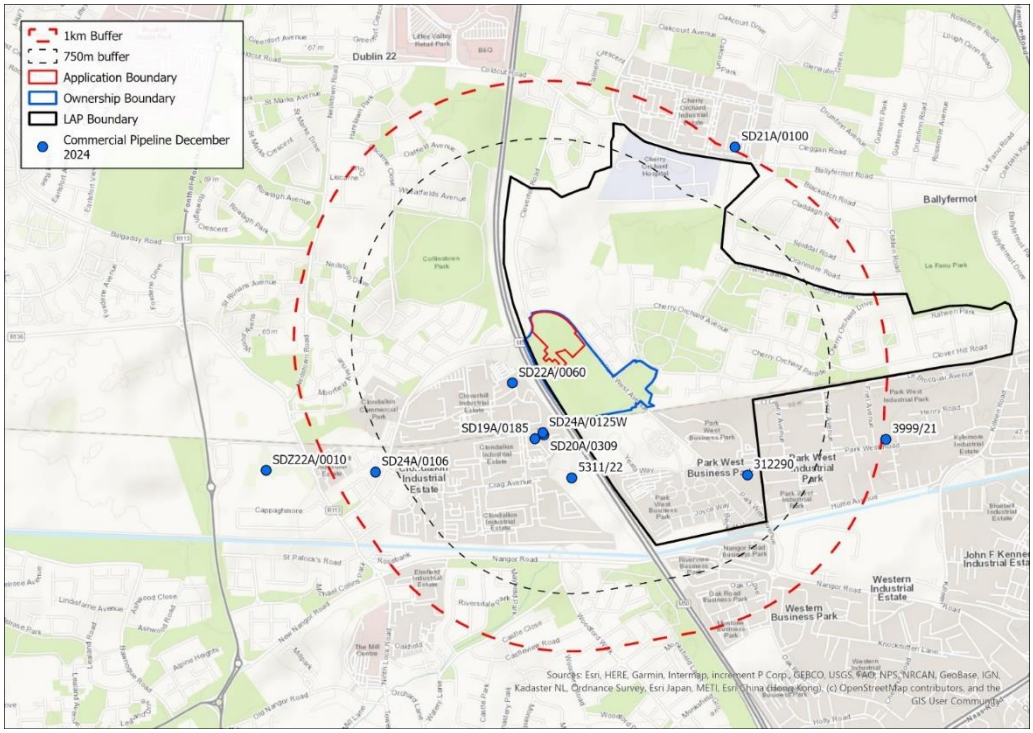


Figure 2.4 Extant Retail / Commercial Schemes Granted Planning Permission within and bordering the LAP (2019) Boundary

A review of the site history determined that the Subject Lands for Phase 2 have no previous permissions or any feature of note – they are vacant greenfield sites.

The Subject Lands for Phase 2 were zoned for strategic development and regeneration under the previous Dublin City Development Plan 2016-2022 and designated a key development site under the Local Area Plan 2019. The current Dublin City Development Plan 2022-2028 reemphasises this need for strategic development and regeneration within the Park West Cherry Orchard Local Area. A key focus of the Park West Cherry Orchard Local Area Plan 2019 is the integration of new development sites with the existing and expanding community in order to create a sustainable and integrated neighbourhood.

DART + South West Project

The DART + South West Project is the second of the infrastructural projects of the DART+ Programme expected to be delivered. The Rail Order Application for the project was submitted for statutory approval by Córas Iompair Éireann (CIÉ) on the 22nd of March 2023 and was approved 13th November 2024. The approved rail improvement project will provide a sustainable, electrified service with increased capacity and frequency for services between Park West Cherry Orchard and Dublin City Centre.

It is expected that once this project is delivered, it will increase the train capacity to double the current (12) trains per hour per direction and increase passenger capacity from the current peak capacity of approximately 5,000 passengers per hour to around 20,000 passengers per hour per direction.

Figure 2.5 below provides the route map approved for the DART + South West Project which also illustrates the new route passing adjacent to the Cherry Orchard Development lands through the Park West and Cherry Orchard train station.

Figure 2.5 Approved Route Map of the Dart + South West with proposed development site identified with a red star. (Source: dartplus.ie)

Part of the rail upgrade works will involve the provision of a substation, temporary access, and compound on lands within Cherry Orchard Development Site 4 as shown in Figure 2.6, below. The design and layout of the proposed development has had full regard to the approved rail works and has incorporated suitable boundary treatment as an interim solution pending the full redevelopment of the wider lands. The Phase 2 addendum to the Parent EIAR has also considered potential cumulative impacts that may arise from the application scheme in combination with the approved rail upgrade works and has set out, where necessary, appropriate mitigation measures to minimise impacts on the environment. The electrification of the rail line coupled with increased capacity and frequency of the service will be of substantial benefit to residents enhancing connectivity to the city centre and providing a cleaner more sustainable mode of public transport.

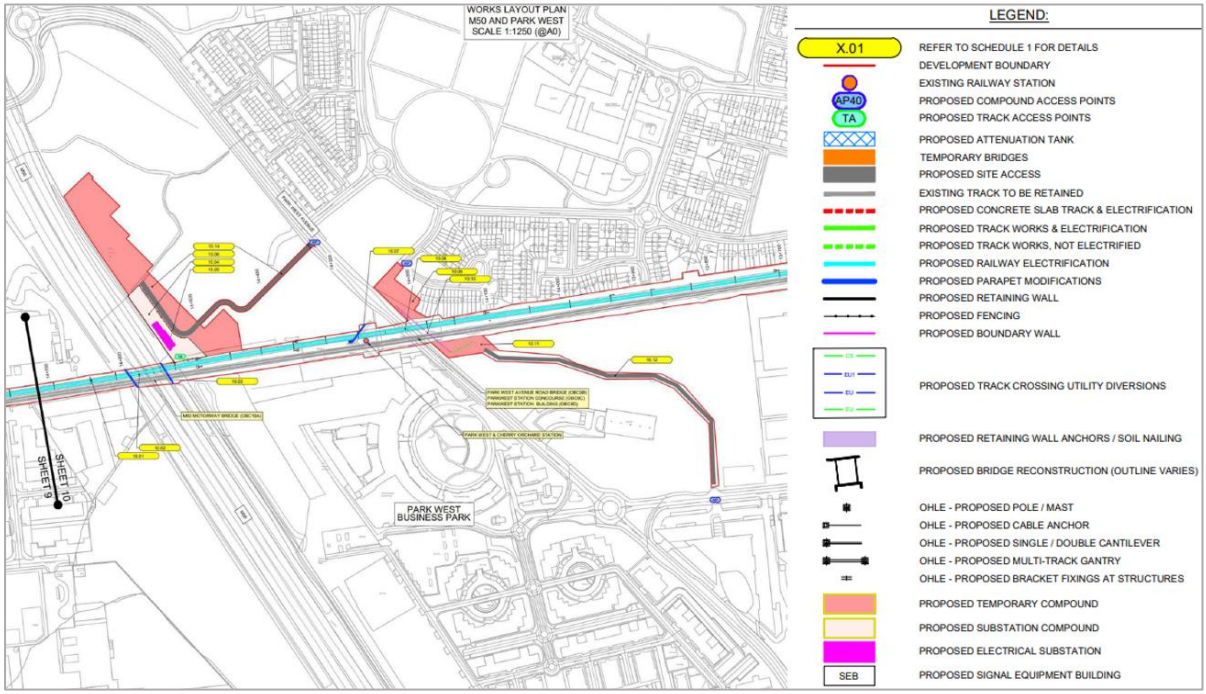


Figure 2.6 Approved Dart + South West Layout Plan

3 Planning Policy Context

This Chapter of the Environmental Report describes the proposed development in the context of the relevant planning policy as it relates to the environment.

The Parent EIAR sets out, in detail the National and Regional planning policies and Local Objectives and Development Standards in context and the interaction of the policy context with other specialists Chapters and Reports, as submitted under ABP Ref. 318607-23.

3.1 Policy Overview

The proposed development site is currently undeveloped and is zoned for regeneration as a Strategic Development and Regeneration Area (Z14) under the Dublin City Development Plan 2022-2028. The proposed residential use is permitted in principle on the site and therefore is compliant with the ascribed land use zoning objective for the lands. It is submitted that the development layout strategy for the proposed scheme follows a systematic approach in alignment with the requirements of the Park West Cherry Orchard Local Area Plan 2019 (LAP) and the relevant Strategic Development Regeneration Area (SDRA) Guidelines for this location, as set out in the Dublin City Development Plan 2022-2028 (the Development Plan).

The proposed development will minimise the potential environmental impacts as set out in the various Chapters of this Environmental Report, which should be read in conjunction with the Parent EIAR. Any additional risk management and interactions between environmental factors as a result of Phase 2 which have not been considered within the Parent EIAR have been assessed, and a programme of mitigation and monitoring measures have been described.

The overall scheme was assessed under the Parent EIAR having regard to the following policy and guidance documents:

- Updated Draft National Planning Framework 2024
- Update on National Development Plan 2024
- Housing for All Q2 2024 Progress Report
- Sustainable Residential and Compact Settlement Guidelines 2024
- Climate Action Plan 2024
- Dublin City Development Plan 2022-2028
- Park West Cherry Orchard Local Area Plan 2019

This Chapter covers any policy updates since the Parent EIAR was prepared and subsequently sets in context, policy implications in relation to the Phase 2 development. **This Chapter should be read in conjunction with Chapter 3 of the Parent EIAR.**

3.2 Updated Draft National Planning Framework 2024

On 5th November 2024, the Government agreed to progress and publish a draft schedule of amendments to the First Revision to the National Planning Framework (NPF) arising from the public consultation process which took place from 10th July 2024 to 12th September 2024. In order to finalise the Revision of the National Planning Framework, the Government will, in due course, be required to approve a final Revised NPF following the conclusion of the environmental assessments, which will include a Strategic Environmental Assessment; Natura Impact Statement and Appropriate Assessment Determination, and a Strategic Flood Risk Assessment.

The National Planning Framework which was originally published in 2018 is being revised and updated to take account of changes that have occurred since 2018 and to build on the existing framework.

Since the publication of the NPF in 2018 there have been a number of significant and critical developments in relation to planning policy, guidance, and legislation, as well as governance and institutional change. Also, within this time, unprecedented, unforeseen events have occurred with ongoing consequences, such as the impacts of Covid-19 particularly in relation to trends in commuting patterns and the emergence of established blended working.

Public consultation on the Draft Revised NPF concluded in September 2024 and the Final Stage was due to be approved, finalised, and published in October 2024. The draft has since been published on the 15th of November 2024 with some of the changes are outlined below.

- *New target of an average 50,500 new homes per year – scaling up to 60,000 homes in 2030 and that level maintained thereafter.*

This milestone decision represents a critical step towards meeting Ireland's growing housing needs, driven by projected population increases, latent and ongoing demand for housing.

These revised housing targets are reflecting the latest research by the Economic and Social Research Institute (ESRI) which forecasts substantial population growth over the next decade. The Government has agreed that to reach the total of 303,000 new homes by 2030, an annual increase in housing delivery starting from 41,000 homes in 2025 and rising incrementally to 60,000 homes by the end of the period.

3.3 Update on National Development Plan 2024

The Prospects 2024-2025 report was published in November 2024 (Prospects) and highlights 50 projects that make up Project Ireland 2040. The report aims to provide further visibility on Ireland's priority infrastructure over the coming years, facilitating firms to plan commercial bids for these major infrastructure projects.

Prospects sets out a clear pipeline for some of the projects that comprise Project Ireland 2040. This pipeline spans a wide range of projects, from those that are currently at planning and appraisal stage to projects that are completing construction this year. Prospects offers the chance to look ahead and to see what infrastructure is planned for the coming years to support Ireland's growth. It also provides construction firms in Ireland, the EU and internationally an opportunity to consider the role they can play in delivering these projects.

The report outlines information about infrastructure projects that will be delivered as part of Project Ireland 2040, including:

- over half of projects are large scale infrastructure in the areas of public transport, housing and health, ranging in value from €200 million up to €1 billion+;
- almost 60% of projects are set to commence in 2025 and 2026, and around half of projects are anticipated to be completed between 2027 and 2029, such as: Wastewater Treatment Plants in Bailieborough, Buncrana and Nenagh, the M28 Cork to Ringaskiddy Road, University Hospital Waterford 60-Bed Acute Mental Health Unit, new post-primary schools in Westmeath and Wicklow under Project Dargle, and regenerated social housing in Constitution Hill, Dublin 7

3.4 Housing for All Q2 2024 Progress Report

The most recent Housing for All progress report details the progress and measures achieved during Quarter 2 of 2024. The report notes that, c. 52,000 new homes were under construction as of May 2024, recording an increase of over 85% since May 2023. Of this, construction on c. 32,000 homes commenced during the first five months of 2024.

As per the report, since the launch of Housing for All in September 2021, almost 74,000 new homes have been built and the 2024 target of 33,450 new homes will be met.

The Affordable Purchase Scheme is expected to support the delivery of over 4,000 homes (this includes affordable purchase and cost rental) with the support of €337 million in grant assistance from the Affordable Housing Fund.

The Phase 2 proposed development at Cherry Orchard seeks to deliver 137 no. dwellings for affordable purchase. This, in tandem with the approved scheme under Phase 1 which will deliver 708 no. units (social / affordable and cost rental homes), will contribute towards achieving the housing targets under the Housing for All programme.

3.5 Sustainable Residential and Compact Settlement Guidelines

The ***Sustainable Residential and Compact Settlement Guidelines for Planning Authorities*** were published in January 2024, under Section 28 Ministerial Guidelines. The Guidelines set out guidance in relation to the planning and development of urban and rural settlements with a focus on residential development and the creation of sustainable and compact settlements. The Guidelines have a new focus on the renewal of existing settlements and on the interaction between residential density, housing standards and quality design and placemaking to support sustainable and compact growth.

With regard to densities, Table 3.1 of the Guidelines sets out density ranges for Dublin and Cork City and Suburbs across three categories of areas – City-Centre, City-Urban Neighbourhoods, City-Suburban / Urban Extension, with specified criteria set out for each.

It is considered that the subject site, given its location within the M50 ring and proximity to Dublin City-Centre, location proximate to the DART and forthcoming DART+ south-west line, would fall within the 'City-Urban Neighbourhoods', which includes:

i) Compact medium density residential neighbourhoods around the city centre that have evolved overtime to include a greater range of land uses,

ii) Strategic and sustainable development locations,

iii) Town centres designated in a statutory development plan, and

iv) Lands around existing or planned high-capacity public transport nodes or interchanges (as defined in Table 3.8) – all within the city and suburb area.

For such locations, the Guidelines sets out that,

"…It is a policy and objective of these Guidelines that residential densities in the range of 50 dph to 250 dph (net) shall generally be applied in urban neighbourhoods of Dublin and Cork." [emphasis added]

Whilst at the lower end of the recommended density band, a density of 40dph enables a variety of housing typologies to be delivered on the subject lands which will add to the range of housing options available in the locality.

The approved Phase 1 application has a net density of 145 uph on a net development area of c.4.87ha. When considering the proposed Phase 2 application which has a density of 4uph on a net development area of 3.390ha, the combined phases have a density of 103uph on an overall development area of c.8.193 ha.

Therefore, it is submitted that the proposed density for the scheme, in isolation and in tandem with Phase 1, aligns with the residential densities provided for in the Compact Settlement Guidelines. A collective approach when analysing density as a metric for the suitability of the scale of development proposed is appropriate as both schemes will be fully integrated and represent the creation of a new community within the Cherry Orchard Area.

The Local Area Plan recognises that for each key site identified, it is important that housing design and density is appropriate to its location, reflecting the significance of the SDRA designation as a resource for the future of the city, and cognisant of national planning policy, Development Plan policy and current legislation.

3.6 Climate Action Plan 2024

The Climate Action Plan 2024 is the third annual update to Ireland's Climate Action Plan 2019. This is the second Climate Action Plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. This Plan builds on the carbon budgets and sectoral emissions ceilings in Climate Action 2023 and sets a course for Ireland's targets to halve emissions by 2030 and reach net-zero no later than 2050.

The purpose of the Climate Action Plan is to lay out a roadmap of actions which will ultimately lead Ireland to meeting its national climate objective of pursuing and achieving, by no later than 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.

Climate mitigations and adaption have been core considerations in the design of the proposed scheme overall. The proposed development incorporates SuDs and sustainable façade design and provides services and facilities that contribute to the energy efficiency, biodiversity, and green infrastructure services.

3.7 Dublin City Development Plan 2022-2028

It is important to note that there have been variations to the Dublin City Development Plan, however there are no impacts on the proposed development for Phase 2. Therefore, the local policy impacts / landscape insofar as the EIAR is concerned remains as per the Parent EIAR. A summary overview through a strategic lens has been provided below for ease of reference.

Core Strategy:

The Dublin City Development Plan 2022-2028 (Development Plan) is the statutory framework application for the Dublin administrative boundary where the proposed development site is located. The proposed development site located in Cherry Orchard falls within an area designated as a Strategic Development and Regeneration Areas (SDRAs) under the Development Plan.

The Development Plan notes that SDRAs are a key part of delivering compact growth, capable of delivering significant quantities of homes and employment for the city. The Development Plan sets out that SDRAs are considered a critical component to the core strategy. All SDRAs have been examined to determine capacity for future housing growth, considering sustainable densities and relevant SDZs and LAPs where relevant. The SDRAs targeted for housing growth in the Development Plan are aligned to existing and planned public transport corridors and guided by national policy set out in the National Planning Framework (NPF) and Regional Spatial and Economic Strategy (RSES). They provide for planned, integrated and sustainable growth over a number of development plan periods for Dublin City Council. Most of the land targeted for new housing in the city is in SDRAs, which are for the most part, brownfield, and regeneration sites.

The proposed development will provide 137 no. homes, which, in addition to 708 no. units which have been approved by An Bord Pleanála as part of Phase 1, will be essential in delivering upon the objectives for SDRA lands under the Development Plan.

Zoning Objective:

The subject site is designated Z14 – Strategic Development and Regeneration Areas (SDRAs), with the zoning objective,

> *"To seek the social, economic and physical development and/or regeneration of an area with mixed-use, of which residential would be the predominant use."*

Chapter 14, Section 14.7.13 of the Development Plan sets out the Land Use Zoning Objective for SDRA (Z14) Lands, with a list of 'Permissible' and 'Open for Consideration' Uses. Permissible uses under this designation includes:

Assisted living/retirement home, beauty/ grooming services, bed and breakfast, buildings for the health, safety and welfare of the public, Build To Rent residential, café/ tearoom, childcare facility, community facility, conference centre, craft centre/ craft shop, cultural/recreational building and uses, delicatessen, education, embassy office, embassy residential, enterprise centre, financial institution, guesthouse, halting site, home-based economic activity, hotel, industry (light), live-work units, media-associated uses, medical and related consultants, mobility hub, office, off-licence, off-licence (part), open space, park and ride facility, place of public worship, primary health care centre, public house, public service installation, **residential**, restaurant, science and technology-based industry, shop (local), shop

(neighbourhood), sports facility and recreational uses, student accommodation, take-away, training centre, veterinary surgery.

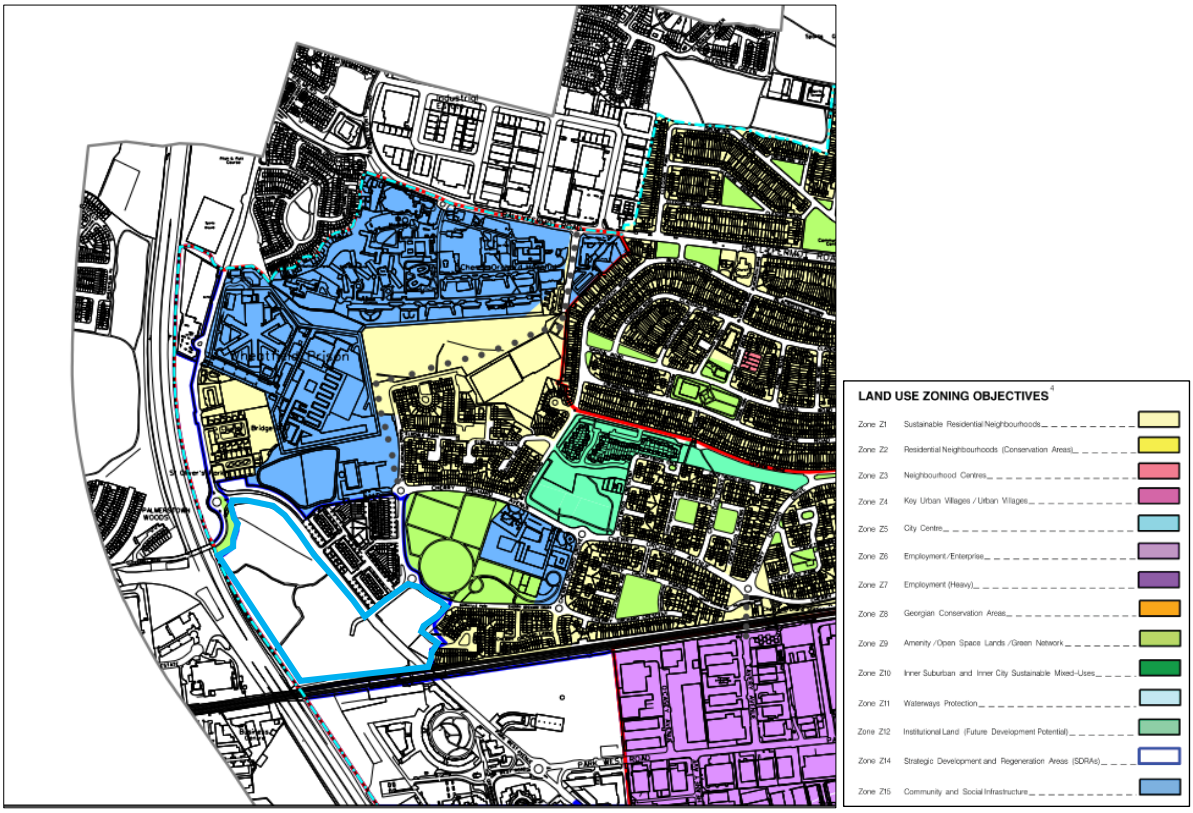


Figure 3.1 Zoning Map as per Dublin City Development Plan 2022-2028 (Ownership (blueline) and Application (redline) Boundary Annotated)

The proposed development involves a residential scheme, which in tandem with the approved Phase 1 Development, will deliver a mix of uses including, community, cultural / arts spaces, a convenience retail supermarket, retail / commercial uses, a creche facility, mobility hub as well as sufficient public open space, all of which are permissible under the Z14 zoning objective ascribed to the subject site. The proposed scheme is, therefore, in accordance with the proper planning and sustainable development of the area.

3.8 Park West Cherry Orchard Local Area Plan 2019

Dublin City Council adopted the Park West Cherry Orchard Local Area Plan 2019 (LAP) in October 2019. The vision of the Plan is to make Park West Cherry Orchard an attractive and identifiable place with a vibrant and active community. To provide a good mix of residential typologies that will cater for all people and residents will benefit from the provision amenities including local shops, schools, parks and community and recreational facilities. The LAP establishes statutory planning framework to allow future development to be managed in a co-ordinated and sustainable manner, providing for the needs of existing and future communities.

The Elected Members of Dublin City Council resolved to extend the LAP for a further period of five years. The extension of the LAP has since been approved until 4th November 2029 as the current LAP remains consistent with the Core Strategy of the Dublin City Development Plan 2022-2028, and with development still to take place on several of the key sites, it is clear that there are objectives of the LAP that remain to be secured.

As set out in Section 3.2 of this Environmental Report, the objectives for the lands as set out in the LAP have been incorporated into the Development Plan, specifically through the area's identification as a Strategic Development Regeneration Area (SDRA) 4.

The LAP sets out individual site briefs for 8 key development sites, which set out the vision, aspirations, and development objectives for each. The site being considered as part of this planning application forms the northern portion of Development Site 4 (M50-Cedarbrook Avenue). The wider Cherry Orchard Point development identified for development constitutes the entirety of Development Sites 4 and adjoining Development Site 5 of the LAP.

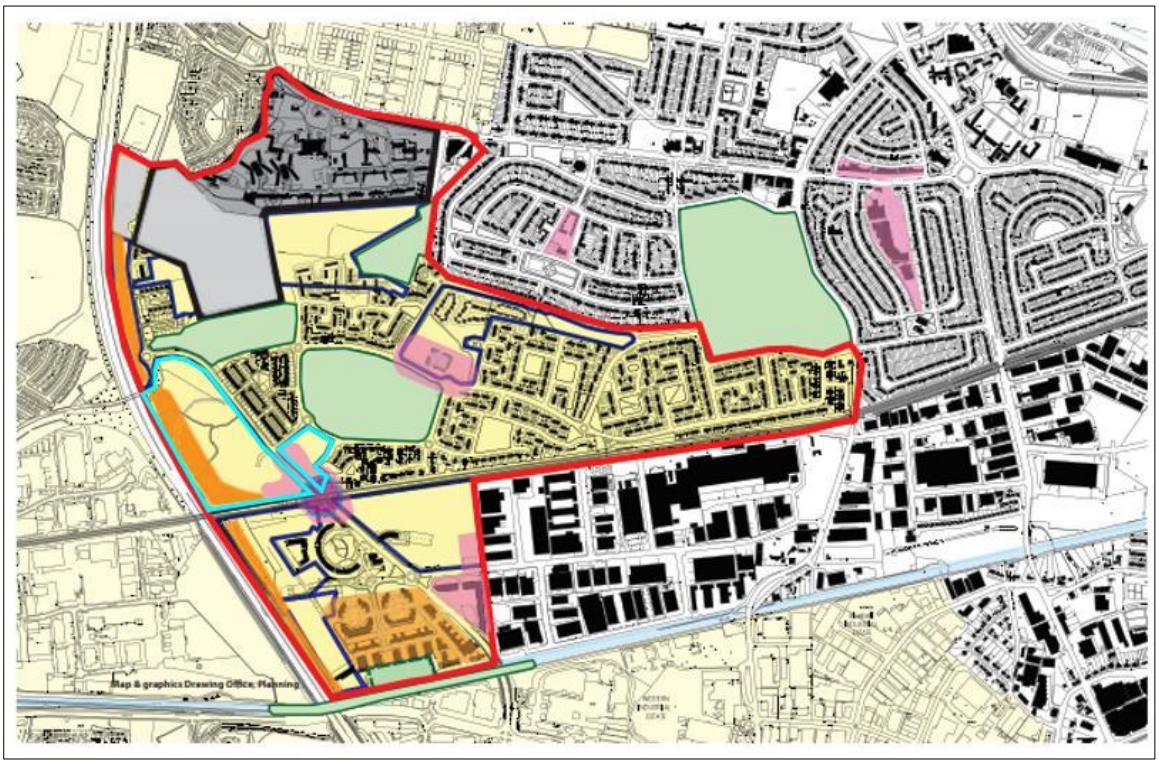


Figure 3.2 LAP Intended Land Use Strategy with proposed development sites 4 & 5 in blue.

It is considered that the development layout strategy for the approved Phase 1 Development, follows a systematic approach in alignment with the requirements of the LAP and SDRA Guidelines for the Cherry Orchard Development lands. The Phase 1 Development will be a new, large scale, mixed-use residential development located on lands alongside Park West Avenue and adjacent to the Park West Train Station. The proposed Phase 2 development represents the coherent and logical extension of the Phase 1 Development and will provide a mixture of housing typologies that will add to the range of housing options being delivered across the wider Site 4 and 5 land banks. The proposed Phase 2 development seeks to provide a vibrant and sustainable urban neighbourhood with a distinct character that will enhance the wider Cherry Orchard area. The proposed scheme has been designed to align with the density and height requirements of the LAP and the principles for SDRA lands as set out in the Development Plan. The wider Cherry Orchard Point scheme across all phases of development is envisaged to sustain quality public transport, such as the approved DART+ South West extension to the rail line and the BusConnects project. The wider scheme, in that regard proposes a mix of uses including retail, commercial, community and art / cultural uses across four Phases.

Furthermore, An Bord Pleanála, in approving the Phase 1 Development stated that, "***the proposed development would be consistent with the development objectives and other provisions of the Park West Cherry Orchard Local Area Plan 2019, with the zoning objectives and other policies and objectives of the Dublin City Development Plan 2022-2028, would positively contribute to compact growth and would make efficient use of an appropriately zoned greenfield/brownfield site within the urban area of Dublin City in an area served by public transport****, would positively*

contribute to an increase in housing stock and commercial / retail floorspace, would be acceptable in terms of urban design and layout and building height, would be acceptable in terms of pedestrian and traffic safety, and would provide an acceptable form of residential amenity for future occupants…" [**emphasis added**, Board Order, p. 9]

The Phase 2 proposed development is compliant with the requirements of the LAP and will connect seamlessly with the Phase 1 Development representing a fully functional and integrated development.

3.9 References

- Updated Draft National Planning Framework 2024
- Update on National Development Plan 2024
- Housing for all Q2 Progress Report
- Sustainable Residential and Compact Settlement Guidelines 2024
- Climate Action Plan 2024
- Dublin City Development Plan 2022-2028
- Park West Cherry Orchard Local Area Plan 2019

4 Alternatives Considered

4.1 Introduction

This chapter of the Environmental Impact Assessment Addendum Report has been prepared by Van Dijk Architects with Conroy Crowe Kelly Architects and contains a description of the reasonable alternatives considered during the evolution of the scheme design.

The aim of the project is to provide a new residential development that meets the criteria for high-quality sustainable urban development and complies with the objectives of the Dublin City Development Plan 2022-2028 and the Park West-Cherry Orchard Local Area Plan 2019. The working title for this project is 'Cherry Orchard Point'.

The scheme design for Cherry Orchard Point builds on the theme of sustainable urban development and encompasses both local, strategic, and national policies with regard to the promotion of active travel, a reduction in private car ownership and trips, enhanced accessibility to public transport and the integration of a natural, bio-diverse scheme that places pedestrians and cyclists first.

The site constraints, objectives and client brief were established at the beginning of the project which meant that the main alternatives explored through the pre-planning design process generally comprised variations on unit mix, massing, building height and plot size.

The preferred and final scheme for Phase 2 proposes a total of 137 dwellings plus all ancillary and associated works.

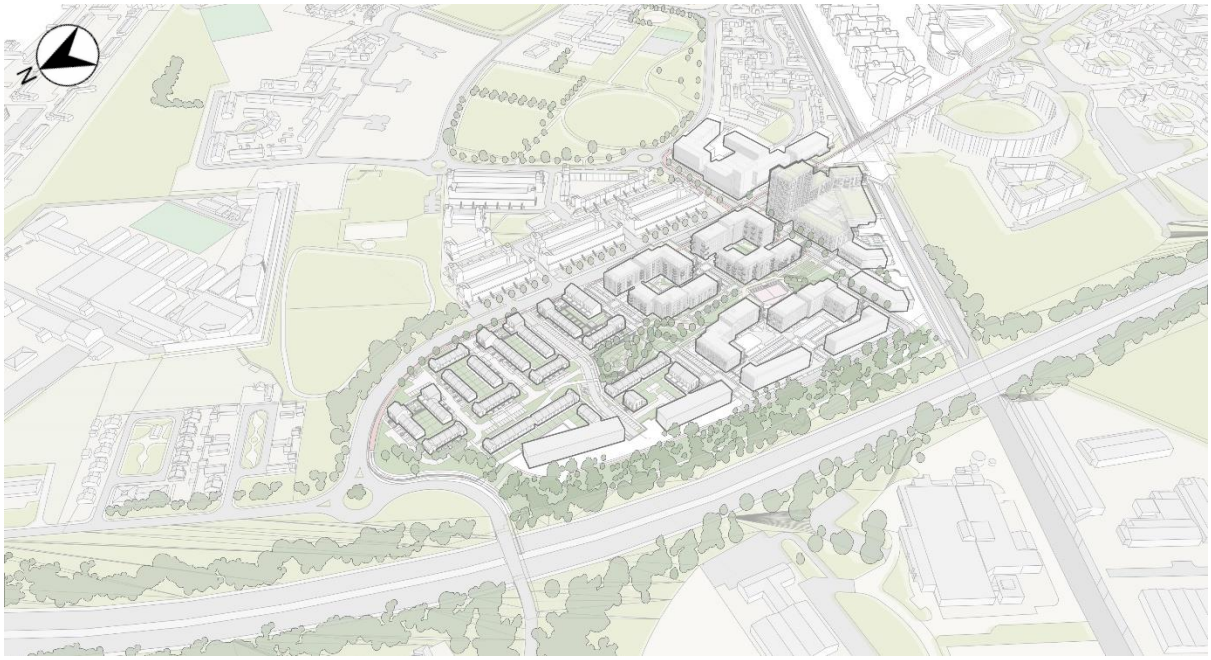


Figure 4.1 Proposed Development Site Layout (Architect's 3D model view)

Summary Description of the Overall Proposed Development

Cherry Orchard Point is a new, large mixed-use residential development to be located on a greenfield site beside Park West Avenue and the Park West/Cherry Orchard railway station.

The overall site has a combined area of c.13.1 hectares or 32.3 acres. It is zoned for development under the Dublin City Council Development Plan 2022-2028 and is governed by the objectives of the Park West-Cherry Orchard Local Area Plan 2019. The proposed development will provide a vibrant and sustainable urban neighbourhood with a distinct character. It will be of sufficient density to sustain

quality public transport, such as the planned DART upgrade to the rail line and Bus Connects project, and to sustain a mix of retail and commercial uses on Park West Avenue. The new neighbourhood will have a permeable and legible street network with an emphasis of pedestrian and cycle-friendly paths and will enable safe and well-overlooked links to existing residential estates and public parks.

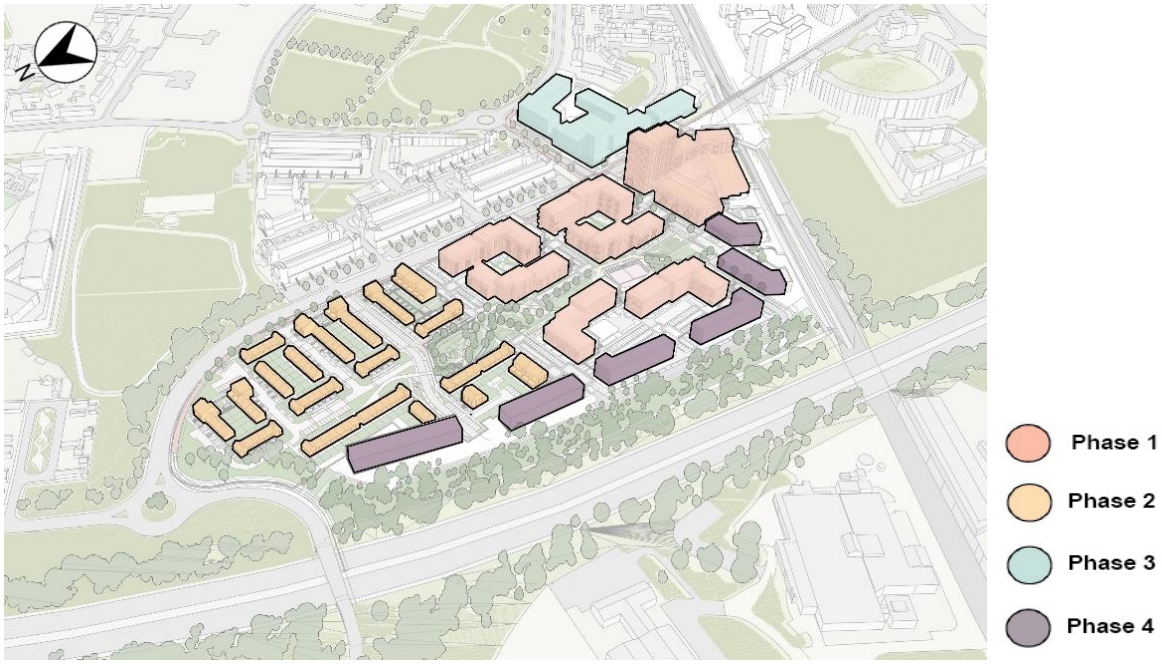


Figure 4.2 Proposed Development Phasing Diagram

The site will be developed over the course of 4 phases and the overall development is expected to comprise approximately 1100 dwellings and c.5990 sqm of retail and community floor space plus the future development of commercial/enterprise units along the M50 boundary.

Phase 1 of the Cherry Orchard development was approved by An Bord Pleanála on the 9th of July 2024, subject to a Part X application to the Bord, Ref ABP-318607-23. This phase comprises 708 dwellings in a mix of medium and high-density apartment buildings, generally in heights of 4 to 6 storeys, and up to 15 storeys on a landmark corner. There will be a mix of social and cost-rental dwellings, ranging in size from 1 to 3-bedroom apartments. Universal Design standards for accessible homes to accommodate people with disabilities and older people have been applied in 10% of the homes, making this scheme suitable for a broad demographic group.

Central to the scheme is its green infrastructure. A continuous car-free open park through the centre of the scheme has been approved, linking all buildings and homes to the wider pedestrian and cycle network, and to the bus/rail public transport hub on Park West Avenue. This central park will provide different passive and active uses, to suit all ages and needs.

The overall scheme seeks to locally restructure Park West Avenue as a ‘Place’, with a Main Street in the traditional sense that is shared by and accessible to the surrounding neighbourhoods as well as the future residents. A series of measures will be undertaken to enable the transformation of what is currently a hostile and unwelcoming environment; continuous street frontage close to the carriageway, multiple front doors and active edges (balconies, terraces, residential windows), mixed-uses at street level which will increase footfall, wide pavements, street trees and planters, off-street cycle paths, pedestrian and cycle priority crossing to Site 5 and New Cherry Orchard Park, bicycle parking and well-overlooked bus and rail stops.

Provision for a new supermarket, shops and civic space on Park West Avenue will create activity and a ‘buzz’ around the station and encourage active travel (car-free) for short trips and local errands.

Parking for the supermarket and shops will be located in an off-street car park, under a landscaped podium, and on-street bays shall be provided for bus stops, taxi-bays, drop-off, EV charging, loading bays and short-stay visitor parking. A slender 15-storey landmark building on the corner of Park West Avenue and the 'New Street' leading into the development will reinforce the identity of this new quarter.

Phase 2, the subject of this EIAR addendum, is the second of the four development phases for Cherry Orchard Point. Phase 2 will comprise 137 dwellings in a mix of houses, duplex units, and own-door apartments, all of which are proposed to be affordable for-sale homes. Building heights will range from 2 to 3-storeys.

The scheme has been designed by a multi-disciplinary team and consideration has been given to delivering a sustainable, efficient, and attractive urban neighbourhood to the highest standards.

The summary schedule of accommodation proposed for Phase 2 of Cherry Orchard Point is as follows:

- 13 no. 2 bedroom houses
- 88 no. 3 bedroom houses
- 9 no. 2 bedroom ground floor apartments (3 person dwellings comprising 1 no. double bedroom and 1 no. single bedroom, designed to Universal Design (UD) standards outlined by the Centre for Excellence in Universal Design (CEUD))
- 9 no. 2 bedroom ground floor apartments (4 person dwellings comprising 2 no. double bedrooms)
- 18 no. 3 bedroom duplex units

The proposed development will include a new access road from Park West Avenue, new internal streets, new public open spaces, and a new pedestrian connection to Cloverhill Road. Soft landscaping will be native where possible and chosen to be pollinator-friendly to encourage a bio-diverse and natural environment.

Figure 4.3 Proposed Phase 2 Development Site Layout outlined in Red.

4.2 Alternative Locations

The subject site is owned by Dublin City Council and is one of several undeveloped sites in the Park West-Cherry Orchard locale. There are 8 key development sites within the Park West-Cherry Orchard Local Area Plan (LAP) that have been zoned for residential and/or mixed-use development. Five of these sites are owned (all, or the majority part thereof) by Dublin City Council (DCC) and all 5 of these sites are available for development, which could be considered as suitable alternative locations for the proposed development. The 3 sites not owned by DCC have not been considered as the applicant is not in a position to develop these sites.

The proposed development is for a lower-density development within the northern half of key development site 4 of the LAP lands. The development is appropriate for the site in question and while consideration could be given to locating such a development elsewhere within the Local Area Plan lands or indeed elsewhere within the jurisdictional boundary of Dublin City Council, there is no material need to do so, as the lands are appropriately zoned for residential development and housing supply is desperately required across the city.

The recent approval for Phase 1 provides a level of certainty for the delivery of a mixed-use centre in the vicinity of the railway station. This will be the focal point of the development for Local Area Plan's Key Development Sites 4 and 5 and it is logical that the mixed-use centre, plus the future investment by Irish Rail into the upgrade of the railway service to DART, is supported by an appropriate density of residential housing and population, including that proposed by this Phase 2 application. Future Phase 3 is located entirely within Site 5 of the LAP lands and will comprise a residential development with some mixed-uses at ground level, of approximately 255 dwellings and 600sqm of commercial, retail or community uses. Future Phase 4 is located within Site 4 and will comprise approximately18,000 sqm of commercial/enterprise uses. The location of each phase is annotated in Figure 4.2 above.

Due to the nature of the proposed development, and demand for similar residential development within the LAP lands, and across the city and county environs, there is no material requirement to consider an alternative location.

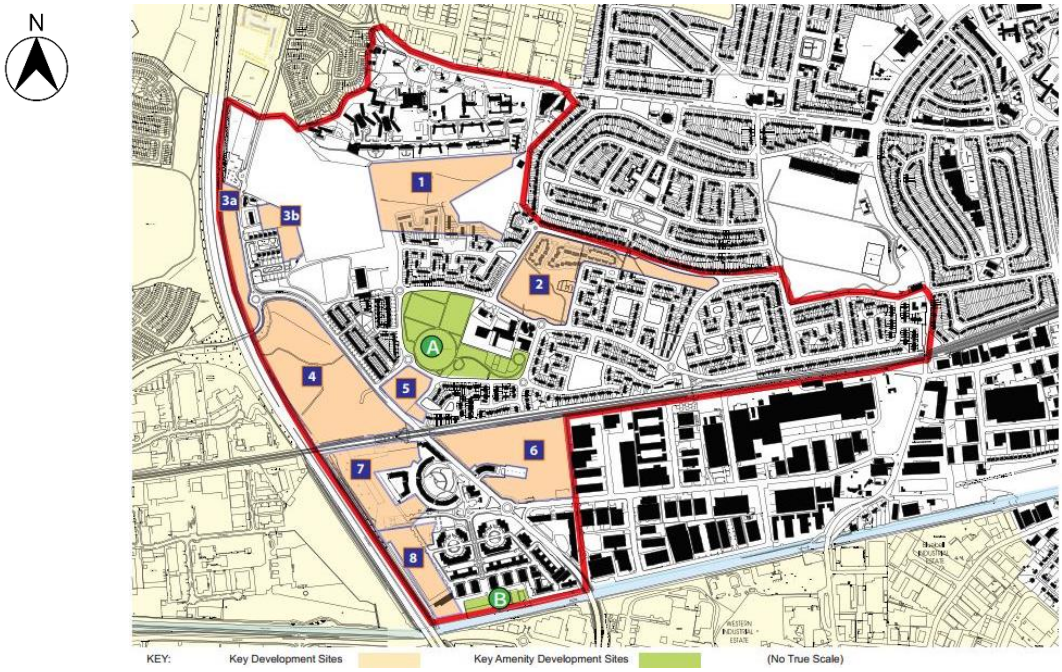


Figure 4.4 *Extract from Park West-Cherry Orchard Local Area Plan 2019 (Key Development Sites)*

4.3 Do Nothing Alternative

The 'Do-Nothing' alternative is not to progress the proposed development and to leave the site as it is.

'Doing-Nothing' would be an inefficient and unsustainable use of zoned and serviced lands, particularly ones that are owned by Dublin City Council. The opportunity to deliver affordable modern, high-quality, N-ZEB dwellings proximate to excellent railway and bus connections, an approved mixed-use centre, an improved public realm, and a new neighbourhood park would be lost.

This alternative scenario would be a setback for the existing and future residents of Cherry Orchard and Ballyfermot at a time of great housing need, and the existing community would continue with inadequate social infrastructure in a road-dominated environment, all giving rise to the potential for increased anti-social behaviour.

The site is currently greenfield and is vulnerable to trespass and anti-social behaviour, which poses an ongoing source of concern for nearby residents and An Garda Síochána. Park West Avenue is not a pleasant or supervised street to use to access bus and rail, and this lack of comfort and safety for pedestrians undermines sustainable policies to encourage active travel and a modal shift away from private cars.

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Figure 4.5 Existing Site (photographs 1, 3, 4, by architect, photograph 2 courtesy of google street view)

4.4 Alternative Land Uses

The site is zoned under the Dublin City Development Plan 2022-2028 as Z14 Strategic Development and Regeneration Area (SDRA). SDRA's are areas considered to be capable of delivering significant quantities of homes and employment for the city, with an overarching framework and individual sets of guiding principles to promote the delivery of compact and sustainable growth under the headings of Architectural Design and Urban Design, Phasing, Access and Permeability, Height, Urban Greening and Biodiversity, Surface Water Management, Flood Risk, River Restoration, Sustainable Energy, Climate Change and Cultural Infrastructure.

In addition to the SDRA zoning, the subject site is located within the boundaries of the Park West-Cherry Orchard Local Area Plan 2019 (LAP) which was adopted by the elected members in 2019, and which was to remain in force for a period of 6 years. After 5 years the Council has the option to extend the life of the plan to a period no longer than 10 years in total. This 'option' has been actioned by the Council and the new expiration date for the LAP is 2029. The LAP addresses overall strategies relating to broad issues such as urban function, land use, access, movement, development, and 'place'. Site briefs for 8 key development sites are set out in the LAP, and the subject lands are located within Site 4 the 'M50-Cedarbrook Avenue Site'.

Site 4: M50-Cedarbrook Avenue Site

Site Area:	**11.5Ha**
Ownership & Availability:	**Dublin City Council owned and available immediately.**
Proposed Use:	**Mixed Use: Predominantly Residential, with enterprise and commercial along the M50 and next to the Train Station. (c. 80/20 split).**
Density	**75 DPH average (Ranging from 50 – 125 DPH).**
Heights:	**Ranging from 2-4 storeys up to 7-8 storeys (24m) in close proximity to Train Station, with opportunity for place marker landmark building of up to 60m.**
Estimated Capacity	**600 – 700 no. units subject to detailed design.**
Supporting Infrastructure Requirements:	**Convenience retail to be provided.**
	Local Park and Ride facility be provided including provision for cycle parking facilities, as one of the supporting requirements when development site 4.

Figure 4.6 Extract from Park West-Cherry Orchard Local Area Plan 2019 (Site Brief for Site 4)

Alternative land uses to *'Mixed Use: Predominantly Residential'*, such as *primarily* Commercial/Employment across the entire site, would be in direct contravention of the objectives of the SDRA and the LAP and is not a feasible design solution.

The LAP Site Brief for Site 4 lists a Local Park and Ride Facility as a supporting infrastructure requirement and further includes an objective to '*Examine the possibility of providing local park and ride facilities at this location in close proximity to the rail station'*.

Consulting Engineers Waterman Moylan prepared a mobility hub strategy document in mid-2022 to inform their consultation(s) with the Transport Section of Dublin City Council in late 2022 and early 2023. The outcome of that assessment confirmed the outcome of previous assessments by the National Transport Authority that the Cherry Orchard LAP Sites 4 and 5 should not be included in the list of locations for new Park and Ride facilities and concluded that the site was not suitable for a strategic or local Park and Ride facility but would be more appropriate for a Local Mobility Hub. This strategy for a Local Mobility Hub formed the basis of the pre-planning consultations with the Transport Section of Dublin City Council, the approved Phase 1 development and has been sustained in the Transport and Traffic Assessment for Phase 2.

Further to the agreed and approved strategy of providing a Local Mobility Hub, a Park and Ride facility was considered by the Design Team to represent an unsustainable use of serviced lands, and which would have a negative visual and physical impact on the future neighbourhood. A Park and Ride would increase traffic movements in and around the site, it would require a large surface area at the expense of housing and amenity space, and it would encourage private car movements over and above active and sustainable modes of travel. Not to provide a Park and Ride on the Site 4 lands is not a contravention of the LAP objectives as the written objective is to examine the possibility of same and is not an absolute.

4.4.1 Alternative A: Indicative Site Layout as per Local Area Plan

The Park West-Cherry Orchard Local Area Plan provides 'indicative' site layouts and massing models for each of the 8 key development sites.

The proposed Phase 2 development is within the northern half of Site 4, the 'M50-Cedarbrook Avenue Site' and the LAP's indicative site layout shows a simple orthogonal grid block plan of predominantly perimeter courtyard residential blocks with linear, non-residential, blocks along the M50 boundary. Vehicular access is from Park West Avenue with cul-de-sac slip roads parallel to Park West Avenue and the M50, connected by the central link street and a single access road leading to the commercial/enterprise uses proposed along the M50 boundary. A central open space is indicated to the south of the Phase 2 lands and additional open space is shown to the north, where the site abuts Cloverhill Road and the M50 flyover. The layout and massing model suggests residential buildings of 0-4 storeys high.

ıdicative Site Layout - Site 4

Figure 4.7 and *Figure 4.8 Extract from Park West – Cherry Orchard Local Area Plan 2019 (Indicative Site Layout and Indicative Massing Model)*

There are specific development objectives to provide mixed-uses on Site 4, including a large convenience store to the immediate north of the station. Other objectives include the retention of historic field boundaries where feasible, a green buffer zone to the M50, examination of the possibility of local park and ride facilities by the station, and the provision of a glass bottle recycling bank.

The execution of a very literal interpretation of the indicative LAP site layout was considered at the outset of the detailed scheme design but was deemed to be inappropriate and unfeasible on environmental grounds for the following reasons:

- Provision of a slip road along Park West Avenue does not meet the objectives for new urban developments as described in the Design Manual for Urban Roads and Streets (DMURS).

- The indicative site layout is designed to accommodate private cars and there is a substantial quantity of road space shown on the plan. Local and strategic policy has increasingly looked towards more sustainable use of land and more 'active' travel means that reduce car ownership and usage, especially for short trips. The specific policies are as follows;

    - National Planning Framework: Ireland 2040: Objectives 27 and 64,
    - Climate Action Plan 2023: CP/23/11,
    - National Sustainability Mobility Policy 2022: Goals 3, 5 and 7,
    - Sustainable Urban Housing: Design Standards for New Apartments (2022): Sections 4.21 and 4.23,
    - EMRA Regional Spatial & Economic Strategy 2019-2031: Policy RPO 5.3, 8.7 and 9.10,
    - Greater Dublin Area Transport Strategy 2022-2042: Strategy Objectives 5.31, 5.32,
    - Dublin City Development Plan 2022-2028: Policy/Objectives CA4, SC2, QHSN12, CCUV6, CCUV37, SMT1, SMTO1, SMT11, SMRO2, SMT12, SMT13, SMT16, SMR17, SMT18, SMT19, SMTO7, SMTO8, SMTI10, SMTO12, SMT20, SMT26, SMT27, G14, G128, SMT20, SMT26, SMT27,
    - Safe Routes to Schools 2020,

- National Cycle Manual 2023,
- Sustainable Residential Development and Compact Settlements 2024: SPPR 4 and SPPR 5, and Key Indicators of Quality Design and Placemaking.

- The provision of a park and ride was considered by the design team in consultation with the Transport Section of the Local Authority and, to achieve the aim of promoting active travel, it was deemed to be an unsustainable use of serviced lands. Improvements to pedestrian and cycle infrastructure to encourage walking and cycling should be prioritised over car usage.

- A desire to explore stronger green route connections to other parts of the neighbourhood, and particularly the relationship between the new development and the primary school in New Cherry Orchard Park.

- The northern blocks of the indicative layout do not address Cloverhill Road, they don't read as a 'gate-way' to the overall development, nor do they actively overlook the strategic green link to the north and west as per Chapter 4 of the Local Area Plan.

- The recent publication of *Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities* (2024) (the Compact Guidelines) introduced new standards for quality urban design and placemaking. These Compact Guidelines were published to address issues associated with the delivery of affordable compact development, particularly low-medium density development such as that proposed for Phase 2. A literal execution of the LAP indicative site layout for Site 4 and Phase 2 would not avail of the efficient standards provided for by the Compact Guidelines, these being SPPR 1 – shorter separation distances between opposing windows at the rear of dwellings and SPPR 2 – minimum private open space standards for houses.

4.4.2 Alternative B: Low Density Design Solution

An alternative design solution comprising a lower-density development of only 'traditional' houses was considered but was ruled out for several reasons:

- The capacity of the Phase 2 site if only houses were proposed is c.117 dwellings, or 35 units per hectare.
- A development with a local 'micro-density' of 35 units per hectare is considered low-density. It is noted that the combined 'macro-density' for Site 4 between Phases 1 and 2 will be >100 unit per hectare and a lower density can be argued. However, there are many other factors that need consideration before such a low density can be justified.
- SPPR 4 of the Urban Developments and Building Heights; Guidelines for Planning Authorities (2018) requires a mix of building heights and typologies and the avoidance of mono-type building typologies in any one development of 100 units or more.
- A low-density scheme is not a sustainable use of serviced lands with existing quality public transport on and adjacent the development (BusConnects and railway, soon to be upgraded to DART).
- To improve the nature of Park West Avenue, and to make it a safe, attractive place to use, key building corners and edges need to be of a scale and intensity that can supervise the street.
- Different building typologies on key corners make for local landmarks that aid legibility and way-finding.
- A low-density development makes for a severe transition of scale between houses and apartment buildings and undermines quality placemaking.
- Infrastructure costs per unit are high and difficult to justify.

The provision of only 'traditional' 3-bedroom houses within Phase 2 does not provide for a good range of typologies, limits choice for residents and does not lend itself to quality urban design and place-making. This alternative design solution was decided not to be the best option and was therefore ruled out.

Figure 4.9 Alternative B: Low Density Design Solution

4.4.3 Alternative C: High Density Design Solution

An alternative design solution that comprises a higher density development of apartments was considered but was ruled out for several reasons:

- Client brief was to provide a scheme of affordable dwellings for sale, comprising a mix of 2-storey houses and some own-door apartments in the form of 3-storey blocks of duplex units and own-door ground floor apartments.
- High-density multi-unit and shared-core apartments are not a viable option for affordable purchase due to the current high construction and delivery costs of apartments compared to houses and duplex units and strict rules governing the price of affordable for purchase homes.
- Phase 1 comprises 708 apartments which will be social and cost-rental units. A greater mix of typologies and tenures is desired within the overall development which makes for a more varied and interesting scheme in terms of urban design and placemaking.
- The Site Briefs and specific Development Objectives for Site 4 of the Local Area Plan provide for lower-density development towards the northern half of the site to 'kick-start' development and state a height range of up to 4-storeys on the proposed Phase 2 lands. Taller buildings in excess of 4-storeys and similar to Phase 1 in terms of form and pattern would not comply with the LAP's objectives (Ref Chapter 5 Site 4 of the Local Area Plan for these development objectives)

A high-density scheme of apartment buildings will not meet the Client's brief for affordable units for sale and will not comply with the LAP objectives for a lower-density and lower-height development for this part of Site 4. Furthermore, a cumulative high-density development for *all* of Site 4 would be potentially 1400 apartments and would lack (i) the variety of typology required by SPPR 4 of Urban Development and Building Heights (2018) and (ii) the mix and character for quality urban design and placemaking

that is a key indicator of the new Sustainable Residential and Development Compact Settlements; Guidelines for Planning Authorities (2024). This alternative design solution was decided not to be the best option and was therefore ruled out.

Figure 4.10 Alternative C: High Density Design Solution

4.4.4 Alternative D: Evolving Scheme

The evolving scheme for the subject lands addressed various issues that arose during the detailed design process. The initial scheme designs explored different combinations of houses, duplex units and 'walk-up' triplex apartments.

The urban framework plan was broadly unchanged from the earliest design sketches and followed the same principles established in Phase 1:

- The continuation of the neighbourhood park down the centre of the development.
- A street hierarchy that included a secondary access road as a loop around the development and a series of tertiary or 'woonerf' streets accessing residential cells.
- Provision for blocks of commercial/enterprise units as a buffer between the residential development and the M50.
- Building lines and active frontage onto the public realm, including Park West Avenue.
- Revisions to the existing footpath and cycle path on Park West Avenue to tie into the upgrade works approved under Phase 1; new verges and street planting to protect cyclists and pedestrians, application of DMURS principles to Park West Avenue.
- Distinctiveness of character and place with the overall development.
- Minor landmarks on key corners and junctions.
- Pedestrian priority and measures to encourage active travel over the use of private cars.
- A choice in the pedestrian and cycle route/path to public transport, shops and amenities, on routes that are overlooked, safe and attractive.

There were many iterations of the site layout during the early design stages, all with a view to determine the optimum unit mix that met the Client's brief. Those which included material differences to each other are described and assessed below.

Figure 4.11 Alternative D: Evolving Design Solution (Option 1)

Option 1 comprised 153 units of which there were 93 apartments and 60 houses. These apartment buildings were typically 3-storey walk-up blocks on the corners of a residential block. This urban plan provided good variety in terms of typology, form and height, but the 3-storey walk-up blocks were deemed unsuitable for the target market, being affordable for sale dwellings, and are better suited to a rental market.

The publication of the Sustainable Residential and Development Compact Settlements; Guidelines for Planning Authorities (the Compact Guidelines) in early 2024 brought new development standards that facilitated variety, distinctiveness, efficiencies and affordability in a way that medium-density apartment developments could not.

The new standards permitted shorter back-to-back distances, smaller gardens and tighter plot depths which allowed the urban designer to introduce a fourth urban block into the development layout. This additional block created the opportunity to increase the overall proportion of houses without unduly impacting on unit numbers and density. Variety in building height and typologies was retained and the evolving scheme met the Client's brief, the objectives of the Local Area Plan and the Key Indicators and Development Standards of the Compact Guidelines.

Option 2 of the design evolution is a scheme of 146 units at 44 units per hectare. This option applied the new standards of the Compact Guidelines but was not progressed to detailed design due to the high proportion of apartments and duplex units (46% apartments/duplex units) which were deemed to be unsuitable for this Phase's target market. Apartments and duplex units have higher building costs than traditional houses and The LDA's brief for Phase 2 is to deliver affordable for purchase housing, which is subject to strict requirements as set out in the Affordable Housing Act 2021 and the Land Development Agency Act 2021, requiring a higher proportion of traditional houses that would better

meet the affordability requirements for affordable purchase housing. The 'twist' in the northernmost block arose from a desire to retain a stand of mature ash trees. However, on further investigation, the ash trees looked likely to suffer from ash die-back, and the decision was made to remove them and compensate with new, sustainable tree and shrub planting.

Figure 4.12 Alternative D: Evolving Design Solution (Option 2)

Option 3 of the design evolution explored how the apartments and duplex units could be grouped to create greater efficiencies in terms of construction sequence and in estate-management. This option also comprised 146 units and a slightly lower percentage of apartments/duplex units at 38%. This option was not deemed feasible as the grouping of the higher-density dwellings (apartments and duplex units) did not create height, active edges and overlooking where it is naturally required, this being frontage to overlook and passively survey Park West Avenue and the junction with Cloverhill Road.

Figure 4.13 Alternative D: Evolving Design Solution (Option 3)

4.4.5 Final Scheme

The final and preferred design solution complies with (i) the Site Briefs and Development Objectives outlined in Chapter 5 of the Local Area Plan, (ii) the Developer's brief for affordable-for-purchase housing and (iii) the policies and objectives of the new Compact Guidelines.

The proposed site layout and scheme design complies with the uses, density and building heights required by the Local Area Plan.

This design solution provides for the Developer's preferred unit mix and typologies at a sustainable and efficient residential density of 40 uph. The overall density for approved Phase 1 and proposed Phase 2 is c103 uph, which is within the range of 50 – 125 uph specified by the Site Briefs for Site 4.

The final design proposed for Phase 2 includes a mix of typologies in the form of houses, duplex units and own-door ground floor apartments that will provide variety and choice for future resident purchasers. The layout is proposed to be well-connected and accessible by sustainable modes of transport and incorporates the principles set out in the Design Manual for Urban Roads and Streets (DMURs) and both optimises and encourages active travel.

It is considered that the final scheme design addresses issues raised in the above alternative options and that it is optimum design solution for Phase 2.

4.5 Summary of Alternatives Considered

Table 4.1 Summary of Alternatives Considered

Alternative	Description	Commentary and Consideration
Alternative A	Indicative Site Layout as per Local Area Plan	A very literal interpretation of the LAP layout has issues with the treatment and frontage of Park West Avenue in the form of a slip road, permeability and legibility, and with 'active' travel within and around the site. Opportunities exist to develop a detailed scheme design that meets the LAP Site Brief objectives and address these issues, particularly since the

		publication of the Sustainable Residential and Development Compact Settlements, Guidelines for Planning Authorities (the Compact Guidelines).
		Environmental Considerations
		• Priority for private car movements within the site layout over 'active' travel (cycling and walking). • Slip road to Park West Avenue non-compliant with DMURS and 'doubles up' on road take. • Park and Ride not conducive to promotion of 'green' travel modes over private cars. • Compliance issues with DMURS and the Compact Guidelines. • Implementation of safe and well-overlooked green routes as per LAP Development Strategy.
Alternative B	Low Density Development	A low-density scheme of *only* houses would not meet the objectives of the LAP, nor would it be a sustainable form of development on serviced lands with excellent public transport links. It would also contravene SPPR 4 of Urban Development and Building Heights (2018).
		Environmental Considerations
		• Low density does not provide a sufficient quantum of affordable housing. • Lower population does not support rail or quality bus transport modes. • Lower population does not support local retail or community assets. • Low density development tends to 'sprawl' at the expense of higher-quality and quantum of the public realm.
Alternative C	High Density Development	A high-density scheme does not meet the objectives of the LAP in terms of height and urban pattern. The build-cost of apartments exceed the market sales prices, and do not meet the client's brief for affordable dwellings for sale.
		Environmental Considerations
		• Whereas high-density blocks are desirable to support public transport, retail and community assets, they do not provide variety in typology and tenure. • High-density blocks do not provide the fine-grained and active frontage that high-quality medium-density own-door units create. • The application of high-density blocks across *all* of Site 4 would be homogenous and potentially over-bearing on the existing neighbourhoods.
Alternative D	Evolving Scheme	The evolving options for the site development plan addressed issues raised by both the Client and Local Authority during the design process. The principals of the scheme were established subject to the finalisation of certain details, mostly concerned with determining the optimum dwelling mix for an affordable scheme.
		Environmental Considerations
		• The retention of mature ash trees and their integration into the site layout was considered unfeasible due to the extreme likelihood of ash die-back. • The fine-grain nature of the evolving options makes for quality place-making and a distinctly different character to Phase 1.

		• The evolving options all follow the principles established by Phase 1 for active travel and the discouragement of private car movements. • The final and preferred option meets the requirements of the LAP and the standards of the Compact Guidelines.

4.6 References

- Environmental Protection Agency (EPA) Guidelines for EIARs (2022)
- Dublin City Development Plan 2022-2028
- Park West – Cherry Orchard Local Area Plan 2019
- Sustainable Residential and Development Compact Settlements, Guidelines for Planning Authorities (2024)
- Design Manual for Urban Roads and Bridges (DMURS) (2019)
- Urban Design Manual: A Best Practice Guide (2009)
- Cycle Design Manual (2023)
- Safe Routes to Schools (2020)

5 Air Quality

5.1 Introduction

This chapter identifies, describes and assesses the likely direct and indirect effects of the proposed development on Air Quality. A full description of the development is available in Chapter 2.6 – Description of Scheme.

This chapter was completed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takea, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

5.2 Methodology

5.2.1 Relevant Legislation and Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality is summarised below.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government (DHPLG), 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 and TII Road Emissions Model (REM) online calculator tool (TII, 2022); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2024).

5.2.2 Study Area

In relation to potential dust impacts, the IAQM Guidance (2024) states that dust impacts to people and property can occur up to 250m from the source. In addition, the guidance states that dust impacts to vegetation can occur up to 50m from a site and 50m from site access roads, up to 250m for a site

entrance (IAQM, 2024). As a result, the study area with respect to dust impacts extends to 250m from the proposed development boundary for the purposes of this assessment. Further detail on the sensitive receptors within the study area for the construction phase assessment is included in Section 5.3.3 and Figure 5.2.

For the purposes of the construction phase air quality assessment, in order to ensure cumulative dust impacts associated with all phases of the proposed masterplan development were considered, the assessment has been conducted for the entire site area denoted as the 'EIAR boundary' in Figure 5.2. This is a wider area than the specific planning application boundary associated with the proposed development (also outlined in Figure 5.2) and encompasses the masterplan site.

In relation to air quality impacts from vehicle emissions, the TII PE-ENV-01106 guidance (TII, 2022) states that a detailed air quality assessment is required where there are sensitive receptors (human or ecological) within 200m of affected road links. Therefore, the study area for the operational phase extended to 200m from impacted road links. Further detail on the sensitive receptors within the study area for the operational phase assessment is included in Section 5.3.3 and Figure 5.3.

5.2.3 Data Collection Methods

A desk-based air quality assessment was carried out following TII PE-ENV-01106 guidance (2022). TII states that, wherever possible, use should be made of existing quality assured air quality monitoring data such as that undertaken by the Environmental Protection Agency (EPA). Air quality monitoring programmes have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report, *Air Quality in Ireland 2023* (EPA 2024), details the range and scope of monitoring undertaken throughout Ireland. The baseline air quality data collected through the desk study is detailed in Section 5.3.2.

As part of the air quality assessment, digital maps, including those provided by the EPA, National Parks, and Wildlife Service (NPWS) and Google Earth®, were used to determine the relevant land use in the region of the proposed development.

5.2.4 Criteria for Rating of Impacts

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.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 *of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast)*. This directive will supersede EU Directive 2008/50/EC *of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe* (CAFE Directive) and it sets out new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011, as amended. With the adoption of Directive (EU) 2024/2881, Ireland must transpose this directive into national law (i.e., update the Air Quality Standards Regulations) before December 2026.

The ambient air quality standards applicable for nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$) are outlined in Table 5.1. The limit values set out in Directive (EU) 2024/2881 will need to be achieved by 2030, with the limit values set out in the Air Quality Standards Regulations 2022 (and future updated regulations) applicable until 2030.

Table 5.1: Ambient Air Quality Limit Values

Pollutant	2008/50/EC Limit Type	2008/50/EC Limit Value (applicable until 2030)	(EU) 2024/2881 Limit Type	(EU) 2024/2881 Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m³
	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
NO_X	Annual limit for protection of vegetation	30 µg/m³	Annual limit for protection of vegetation	30 µg/m³
Particulate Matter (as PM_{10})	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m³
	Annual limit for protection of human health	40 µg/m³	Annual limit for protection of human health	20 µg/m³
Particulate Matter (as $PM_{2.5}$)	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m³
	Annual limit for protection of human health	25 µg/m³	Annual limit for protection of human health	10 µg/m³

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026 (shown in Table 5.2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 5.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m³. The strategy also acknowledges that "*meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2*".

Annex II of Directive (EU) 2024/2881gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that *"Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II."*

These assessment thresholds relate to monitoring of ambient air quality by Member States, where *"exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold*

shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years."

The applicable air quality limit values for the purposes of this assessment are those set out in Table 5.1. The limit values stipulated under Directive 2008/50/EC and the Air Quality Standards Regulations 2022 are applicable for the construction phase and opening year 2027 for the proposed development. The limit values stipulated by Directive (EU) 2024/2881 are applicable for the design year 2042 for the proposed development.

Table 5.2: WHO Air Quality Guidelines 2021

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	24-hour limit for protection of human health	-	-	25 µg/m³
	Annual limit for protection of human health	20 µg/m³	-	10 µg/m³
PM (as PM_{10})	24-hour limit for protection of human health	75 µg/m³	50 µg/m³	45 µg/m³
	Annual limit for protection of human health	30 µg/m³	20 µg/m³	15 µg/m³
PM (as $PM_{2.5}$)	24-hour limit for protection of human health	37.5 µg/m³	25 µg/m³	15 µg/m³
	Annual limit for protection of human health	15 µg/m³	10 µg/m³	5 µg/m³

Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 5.1 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/m²/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m²/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

Air Quality & Traffic Significance Criteria

Human Receptors

The Transport Infrastructure Ireland (TII) guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do-Nothing scenario. The TII significance criteria are outlined in Table 4.9

of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) and reproduced in Table 5.3 below. These criteria have been adopted for the proposed development to predict the impact of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the proposed development.

Table 5.3: Air Quality Significance Criteria

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Ecological Receptors

The Air Quality Standards Regulations 2022 (Table 5.1) outline an annual critical level of 30 µg/m^3 for NO_X for the protection of vegetation and natural ecosystems in general. Ammonia (NH_3) has an annual mean limit value of 1 µg/m^3 to 3 µg/m^3. The CAFE Directive (2008/50/EC) defines 'Critical Levels' as '*a level fixed on the basis of scientific knowledge, above which direct adverse effects may occur on some receptors, such as trees, other plants or natural ecosystems but not on humans*'.

The TII PE-ENV-01106 guidance (2022) outlines the assessment of significance of effects at sensitive designated habitats (Section 4.10.2 and Table 4.11 of the guidance), stating that if the total N deposition and acid deposition (due to the proposed development plus background concentrations) are more than 1% of the critical loads then the modelled results should be discussed further with the project ecologist.

A 'Critical Load' is defined by the United Nations Economic Commission for Europe (UNECE) as a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge (UNECE 2010).

To determine if the air quality impacts at a sensitive designated habitat are significant, the project ecologist shall consider:

- Factors such as the nature of site management.
- Other factors such as regular flooding in maintaining a suitable habitat.
- The degree of sensitivity of fauna to relatively subtle changes in botanical composition.
- Whether nitrogen or phosphorus is the key limiting nutrient.
- The extent of the sensitive designated site that is negatively affected.

The assessment considers the absolute impact of the proposed development, i.e., the predicted pollutant concentrations due to the proposed development plus background concentrations. The assessment also considers the degree of change in pollutant concentrations between the Do-Nothing and Do-Something scenarios to determine how much the proposed development is contributing to predicted concentrations. The degree of change must be taken into consideration when assessing the significance of effects. If significant effects are determined, site survey information is required to determine if the sensitive habitat of relevance is actually present in the affected area and to inform potential mitigation measures that may be required.

Critical loads for N deposition and acid deposition were derived from the Air Pollution Information System (APIS) website (APIS 2024), as per the TII PE-ENV-01106 guidance (2022). These are only

available for internationally designated habitats (Special Protection Area (SPA) and Special Area of Conservation (SAC)). Critical loads for nationally designated habitats (e.g., Natural Heritage Area (NHA)) or proposed designated habitats (e.g., proposed NHA (pNHA)) can be derived by searching APIS for the habitat type, rather than a specific site. The critical loads used for the current assessment are detailed in Table 5.4. Where predicted pollutant levels are within the upper threshold of the critical load then the levels are deemed to be in compliance and not in exceedance of the critical load.

Table 5.4 Critical Loads for Nitrogen and Acid Deposition

Pollutant	Designated Site	Potential Sensitive Ecology Present for Determining Critical Load	Critical Load Range
N Deposition	Grand Canal pNHA	Calcareous grassland	5 – 10 kgN/ha/yr
Acid deposition	Grand Canal pNHA	Calcareous grassland	0.714 – 5.146 keq/ha/yr

5.2.5 Construction Phase

Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024) 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 the proposed development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. TII recommend the use of the IAQM guidance (2024) in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022).

The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- 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. 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.

The IAQM guidance (2024) in Section 9 of its document outlines the approach for determining the significance of effects for dust emissions. The approach is – once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified the final step is to determine whether there are significant effects arising from the construction phase of a proposed development. The primary aim, according to IAQM is to prevent significant effects on receptors through the use of effective mitigation. Hence the residual effect will normally be 'not significant'. This approach has been applied to the proposed development in conjunction with professional judgment in order to determine the significance of effects.

Construction Phase Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022), 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. While the guidance is specific to infrastructure projects, the approach 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;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

Waterman Moylan have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 14 Material Assets (Traffic and Transport) this EIAR. As per Chapter 14, it has been determined by Waterman Moylan that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, or that the development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality with respect with human or ecological receptors (see Section 5.3.3 for further detail on sensitive receptors). The traffic data has included data associated with the entire masterplan development for the site as well as other specific cumulative developments, as required. This ensures the full cumulative impact is assessed.

5.2.6 Operational Phase

Operational Phase Traffic Assessment

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 5.2.5 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. Waterman Moylan have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 14 Material Assets (Traffic and Transport). The traffic assessment has included traffic associated with the entire masterplan development for the site as well as other specific cumulative developments, as required. This ensures the full cumulative impact is assessed. It has been determined by Waterman Moylan that the proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on a number of road links. Therefore, in accordance with the TII scoping criteria a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted.

The impact of traffic emissions on air quality is assessed for both human and ecological receptors as per the TII PE-ENV-01106 guidance (TII, 2022). The following sections describe the methodology for each assessment.

Air Quality Traffic Assessment – Human Receptors

The impact to air quality as a result of changes in traffic is assessed at sensitive human receptors in the vicinity of affected roads. These are discussed in further detail within Section 5.3.3 and shown graphically in Figure 5.3.

The TII guidance (2022) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2024).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2022b). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data, the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tyre wear (TII, 2024). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

Air Quality Traffic Assessment – Ecological Receptors

In addition to assessing the impact to people as a result of air quality, the impact to sensitive ecosystems has also been assessed as per the TII PE-ENV-01106 guidelines (2022). Sensitive ecological habitats include internationally, nationally and locally designated sites of ecological importance, referred to as 'designated habitats' within the TII guidance PE-ENV-01106 (2022). According to TII guidance PE-ENV-01106, designated habitats may include: Ramsar sites, Special Protection Areas (SPAs) and proposed sites (pSPA), Special Areas of Conservation (SACs) and proposed sites (pSAC), Natural Heritage Areas (NHA), and pNHA, ancient woodland, veteran trees, Nature Reserves, National Parks, Refuge for Fauna and Flora, Wildfowl Sanctuaries, Biogenetic Reserves and UNESCO Biosphere Reserves.

Further guidance can also be found in the IAQM document A Guide to The Assessment of Air Quality Impacts on Designated Nature Conservation Sites (IAQM, 2020) and in the TII guidance (TII, 2022), both of which describe NO_X and ammonia emissions as the most likely source of significant impacts from road traffic. Pollutants such as CO_2, CO, SO_2 and volatile organic compounds are not considered in this guidance and have been scoped out of detailed assessment.

The assessment of impacts to ecology from air quality and traffic emissions requires the air quality specialist to liaise with an ecologist on schemes where there is a designated site within 2km of the route. However, as the potential impact of a scheme is limited to local level, a detailed assessment is only required where there is a significant change to traffic flows (>1,000 AADT or >200 HDV AADT) and the designated site lies within 200m of the road centre line. Where these two requirements are fulfilled, the assessment involves a calculation of nitrogen oxides (NO_X) and ammonia (NH_3) concentrations in order to determine the nitrogen (N) deposition and acid deposition rates using the methodology set out in TII PE-ENV-01106 (2022).

The Grand Canal pNHA (Site Code: 002104) is within 200 m from the road link *Junction 7 Arm C* impacted by the proposed development. Therefore, there is the potential for impacts to ecology as a result of NO_X, NH_3, N deposition and acid deposition and an assessment is required.

Chapter 8 (Biodiversity) includes further details on the ecological sensitivities associated with these sites.

Modelling using the TII REM was conducted for the relevant sensitive habitats. The assessment consisted of modelling individual ecological receptors at a worst-case distance of 5m from the road centreline. The greatest impacts would occur in closest proximity to the source of the emissions (the road) and therefore this represents a precautionary assessment.

Road traffic emission rates for NH_3 were generated using the best available method at the time of undertaking the assessment, namely the Calculator for Road Emissions of Ammonia (CREAM) Tool developed by Air Quality Consultants (AQC 2020), as recommended by the TII guidance (TII 2022, 2024).

The TII PE-ENV-01106 guidance (2022) outlines a methodology to derive the road contribution to dry deposition and thereafter to compare with the published critical loads for the appropriate habitat. The TII REM has the necessary calculation embedded within it to provide N deposition and acid deposition rates based on the calculated NO_X and NH_3 concentrations.

The REM uses the conversion factors outlined in Table 5.5 for NO_2 and NH_3 based on the methodology of AGTAG06 – Technical Guidance On Detailed Modelling Approach For An Appropriate Assessment For Emissions To Air (UK Environment Agency 2014) and the IAQM (2020).

Table 5.5 NO_2 and NH_3 N Deposition Conversion Factors

Habitat Type	NO_2 Conversion Factor	NH_3 Conversion Factor
Grassland and similar habitats	1µg/m^3 of NO_2 = 0.14 kgN/ha/yr	1µg/m^3 of NH_3 = 5.2 kgN/ha/yr
Forestry and similar habitats	1µg/m^3 of NO_2 = 0.29 kgN/ha/yr	1µg/m^3 of NH_3 = 7.8 kgN/ha/yr

The N deposition is then converted to an acid deposition within the REM software using a conversion factor of 0.071429 keqN/ha/yr for all habitat types.

N deposition and acid deposition are calculated for both the road contribution of NO_2 and NH_3, and these are then summed along with the background deposition rates in order to calculate the total N deposition and acid deposition at each sensitive designated habitat.

Background concentrations for NO_X, NH_3, N deposition and acid deposition at the closest point to the modelled road within each modelled designated habitat were derived from the 1km grid square concentrations provided on the Air Pollution Information System (APIS) website (APIS 2024), in line with UK Environment Agency (2014) and UK Department for Environment, Food and Rural Affairs (Defra) (2022) guidance, as shown in Section 5.3.2 and Table 5.9. These background concentrations were input into the REM to complete the necessary calculations.

Traffic Data Used in Modelling Assessment

Traffic flow information is detailed in Table 5.6 as obtained from Waterman Moylan for the purposes of this assessment. Data for the Base Year 2022 and the Do Nothing and Do Something scenarios for the Opening Year 2027 and Design Year 2042 were provided. The traffic data included traffic associated with each phase of the entire masterplan development for the site (i.e. the assessment is inherently cumulative). In addition to the traffic associated with the full masterplan development for the site, a conservative growth factor has been applied to the traffic data to allow for cumulative development within the area. Specific cumulative developments were also investigated but it was found that there were no additional specific permitted developments that would lead to cumulative traffic impacts due to their increased distance from the site (see Chapter 14 for further details).

The modelling assessment has been undertaken for road links that were within 200 m of receptors. Background concentrations have been included as per Section 5.3.2 of this chapter based on available EPA background monitoring data (EPA, 2024).

Table 5.6: Traffic Data used in Air Modelling Assessment

Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
			Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
Junction 1_Arm A	50	9709 (511)	8101 (517)	12432 (654)	11938 (628)	1490 (15)
Junction 1_Arm B	50	10344 (544)	10316 (543)	172 (9)	12178 (641)	4694 (96)
Junction 1_Arm C	50	7390 (472)	172 (9)	12942 (681)	734 (39)	1469 (30)
Junction 2_Arm A	50	9020 (475)	10338 (544)	1469 (77)	0 (0)	1403 (14)
Junction 2_Arm B	30	166 (2)	0 (0)	11797 (753)	0 (0)	507 (10)
Junction 2_Arm C	50	9040 (476)	8976 (573)	1937 (20)	0 (0)	12482 (657)
Junction 2_Arm D	30	0 (0)	1937 (20)	12923 (680)	12172 (641)	9418 (1164)
Junction 3_Arm A	50	7790 (497)	10319 (543)	734 (39)	11457 (603)	14663 (1104)
Junction 3_Arm B	30	1787 (18)	0 (0)	12178 (641)	9010 (575)	5237 (107)
Junction 3_Arm C	50	9023 (475)	9088 (478)	6384 (130)	11425 (601)	10058 (529)
Junction 3_Arm D	30	0 (0)	4226 (86)	13694 (721)	192 (10)	10058 (529)
Junction 4_Arm A	50	7888 (415)	11270 (593)	1957 (103)	11450 (603)	0 (0)
Junction 4_Arm B	50	3732 (76)	0 (0)	4682 (96)	0 (0)	0 (0)
Junction 4_Arm C	50	9728 (512)	3535 (72)	2646 (27)	11797 (753)	0 (0)
Junction 4_Arm D	30	0 (0)	1342 (14)	6392 (130)	1937 (20)	13973 (735)
Junction 5_Arm A	50	3135 (64)	4234 (86)	2614 (53)	12923 (680)	13573 (714)
Junction 5_Arm B	50	1198 (12)	1324 (27)	1868 (19)	734 (39)	9315 (595)
Junction 5_Arm C	50	3739 (76)	1264 (13)	1842 (38)	10058 (529)	13541 (713)
Junction 6_Arm A	50	1181 (24)	456 (9)	13689 (720)	4685 (96)	192 (10)
Junction 6_Arm B	50	1126 (11)	11264 (593)	9597 (1186)	12467 (656)	14054 (740)
Junction 6_Arm C	30	420 (9)	8493 (1050)	14461 (1088)	0 (0)	1469 (77)
Junction 7_Arm A	50	9895 (521)	13241 (997)	4722 (96)	3921 (80)	12755 (814)
Junction 7_Arm B	50	7522 (930)	4722 (96)	11938 (628)	1490 (15)	2157 (22)
Junction 7_Arm C	50	11561 (870)	9088 (478)	12178 (641)	4694 (96)	14033 (739)
Junction 7_Arm D	30	4189 (85)	9088 (478)	734 (39)	1469 (30)	734 (39)
Junction 8_Arm A	50	7888 (415)	0 (0)	0 (0)	1403 (14)	13148 (692)
Junction 8_Arm B	50	7888 (415)	0 (0)	0 (0)	507 (10)	6843 (140)
Junction 8_Arm C	30	0 (0)	0 (0)	0 (0)	12482 (657)	14891 (784)

5.3 Baseline Environment

5.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality are 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) (WHO, 2021). 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 meteorological station, which is located approximately 15 km east 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 5.1). For data collated during five representative years (2019 – 2023), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.4 m/s over the 30-year period of 1991 - 2020 (Met Éireann, 2024).

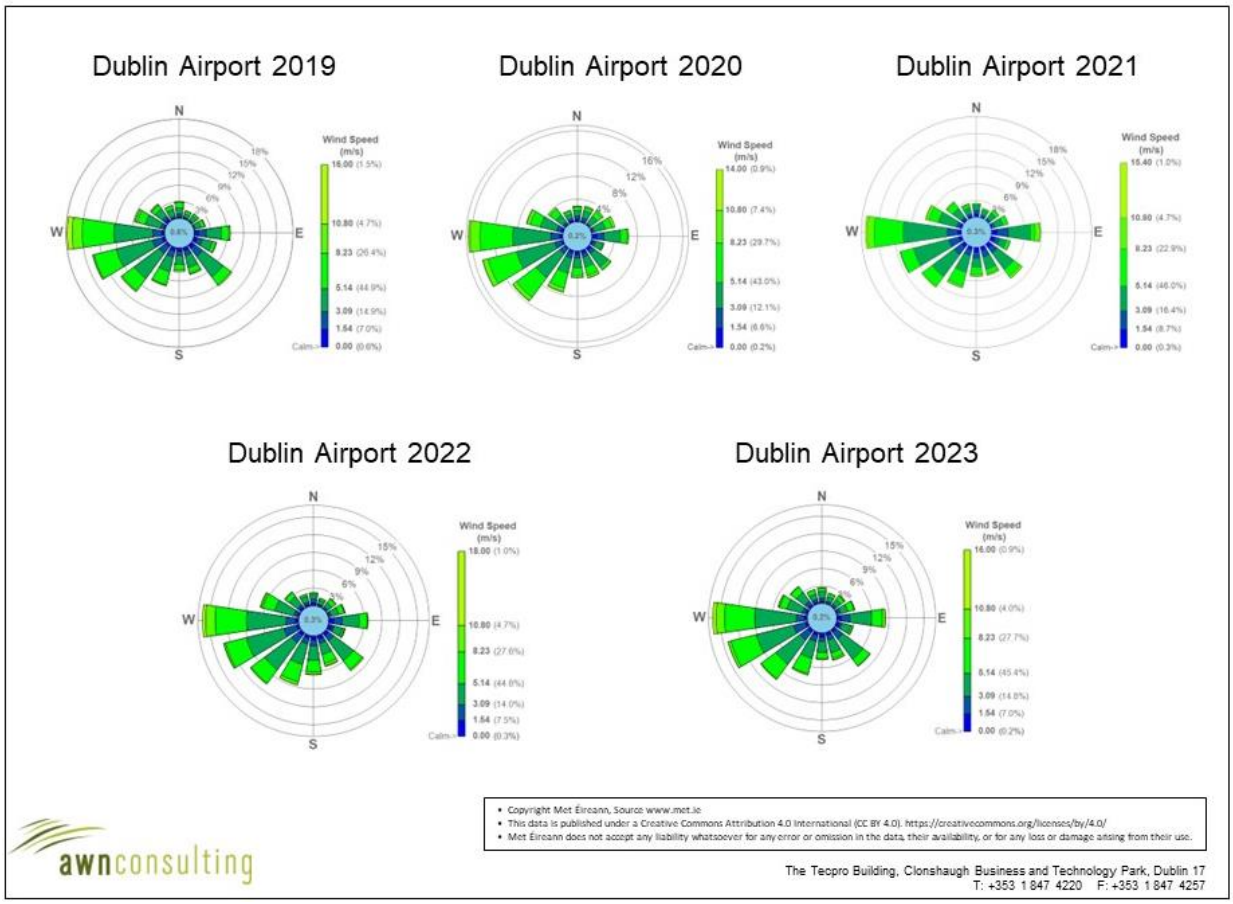


Figure 5.1 Dublin Airport Windrose 2019 – 2023

5.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2023*" (EPA, 2024). 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.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). 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, 2024). 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.).

NO_2

Long-term NO_2 monitoring was carried out at the representative Zone A suburban background locations of Tallaght, Dún Laoghaire, Swords and Ballyfermot for the period 2019 – 2023 (see Table 5.7) (EPA, 2024). Long term average concentrations are significantly below the annual average limit of 40 µg/m³. Average results range from 10 – 20 µg/m³ for the suburban background locations. Additionally, there were no exceedances of the hourly limit value of 200 µg/m³.

The monitoring site in Ballyfermot is the most representative of the proposed development location, it is located to the west of the proposed development. Concentrations of NO_2 at the Ballyfermot site ranged from 13 – 20 µg/m³ over the period 2019 – 2023. The NO_2 annual average for Ballyfermot over the 2019 - 2023 period suggests an overall average of no more than 14.3 µg/m³ as a background concentration. Based on the above information, and the proximity of the proposed development to the M50, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 20 µg/m³.

Table 5.7: Trends In Zone A Air Quality - Nitrogen Dioxide (NO_2)

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Tallaght	Annual Mean NO_2 (µg/m³)	-	14	13	14	14
	1-hr Mean > 200 µg/m³ (days)	-	0	0	0	0
Dun Laoghaire	Annual Mean NO_2 (µg/m³)	15	13	16	16	13
	1-hr Mean > 200 µg/m³ (days)	0	0	0	0	0
Swords	Annual Mean NO_2 (µg/m³)	15	11	11	12	10
	1-hr Mean > 200 µg/m³ (days)	0	0	0	0	0
Ballyfermot	Annual Mean NO_2 (µg/m³)	20	12	13	13	13
	1-hr Mean > 200 µg/m³ (days)	0	0	0	0	0

PM_{10}

Continuous PM_{10} monitoring was carried out at four representative Zone A locations from 2019 – 2023; Ballyfermot, Dún Laoghaire, Tallaght and Phoenix Park. Annual average PM_{10} concentrations across the sites ranged from 9 – 14 µg/m³ over the 2019 – 2023 period (see Table 5.8). There was at most 1 exceedance of the daily limit of 50 µg/m³ in 2023 (35 exceedances are permitted per year) (EPA, 2024). Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 16 µg/m³.

Table 5.8: Trends In Zone A Air Quality - PM_{10}

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Ballyfermot	Annual Mean PM_{10} (µg/m³)	14	12	12	13	11
	24-hr Mean > 50 µg/m³ (days)	7	2	0	1	0
Dún Laoghaire	Annual Mean PM_{10} (µg/m³)	12	12	11	12	12
	24-hr Mean > 50 µg/m³ (days)	2	0	0	1	0
Tallaght	Annual Mean PM_{10} (µg/m³)	12	10	10	11	11
	24-hr Mean > 50 µg/m³ (days)	3	1	0	1	1
Phoenix Park	Annual Mean PM_{10} (µg/m³)	11	10	10	11	9
	24-hr Mean > 50 µg/m³ (days)	2	0	0	0	0

$PM_{2.5}$

Average $PM_{2.5}$ levels in Ballyfermot over the period 2019 - 2023 ranged from 7 - 10 µg/m³ (EPA, 2024). The overall annual average concentration for this 5-year period is 8 µg/m³. Based on this information, an estimate of the background $PM_{2.5}$ concentration in the region of the proposed development is 8 µg/m³.

Summary

Based on the above information the air quality in the suburban Dublin area is generally good, with concentrations of the key pollutants generally well below the relevant limit values set out in Directive 2008/50/EC. However, the current pollutant concentrations at the majority of monitoring sites are not in compliance with the 2030 limit values set out in Directive (EU) 2024/2881 and the clean air strategy; further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

The current estimated background concentrations have been used in the operational phase air quality assessment for both the Opening and Design Year as a conservative approach to predict future pollutant concentrations. This is in line with the TII methodology (TII, 2022).

Sensitive Designated Habitats

Background concentrations for NO_X, NH_3, nitrogen and acid deposition at the closest point to the modelled road within the modelled designated habitat were derived from the 1km grid square concentrations provided on the APIS website (APIS 2024), in line with UK Environment Agency (2014) and UK Defra (2022) guidance. These are shown in Table 5.9. The background concentrations vary depending on the location and therefore are provided for the specific designated ecological areas assessed.

Table 5.9 Background Concentrations for NO_X, NH_3, Nitrogen and Acid Deposition (APIS 2024)

Sensitive Designated Habitat	NO_X ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Nitrogen Deposition (kg/ha/yr)	Acid Deposition (keq/ha/yr)
Grand Canal pNHA	16.8	1.8	6.5	0.48

5.3.3 Sensitivity of the Receiving Environment

5.3.3.1 Construction Phase

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2024) 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. Commercial properties 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.

In terms of receptor sensitivity to dust soiling, there are approximately 18 no. high sensitivity residential properties within 20 – 50m of the proposed development planning boundary (see Figure 5.2). Based on these receptor numbers and using the IAQM criteria in Table 5.10, the sensitivity of the area to dust soiling impacts from the proposed development is medium.

Additionally, there are approximately 18 no. high sensitivity residential properties within 20m of the overall EIAR site boundary (see Figure 5.2), which accounts for the full masterplan development of the site. Based on the IAQM criteria in Table 5.10, the overall sensitivity of the area to dust soiling impacts associated with the overall site masterplan is high.

Table 5.10: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
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

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 based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works.

This assessment has included a review of the sensitive receptors within 250m of the proposed development site boundary as well as sensitive receptors within 250m of the wider masterplan site boundary, denoted as 'EIAR boundary' in Figure 5.2. Due to the phased nature of the masterplan development, there is the potential for overlap in the construction of the various phases. As such, to ensure a conservative approach the sensitivity of the wider area with respect to the overall masterplan lands has been considered.

A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 16 µg/m^3. There are 18 no. high sensitivity residential receptors within 20 – 50m of the proposed development planning application boundary (see Figure 5.2). Additionally, there are 18 no. high sensitivity receptors within 20m of the overall EIAR site boundary, which accounts for the full masterplan development of the site. Based on the IAQM criteria outlined in Table 5.11 the worst-case sensitivity of the area (both proposed development and overall masterplan) to dust-related human health effects is low.

Table 5.11: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. There are no sensitive ecological receptors that meet these criteria within the study area and therefore there is no potential for impacts to sensitive ecology from construction dust emissions and no further assessment is required.

Figure 5.2 Sensitive Receptors within 20m, 50m, 100m and 250m of Site

Operational Phase

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022) states that a proportionate number of representative receptors, which are located in areas which will experience the highest concentrations or greatest improvements because of the proposed development, are to be included in the modelling. The TII criteria state that receptors within 200 m of impacted road links should be assessed; roads which are greater than 200 m from receptors will not impact pollutant concentrations at that receptor (TII, 2022). The TII guidance (2022) defines sensitive receptor locations for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e., locations where members of the public are likely to be regularly present for 24 hours. A total of 4 no. high sensitivity residential receptors (R1 – R4) and the Grand Canal pNHA were included in the modelling assessment (see Figure 5.3)

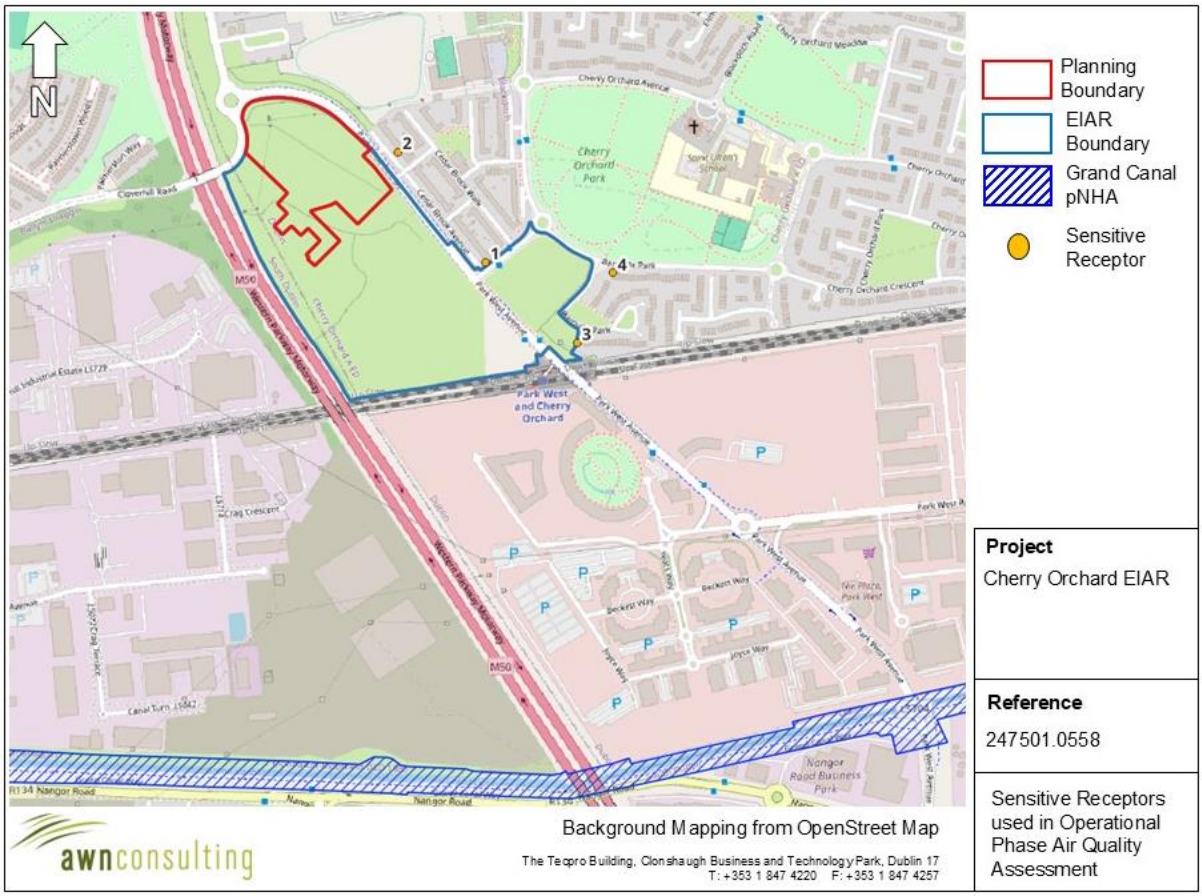


Figure 5.3 Sensitive Receptors Included in Operational Phase Air Quality Modelling Assessment

5.4 Predicted Impacts

5.4.1 Construction Stage

5.4.1.1 Construction Stage Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250m of a construction site, the majority of the deposition occurs within the first 50m (IAQM, 2024). 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 indicates that the prevailing wind direction is south-westerly and wind speeds are generally moderate in nature (see Section 5.3.1). 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 meteorological station indicates that on average 200 days per year have rainfall over 0.2 mm (Met Eireann, 2024) and therefore it can be determined that 54% of the time dust generation will be reduced due to natural meteorological conditions.

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 5.3.3). The major dust generating activities are divided into four types within the IAQM (2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

Demolition

No demolition is required for the proposed development; therefore, the assessment is scoped out.

Earthworks

Earthworks primarily 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. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large**: Total site area > 110,000 m^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 > 6 m in height;
- **Medium**: Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g., silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6 m in height;
- **Small**: Total site area < 18,000 m^2, soil type with large grain size (e.g., sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3 m in height, earthworks during wetter months.

The total developable site area associated with the entire masterplan area, including the proposed development is greater than 110,000 m^2; therefore, the proposed earthworks can be classified as large. The sensitivity of the area, as determined in Section 5.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 5.13, using the criteria in Table 5.12 and combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to dust-related human health impacts, results in an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts. This risk is as a result of the proposed earthworks activities in the absence of mitigation.

Table 5.12: Criteria for Rating Risk of Dust Impacts – Earthworks

Sensitivity of Area	**Dust Emission Magnitude – Earthworks**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 5.13: Risk of Dust Impacts – Earthworks

Receptor	**Receptor Sensitivity**	**Dust Emission Magnitude – Earthworks**	**Risk of Dust-Related Impacts**
Dust Soiling	High	Large	High
Human Health	Low		Low

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 > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium:** Total building volume 12,000 m^3 – 75,000 m^3, potentially dustyconstruction material (e.g., concrete), on-site concrete batching;

- **Small:** Total building volume < 12,000 m^3, construction material with low potential for dust release (e.g., metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as large as a worst-case, as the total building volume will be greater than 75,000 m^3. As outlined in Table 5.14 and Table 5.15, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts, results in an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts. This risk is as a result of the proposed construction activities in the absence of mitigation.

Table 5.14: Criteria for Rating Risk of Dust Impacts – Construction

Sensitivity of Area	Dust Emission Magnitude – Construction		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 5.15: Risk of Dust Impacts – Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-related Impacts
Dust Soiling	High	Large	High
Human health	Low		Low

Trackout

Factors which determine the dust emission magnitude 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 > 100m;
- **Medium:** 20 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100m;
- **Small:** < 20 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50m.

The dust emission magnitude for the proposed trackout activities can be classified as large as there will be up to 50 outward HGV movements per day during peak periods. Using the criteria in Table 5.16, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts, results in an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts (see Table 5.17). This risk is as a result of the proposed trackout activities in the absence of mitigation.

Table 5.16: Criteria for Rating Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude – Trackout		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 5.17: Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-related Impacts
Dust soiling	High	Large	Large
Human health	Low		Low

Summary of Dust Emission Risk

The risk of dust impacts as a result of the proposed development are summarised in Table 5.18 for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with a high risk of dust impacts must be implemented. When the dust mitigation measures detailed in the mitigation section of this chapter (Section 5.9.1) and Appendix 5.1 are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors. In the absence of mitigation dust impacts are predicted to be ***short-term, localised, negative, slight and non-significant***.

Table 5.18: Summary of construction phase dust impact risk used to define site-specific mitigation.

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Ecology	N/A	N/A	N/A	N/A
Dust Soiling	N/A	High Risk	High Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk

5.4.1.2 Construction Stage Traffic Assessment

There is also the potential for traffic emissions to impact air quality with respect to human health and ecology 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 a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 5.2.5.

It can therefore be determined that the construction stage traffic will have ***an imperceptible, neutral, short-term and non-significant*** impact on air quality.

5.4.1.3 Construction Phase - Human Health

Dust emissions from the 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 section 5.3.3 the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health impacts as a result of the construction phase of the proposed development (Table 5.18). Therefore, in the absence of mitigation, there is the potential for ***imperceptible, negative, short-term, non-significant*** impacts to human health as a result of the proposed development.

5.4.2 Operational Stage

5.4.2.1 Operational Stage Traffic Assessment

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the Opening Year 2027 and Design Year 2042 was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

5.4.2.1.1 Operational Stage Traffic Assessment – Human Receptors

Traffic related air emissions have the potential to impact air quality which can affect human health. The following details the results of the air dispersion modelling assessment of traffic emissions to determine the impact to human health. The predicted pollutant concentrations have been compared against the ambient air quality limit values set out in Table 5.1. The limit values set out in Directive 2008/50/EC and the Ambient Air Quality Standards Regulations 2022 are applicable to the Opening Year 2027. The limit values set out under Directive (EU) 2024/2881 are applicable to the Design Year 2042.

The results of the NO_2 modelling are shown in Table 5.19. In the Opening Year 2027, predicted annual mean concentrations of NO_2 are in compliance with the annual mean limit value of 40 µg/m^3 set out under Directive 2008/50/EC reaching at most 59% of the limit. In addition, the TII guidance (2022a) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. As predicted NO_2 concentrations are significantly below 60 µg/m^3 (Table 5.19). It can be concluded that the short-term NO_2 limit value will be complied with at all receptor locations. There are predicted to be some increases in NO_2 concentrations at the worst-case receptors assessed in the Opening Year when compared with the Do Nothing scenario (see Table 5.19). Concentrations are predicted to increase by at most 0.99 µg/m^3 at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 2.5% at receptor R1. All other receptors will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5.3.

In the Design Year 2042, predicted annual mean NO_2 concentrations are in exceedance of the limit value of 20 µg/m^3 set out under Directive (EU) 2024/2881, at all receptors assessed. Concentrations are in exceedance of the limit in both the Do Nothing and Do Something scenarios as a result of the estimated background concentrations. For the purposes of this assessment, it has been assumed that

the current estimated background pollutant concentrations are applicable for both the opening and design years with no decreases in future background concentrations allowed for. There will be some decreases in background concentrations in future years, however, at present there is no explicit methodology available for estimating future year background concentrations and therefore, as a conservative approach, the current estimated background concentrations have been applied to future years. The current estimated background NO_2 concentration is 20 µg/m^3 (see Section 5.3.2) which is above the future annual mean limit value for NO_2. The proposed development will result in some 'slight' to 'moderate' increases in NO_2 concentrations according to the TII significance criteria in Table 5.3, with concentrations increasing by at most 0.44 µg/m^3 as a result of the proposed development (at receptor R1, see Table 5.19), which is an increase of 2.2% when compared with the applicable annual mean limit value for NO_2.

Table 5.19: Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor	Impact Opening Year					Impact Design Year				
	DN	DS	DS-DN	% Change of AQLV	Description	DN	DS	DS-DN	% Change of AQLV	Description
R1	22.4	23.4	0.99	2.5%	Neutral	21.2	21.6	0.44	2.2%	Moderate
R2	21.9	22.3	0.38	0.9%	Neutral	21.0	21.1	0.09	0.4%	Moderate
R3	21.3	21.6	0.28	0.7%	Neutral	20.6	20.8	0.11	0.5%	Moderate
R4	20.3	20.7	0.37	0.9%	Neutral	20.2	20.3	0.15	0.7%	Slight

The results of the PM_{10} modelling can be seen in Table 5.20 for the Opening Year 2027 and Design Year 2042.

In the Opening Year 2027, annual mean PM_{10} concentrations are in compliance with the annual mean limit value of 40 µg/m^3 set out under Directive 2008/50/EC reaching at most 49% of the limit. In the Design Year 2042 annual mean PM_{10} concentrations are also in compliance with the annual mean limit value of 20 µg/m^3 set out under Directive (EU) 2024/2881 reaching at most 98% of the limit. In addition, the proposed development will result in one additional day of exceedance of the daily PM_{10} limit value (Table 5.1) in both the opening and design years. However, there are 35 allowable exceedances per year in the opening year under Directive 2008/50/EC and 18 allowable exceedances per year under Directive (EU) 2024/2881, therefore the additional day of exceedance is not considered significant in the context of the proposed development.

The changes in PM_{10} concentrations as a result of the proposed development can be assessed relative to the 'Do Nothing' (DN) levels. In the opening year 2027 annual PM_{10} concentrations will increase by at most 1 µg/m^3 at receptor R1, this is a 2.5% increase when compared with the annual mean limit value of 40 µg/m^3. All other receptors will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5.3. In the design year 2042 the proposed development will result in a maximum increase of 0.98 µg/m^3 at receptor R1, which is a 4.9% increase when compared with the annual mean limit of 20 µg/m^3. The changes in concentrations in the design year are considered 'neutral' to 'moderate' based on the TII criteria in Table 5.3.

Table 5.20: Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Impact Opening Year					Impact Design Year				
	DN	DS	DS-DN	% Change of AQLV	Description	DN	DS	DS-DN	% Change of AQLV	Description
R1	18.4	19.4	1.00	2.5%	Neutral	18.6	19.6	0.98	4.9%	Moderate
R2	17.9	18.3	0.39	1.0%	Neutral	18.2	18.4	0.20	1.0%	Neutral
R3	17.4	17.6	0.28	0.7%	Neutral	17.5	17.7	0.24	1.2%	Slight
R4	16.3	16.6	0.31	0.8%	Neutral	16.3	16.7	0.31	1.5%	Slight

The results of the $PM_{2.5}$ modelling can be seen in Table 5.21 for the Opening Year 2027 and Design Year 2042.

In the Opening Year 2027, predicted annual mean concentrations of $PM_{2.5}$ are in compliance with the annual mean limit value of 25 µg/m^3 set out under Directive 2008/50/EC reaching at most 40% of the limit. There are predicted to be some increases in $PM_{2.5}$ concentrations at the worst-case receptors assessed in the Opening Year when compared with the Do-Nothing scenario (see Table 5.21). Concentrations are predicted to increase by at most 0.55 µg/m^3 at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 2.2% at receptor R1. All other receptors will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 5.3.

In the Design Year 2042, predicted annual mean $PM_{2.5}$ concentrations are at the limit value of 10 µg/m^3 set out under Directive (EU) 2024/2881, at receptor R1. The limit value is complied with at all other receptors assessed. The proposed development will result in some 'slight' to 'moderate' increases in $PM_{2.5}$ concentrations according to the TII significance criteria in Table 5.3, with concentrations increasing by at most 0.53 µg/m^3 as a result of the proposed development (at receptor R1, see Table 5.21), which is an increase of 5.3% when compared with the annual mean limit value of 10 µg/m^3 for $PM_{2.5}$.

Table 5.21: Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)

Receptor	Impact Opening Year					Impact Design Year				
	DN	DS	DS-DN	% Change of AQLV	Description	DN	DS	DS-DN	% Change of AQLV	Description
R1	9.4	9.9	0.55	2.2%	Neutral	9.4	10.0	0.53	5.3%	Moderate
R2	9.0	9.3	0.22	0.9%	Neutral	9.2	9.3	0.11	1.1%	Slight
R3	8.8	8.9	0.16	0.6%	Neutral	8.8	8.9	0.13	1.3%	Slight
R4	8.2	8.4	0.17	0.7%	Neutral	8.2	8.4	0.16	1.6%	Slight

The TII PE-ENV-01106 guidance (TII, 2022) states that where there is an increase in pollutant concentrations and this increase is not considered a 'neutral' increase as per the TII assessment criteria then the impact is considered 'negative'. The TII PE-ENV-01106 guidance defines a 'neutral' effect as where there is a change in concentration at a receptor of:

- 5% of less where the opening year, without the proposed development annual mean concentration is 75% of less of the standard; or
- 1% or less where the opening year, without the proposed development annual mean concentration is 94% or less of the standard.

The TII guidance (2022) states that significance of effects should be assessed based on the opening year only. Non-significant effects are 'neutral' or 'slight' changes in concentrations while significant effects can be changes in pollutant concentrations that are either 'moderate' or 'substantial' however, the TII guidance (2022) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects. The predicted increases in pollutant concentrations in the Opening Year of 2027 are all considered 'neutral' according to the TII assessment criteria in Table 5.3, additionally, the proposed development is not predicted to significantly increase pollutant concentrations. It can be concluded that the impact of traffic emissions on air quality and human health during the operational phase is long-term, direct, localised and imperceptible, which is an overall non-significant effect in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. The high pollutant concentrations reported for the Design Year 2042 are predominantly as a result of high background concentrations rather than pollutant

contributions associated with the proposed development. Strategies to improve air quality at a national level in future years will contribute to reducing background concentrations and therefore it is envisioned that air quality will improve in the future. Therefore, should pollutant background concentrations decrease in future years there is the potential that the impact of the proposed development in the Design Year 2042 will reduce, and impacts have the potential to reduce to 'neutral'.

5.4.2.1.2 Operational Stage Traffic Assessment – Ecological Receptors

An assessment of the impact of the changes in traffic associated with the proposed development and the impact on air quality and sensitive ecology has been undertaken using the approach outlined in the IAQM guidance document A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020) and the TII guidance (TII, 2022). An assessment of the ecologically sensitive sites listed in Section 5.2.6 has been carried out.

As outlined in Section 5.2.6, the Grand Canal pNHA (Site Code: 002104) is within 200 m of the road link *Junction 7 Arm C* affected by the proposed development (See Table 5.6).

The results of the modelling assessment within the relevant sections of the Grand Canal pNHA are detailed in Table 5.22 for NO_X, NH_3, N deposition and acid deposition. Background concentrations (as per Table 5.9) have been added to the modelled road contribution to give the total result. The 'total annual mean NO_X', 'total annual mean NH_3', 'total N deposition' and 'total acid deposition' referred to in the below tables includes the predicted modelled result from the operational phase traffic associated with the proposed development plus background concentrations as per Table 5.9. Results have been compared against the annual mean NO_X limit value of 30 µg/m^3 and the annual mean NH_3 limit value of 3 µg/m^3. The N deposition and acid deposition results have been compared to the critical load ranges set out in Table 5.4. The applicable N deposition critical load range for the Grand Canal pNHA is 5 kgN/ha/yr to 10 kgN/ha/yr. The critical load range for acid deposition for the Grand Canal pNHA is 0.714 keqN/ha/yr to 5.146 keq/ha/yr.

These critical load ranges have been based on the ranges for the potentially most sensitive species within the designated site as a conservative approach regardless of whether that specific sensitive species is present within the impacted area.

In relation to NO_X, predicted concentrations are in compliance with the annual mean limit value of 30 µg/m^3 in both the Do-Nothing and Do-Something scenarios. The proposed development is predicted to increase NO_X concentrations within a section of the relevant designated site. As can be seen in Table 5.22, NO_X concentrations would increase by 0.51 µg/m^3 or 1.7% of the limit in the opening year 2027 at the Grand Canal pNHA. Overall, the proposed development is not predicted to have a substantial impact on NO_X concentrations at the relevant section of the designated site and concentrations remain well below the annual mean limit value.

Emissions of NH_3 as a result of the proposed development are in compliance with the limit value of 3 µg/m^3 (see Table 5.22). Concentrations will increase by at most 0.08 µg/m^3 in the opening year 2027, which is a 2.7% increase compared to the limit value. Overall, the proposed development is not predicted to have a substantial impact on NH_3 concentrations at the relevant section of the designated site.

Predicted N deposition rates are in exceedance of the critical load range of 5 – 10 kgN/ha/yr for the Grand Canal pNHA. However, information from the APIS website (APIS 2024), detailed in Section 5.3.2, indicates that background concentrations of N deposition in the affected area of the identified designated site are already high, at 6.5 kgN/ha/yr which is above the lower limit of the critical load range. The modelling results indicated that the proposed development would increase N deposition levels by only 0.46 kgN/ha/yr (see Table 5.22). The impact will decrease with further distance from the road.

Predicted acid deposition rates are within the critical load range of 0.714 – 5.146 keqN/ha/yr for the Grand Canal pNHA. The modelling results indicate that the proposed development would increase acid deposition rates by 0.03 keq/ha/yr (see Table 5.22). The impact will decrease with further distance from the road.

The TII PE-ENV-01106 guidance referenced in Section 5.2.4 states that if the total N deposition and acid deposition (due to the proposed development plus background concentrations) are more than 1% of the critical loads then the modelled results should be discussed further with the project ecologist. The project ecologist was advised of these results to ensure a robust EIAR assessment. Input from the project ecologist is detailed below which has included determining the significance of impacts to ecology as a result of air quality changes from traffic emissions.

The Grand Canal is a proposed Natural Heritage Area (pNHA) and comprises the canal channel and the banks on either side of it. The ecological value of the canal lies in the diversity of species it supports along its linear habitats including Annex II of the EU Habitats Directive species Otter and White-clawed Crayfish, Bats species (Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat, Daubenton's Bat and Brown Long-eared Bat), and also flora and fauna of local importance.

The designation pNHA has national relevance only and has no standing in the context of Natura 2000 designations. Furthermore, this is a proposed Natural Heritage Area and as such has nominal statutory protection.

In accordance with the EPA Guidelines (EPA, 2022) the ecological impacts associated with the operational phase traffic emissions are overall ***localised, direct, long-term, negative and slight*** which is not significant in EIA terms.

None of the detailed increases in emissions associated with this development are likely to have a negative impact on protected species or habitats within this pNHA.

Table 5.22: Predicted NO_X, NH_3, Nitrogen and Acid Deposition Results at Closest Point within Ecological Sites to Road

Ecology Receptor	Scenario	Total Annual Mean NO_X (µg/m³)	Total Annual Mean NH_3 (µg/m³)	Total Annual Mean N Dep (kgN/ha/yr)	Total Annual Mean N Acid Dep (keqN/ha/yr)
	Opening Year				
Grand Canal pNHA (Site Code: 002104)	Do Nothing	24.17	2.67	11.55	0.84
	Do Something	24.68	2.75	12.01	0.87
	DS-DN	0.51	0.08	0.46	0.03
	Critical Load	30	3	5 – 10 kgN/ha/yr	0.714 – 5.146 keqN/ha/yr
	% Change Relative to Limit	1.7%	2.7%	9.2% - 4.6%	4.2% - 0.6%
	Design Year				
	Do Nothing	20.36	2.82	12.06	0.88
	Do Something	20.47	2.91	12.54	0.91
	DS-DN	0.11	0.09	0.48	0.03
	Critical Load	30	3	5 – 10 kgN/ha/yr	0.714 – 5.146 keqN/ha/yr
	% Change Relative to Limit	0.4%	3.0%	9.6% - 4.8%	4.2% - 0.6%

5.4.3 Do Nothing Impact

Under the Do-Nothing Scenario, no construction works will take place and the identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions will also not occur. The 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 new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered ***neutral*** in terms of air quality.

5.5 Mitigation Measures

5.5.1 Proposed Development

Construction Stage

The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan. The mitigation measures for controlling dust are listed below and can also be found in the Dust Management Plan (DMP) in Appendix 5.1 of the Parent EIAR. The dust minimisation measures set out in the DMP are equally applicable to the proposed Phase 2 development and will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. An outline CEMP has been prepared and is enclosed separately.

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following measures draw on best practice guidance from Ireland, the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 5.1 for the windrose for Dublin Airport). As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2024; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent will monitor the contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;

- Community engagement shall be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 20 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002). A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. 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.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

- Access gates to be located at least 10 m from receptors where possible.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
  The specification of effective measures to deal with any complaints received.

Operational Stage

No site-specific mitigation measures are proposed for the operational phase. The significance of the impact of traffic emissions on air quality is assessed for the opening year only according to the TII guidance (2022) which results in only 'neutral' increases in pollutant concentrations and an imperceptible impact. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. These measures must be set at a national level. In relation to the proposed development, the inclusion of bike parking facilities and electric vehicle charging infrastructure as well as it's close proximity/accessibility to train, Luas and bus routes will all help in promoting more sustainable modes of transportation and reducing private vehicle trips which will have the benefit of reducing air emissions from traffic.

5.5.2 Cumulative Mitigation

Construction Stage

Prior to commencing construction, it will be the responsibility of the contractor to identify any other significant developments within 500m (combination of 250m from either site as per Section 5.2.5) of the site that are also undergoing construction. The contractor shall undertake communication with other identified significant developments within a 500m radius to ensure any potential cumulative construction dust impacts are managed and mitigated.

Operational Stage

There is no mitigation required for the cumulative operational phase of the development as impacts to air quality are predicted to be neutral.

5.6 Residual Impacts

5.6.1 Proposed Development

Construction Stage

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (Appendix 5.1 of Phase 1 Parent EIAR). Provided the

dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality impacts during the construction phase are ***short-term, direct, negative, localised and imperceptible.***

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive 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 will ensure that the impact complies with all EU ambient air quality legislative limit values (set out in Directive 2008/50/EC), which are based on the protection of human health (see Table 5.1). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is ***negative, direct, short-term, imperceptible and non-significant.***

Operational Stage

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the TII assessment criteria which is based on the impacts in the opening year. Section 5.4 determined that the impact to air quality as a result of increased traffic volumes during the operational phase of the proposed development will be localised, direct, long-term, neutral and imperceptible for the opening year, which is overall not significant in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

With respect to ecological impacts due to operational phase traffic, there is an overall **negative, slight and long-term** effect which is not significant in EIA terms.

Worst Case Impact

Conservative assumptions have been made throughout this assessment including for background air quality and requirements for dust mitigation measures. Therefore, the impacts can be considered inherently worst-case.

5.6.2 Cumulative

Construction Stage

According to the IAQM guidance (2024), should the construction phase of the proposed development coincide with the construction phase of any other developments within 500m, then, there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. A review of other permitted developments within 500m of the site was conducted in order to identify other developments with the potential for overlapping construction phases that may result in cumulative construction dust impacts. The following permitted developments were identified as having the potential for cumulative impacts should the construction phases coincide: 318607, 4313/22, 312290, 3403/21, SD19A/0098, SD19A0185, SD20A/0309, ABP-316119, SD22A/0093, SDZ22A/0010. Additionally, there are 2 no. sites within the LAP lands which have the potential for future development by Dublin City Council, these include Site 1 and Site 2 of the LAP lands which have plans for social and affordable housing schemes. Additionally, the approved Phase 1 associated with the overall masterplan site has been assessed within the previous sections of this chapter to ensure a fully cumulative assessment.

Provided the mitigation measures outlined in Section 5.5.1 and Appendix 5.1, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted.

Construction stage traffic also has the potential to impact air quality. The traffic data assessed as part of this EIAR has included other relevant cumulative development within the area, including the overall

masterplan area. It was determined that the change in traffic was not of the magnitude to require a detailed modelling assessment of traffic emissions. It can be concluded that the cumulative impact of traffic on air quality will be ***imperceptible***.

With mitigation measures (as per Section 5.5.1) in place, there are no significant cumulative impacts to air quality predicted for the construction phase. Impacts will be ***short-term, localised, negative, imperceptible and non-significant.***

Operational Stage

The traffic data used to assess the operational stage impacts to air quality included the cumulative traffic associated with the proposed development as well as other existing and permitted developments in the local area (see Chapter 14 Material Assets - Traffic and Transport). Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to localised, direct, long-term, neutral and imperceptible, which is overall not significant in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

5.7 Difficulties Encountered

There were no difficulties encountered when compiling this assessment.

5.8 Interactions

Air quality does not have a significant number of interactions with other topics. 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. Therefore, the predicted impact is short-term, imperceptible, negative and non-significant with respect to population and human health during construction, and long-term, imperceptible, neutral and non-significant during the operational phase.

Interactions between air quality and traffic (Chapter 14) can be significant, in particular in light of Directive (EU) 2024/2881 which significantly reduces the ambient air quality limit values. 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 roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be long-term, imperceptible and neutral for the opening year which is prior to the reduction in legal limit values as per Directive (EU) 2024/2881. These interactions have the potential to impact both human health (Chapter 13) and ecology (Chapter 8). Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. This may include measures which impact traffic and reduce private vehicle usage in favour of active travel or public transport.

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate chapter (Chapter 6). There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

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.

As set out in Chapter 11 (Land, Soils, Geology and Hydrogeology), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air quality in the locality. The impact of the interactions between air quality, land, soils and geology are considered to be ***short-term, imperceptible and neutral.***

There is the potential for interactions between air quality and biodiversity. During the construction phase dust will be generated which may impact vegetation. There are no sensitive ecological sites within 250m of the proposed development and therefore the potential for dust impacts is imperceptible. Additionally, a high-level of mitigation will be in place throughout the construction phase to mitigate dust emissions from site activities. Therefore, dust emissions will not have a significant impact on biodiversity. Impacts to the sensitive ecological species within the Grand Canal pNHA as a result of changes in air quality due to traffic emissions during the operational phase are predicted to be ***long-term, negative and slight***, which is overall not significant in EIA terms.

No other significant interactions with air quality have been identified.

5.9 Monitoring

5.9.1 Construction Phase

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 method 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 2 m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

5.9.2 Operational Phase

No monitoring required.

5.10 References

- Air Pollution Information Service (APIS) (2024) APIS website: https://www.apis.ac.uk. Accessed March 2024
- Air Quality Consultants (AQC) (2020) Ammonia Emissions from Roads for Assessing Impacts on Nitrogen-sensitive Habitats
- BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites
- Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities
- Dublin City Council (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition
- Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

- Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024) Air Quality in Ireland 2023 (& previous annual reports)
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2023) Clean Air Strategy for Ireland
- Institute of Air Quality Management (IAQM) (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1)
- Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2
- Met Éireann (2024) Met Eireann website: https://www.met.ie/
- The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings
- Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106
- Transport Infrastructure Ireland (2024) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- UK Department for Environment, Food and Rural Affairs (Defra) (2022) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM. TG(22)
- UK Department of the Environment, Transport and the Regions (DETR) (2000) Air Quality and Transport
- UK Environment Agency (2014) AGTAG06 – Technical Guidance On Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air
- UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance
- United Nations Economic Commission for Europe (UNECE) (2007) Report on the Workshop on Atmospheric Ammonia: Detecting Emission Changes and Environmental Impacts
- United Nations Economic Commission for Europe (UNECE) (2010) Empirical Critical Loads & Dose-Response Relationships
- USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures
- World Health Organisation (2021) Air Quality Guidelines (and previous Air Quality Guideline Reports 1999 & 2000 & 2006)
- World Health Organisation (2021) Air Quality Guidelines 2021

6 Climatic Factors

6.1 Introduction

This chapter identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on climate. A full description of the development is available in Chapter 2.6 – Description of Scheme.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

This chapter was completed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takea, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

6.2 Methodology

6.2.1 Relevant Guidance, Legislation & Policy

6.2.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts of the proposed development on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- IEMA Principles Series: Climate Change Mitigation & EIA (IEMA, 2010);
- Publicly Available Specification (PAS) 2080:2016 on Carbon Management in Infrastructure (BSI, 2016); and
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

6.2.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) was enacted by the Oireachtas (the **2015 Act**). The purpose of the 2015 Act was to enable Ireland in accordance with section 3(1) '*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*'). This is referred to in the 2015 Act as the 'national transition objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 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 first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The CAP 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The CAP 2019 also detailed 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 Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Actions published in March 2023. The current Climate Action Plan is CAP24, published in December 2023 (Department of the Environment Climate and Communications (DECC), 2023a).

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 in December 2019, followed by the enactment of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the Climate Act 2021). The Climate Act 2021 was signed into law on 23 July 2021, giving statutory effect to the core objectives stated within the CAP and to amend the 2015 Act.

The purpose of the Climate Act 2021is 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 Climate Act 2021 also provides for "*carbon budgets and a decarbonisation target range for certain sectors of the economy*". The Climate Act 2021 defines the carbon budget as "*the total amount of greenhouse gas emissions that are permitted during the budget period*".

In relation to carbon budgets, the 2015 Act, as amended states '*A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the [Climate Change] Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')*'. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 6.1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) and are shown in Table 6.2.

Table 6.1: 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 6.2 Sectoral Emission Ceilings 2030

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	**68**				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	**-**	**295**	**200**	**-**	**51**

6.2.1.3 Policy

In December 2023 the current Climate Action Plan, CAP24, was published (DECC, 2023). This CAP builds on the progress of CAP23, which first published carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. The CAP has six vital high impact sectors where the biggest savings can be made. These sectors are renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction (Construction Industry Federation, 2021). The IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies to ensure economic growth can continue alongside a reduction in emissions.

In April 2023, the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The Dublin City County Council (DCC) Climate Action Plan 2024 – 2029 (DCC & Codema, 2024) outlines DCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The Climate Action Plan sets out a range of actions across the six theme areas of Energy & Buildings, Transport, Flood Resilience, Nature Based Solutions, Circular Economy & Resource Management and Citizen Engagement. This is aligned to the Government's overall National Climate Objective, which seeks to pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. The DCC Climate Action Plan states that DCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. DCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

The DCC Climate Action Plan highlights the risks that climate change poses to infrastructure, individuals, communities, and business sectors (such as agriculture, tourism and transport), with risks mainly associated with extreme weather events. The DCC Climate Action Plan notes that extreme temperature and flooding and erosion (coastal, pluvial and fluvial) have the greatest future risk when both the likelihood and consequence are accounted for. Increases in extreme rainfall and flooding and will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

The second National Adaptation Framework (NAF) (DECC, 2024) was published in June 2024 in line the five-year requirement of the 2015 Act. The plan provides a whole of government and society approach to climate adaptation in Ireland to reduce Ireland's vulnerability to climate change risks including extreme weather events, flooding, drought, loss of biodiversity, sea level rise and increased temperatures. Similar to the *"Just Transition"* when considering carbon emissions, the NAF aims for *"Just Resilience"* stating that:

"A climate resilient Ireland will have a reduced reliance on fossil fuel, it will have widely accessible electrified public transport and will have transitioned towards sustainable agricultural practices such as agroforestry and organic farming."

In relation to the built environment the NAF states in Chapter 3 that "*deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment*". Within the NAF it mentions that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards (to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms for example) according to the NAF (DECC, 2024).

The National Climate Change Risk Assessment (NCCRA) was published in May 2024 (EPA 2024a). The NCCRA was required to be developed under Action 457 from the CAP 2021. Action 457 seeks to "*Further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland'*. The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC 2023):

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources;

- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected;
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity; and
- **Risk** - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assess exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- RCP4.5 was selected as it represents a scenario aligned with the global temperature trajectory.
- RCP8.5 was selected as it represents a high-emissions scenario and achieves the highest level of modelled temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

These scenarios align with a conservative approach to assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (DECC 2024). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030)
- Medium term (~2050)
- Long term (~2100).

6.2.2 Study Area

Impacts to climate are assessed against compliance with national targets and sectoral emissions ceiling. As climate is assessed at a national scale no project-specific study area can be set. The study area will be the Irish State.

6.2.3 Greenhouse Gas Assessment

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 with reference to EPA data on annual GHG emissions (see Section **Error! Reference source not found.**).

6.2.3.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period (i.e. the assumed building life expectancy) for the purposes of the assessment is 50 years as recommended by the TII PE-ENV-01104 guidance (2022). Embodied carbon emissions are attributed to four main categories, taken from BS EN 15978. The categories are:

- **Product Stages (Category A1 to A3)** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- **Construction (Category A4 to A5)** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- **Use Stage (Category B1 to B7)** This covers a wide range of sources from the GHG emissions associated with the operation of the building (B1), maintenance (B2), repair (B3), refurbishment (B4) and replacement (B5) of materials, and operational energy use (B6) and water use (B7).

- **End of Life Stages (Category C1 to C4)** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

The TII Online Carbon Tool (TII, 2022c) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080. The use of the TII carbon tool is considered appropriate for certain elements of the proposed development as the material types and construction activities employed by the proposed development are accounted for in the tool. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction/maintenance phase. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent). Inputs for the TII Carbon Tool were provided by Waterman Moylan and McGahon Surveyors.

The use of the TII Carbon Tool was not considered suitable for the building elements of the proposed development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. Therefore, the carbon impact of the buildings was carried out using an alternative tool; the Carbon Designer for Ireland tool.

The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClickLCA is certified to EN 15978, EN 15978, ISO 21931 – 1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool was completed by the project architects with the outputs provided to AWN Consulting to assess the GHG impact of the building elements of the proposed development.

Reasonable conservative estimates have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development. This has been carried out using professional judgement and experience from similar development types and in consultation between the project architecture team and the climate consultant.

6.2.3.2 Operational Phase

Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022c), 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, and also the climate assessment. While the guidance is specific to infrastructure projects the approach 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;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

As per Chapter 5 – Air Quality, there are a number of road links that will experience a change of over 1,000 AADT during the operational phase as a result of the proposed development. As a result, a detailed assessment of traffic related carbon dioxide (CO_2) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner (i.e. the author of the air quality EIAR chapter) calculated the traffic related emissions through the use of the TII REM tool (TII, 2024) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO_2e for the base year 2022, opening year 2027 and design year 2042. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from Waterman Moylan for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. The traffic data used in the operational phase modelling assessment is detailed in Chapter 5 Air Quality.

Operational Phase Energy Use

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, which includes emissions associated with energy usage. A Climate Action Energy Statement was prepared by Waterman Moylan Consulting Engineers in relation to the proposed development and is submitted separately with this planning application. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation. In addition, the Land Development Agency Sustainable Development Strategy 2024 – 2028 was reviewed as part of the climate assessment.

6.2.3.3 Significance Criteria for GHGA

The TII guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development in relation to GHG emissions.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended TII significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".*

Significance is determined using the criteria outlined in Table 6.3 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 6.3 Significance Criteria for GHGA

Effects	Significance Level	Description
Significant adverse	Major adverse	• The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate adverse	• The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not significant	Minor adverse	• The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan.

6.2.4 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by and conducted in line with the principles set out in the overarching best practice guidance documents:

- Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 6.3, future climate change modelling and input from other experts working on the proposed development (i.e., hydrologists) should be used to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2**.**
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

6.2.4.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 6.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the proposed development can be considered to be not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce

risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 6.4 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 6.4.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 6.5.

6.3 Baseline Environment

PE-ENV-01104 (TII, 2022c) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

6.3.1 Current GHG Baseline

Data published in July 2024 (EPA, 2024), indicates that Ireland exceeded, without the use of flexibilities, its 2023 annual limit set under EU's Effort Sharing Regulation (ESR) (EU 2018/842) by 2.27 Mt CO_2e. However, the 2023 emissions were the first time that Irelands emission were below (-1.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-17.0%) and ESR emissions decreased (-3.4%). Ireland's target is an emission reduction of 626 kt of CO_2e by 2030 on an average baseline of 2016 to 2018. The EPA estimate that 2023 total national GHG emissions, excluding LULUCF, have decreased by 6.8% on 2022 levels to 55.01 Mt CO_2e, with a 2.2 Mt CO_2e (-21.6%) reduction in electricity industries alone. This was driven by a 40.7% share of energy from renewables in 2023 and by increasing our imported electricity. Manufacturing combustion and industrial processes decreased by 5.1% to 6.3 Mt CO_2e in 2023 due to declines in fossil fuel usage. The sector with the highest emissions in 2023 was agriculture at 37.6% of the total, followed by transport at 21.4%. For 2023, total national emissions (including LULUCF) were 60.62 Mt CO_2e (EPA, 2024), as shown in Table 6.5.

The provisional 2023 figures indicate that Ireland has used 63.9% of the 295 Mt CO_2e Carbon Budget for the five-year period 2021-2025.

Table 6.5: Trends in Total National GHG Emissions 2021 – 2023

Sector *Note 1*	2021	2022	2023	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2022 to 2023
Electricity	9.893	9.694	7.558	40.0	67.9%	-22.0%
Transport	11.089	11.760	11.791	54.0	64.1%	0.3%
Buildings (Residential)	6.868	5.753	5.346	29.0	62.0%	-7.1%
Buildings (Commercial and Public)	1.444	1.447	1.409	7.0	61.4%	-2.6%
Industry	7.093	6.622	6.288	30.0	66.7%	-5.0%
Agriculture	21.940	21.795	20.782	106.0	60.9%	-4.6%
Other *Note 2*	1.864	1.931	1.832	9.0	62.5%	-5.1%
LULUCF	4.628	3.983	5.614	–	–	40.9%
Total including LULUCF	**64.819**	**62.986**	**60.620**	**295.0**	**63.9%**	**-3.8%**

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024).
Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

6.3.2 Future GHG Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "*whether it* [the project] *contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP24, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG 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'* (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. 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. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

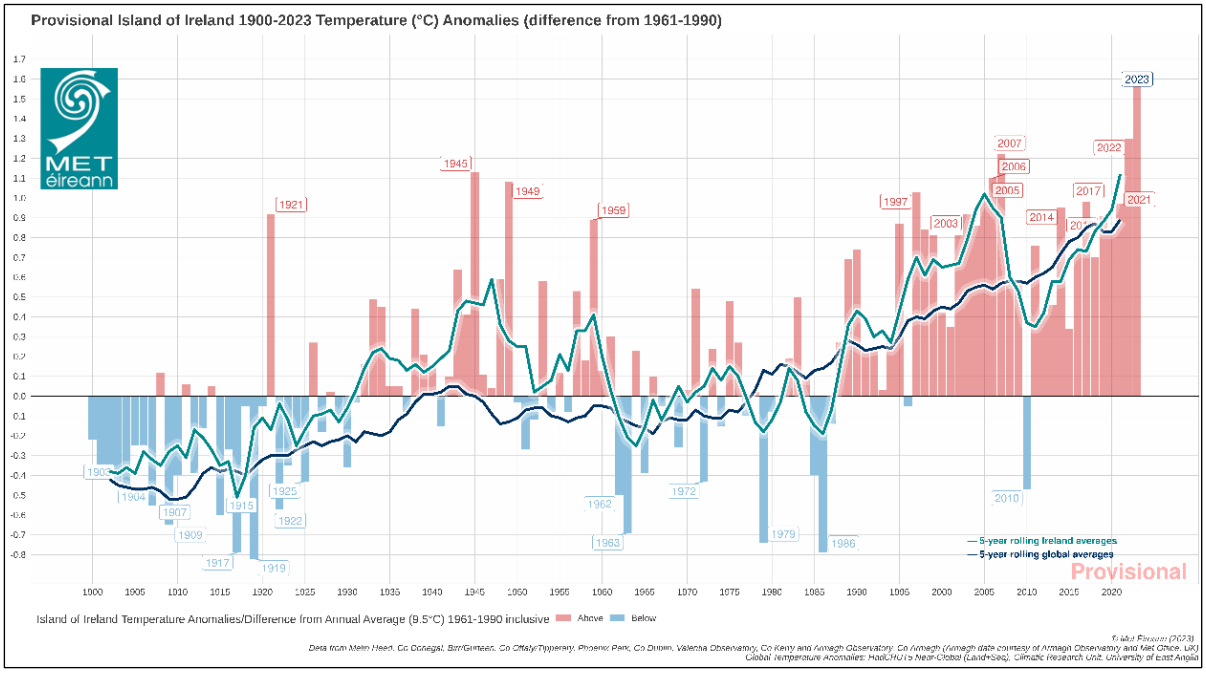
In June 2024, the EPA released the report Ireland's Greenhouse Gas Emissions Projections 2023-2050 (EPA 2024d), which includes total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA projections indicate that under the 'With Existing Measures' scenario, Ireland will achieve a reduction of 11% on 2018 levels by 2030. A reduction of 29% by 2030 can be achieved under the 'With Additional Measures' scenario, which is still short of the 42% reduction target, set out in the carbon budgets.

6.3.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest, representative, weather and climate monitoring station to the proposed development (c. 12 km north of the proposed development) with meteorological data recorded for the 30-year period from 1991 to 2020. The data for the 30-year period indicates that the wettest months at Dublin Airport Metrological Station were October and November, and the driest month on average was March (Met Éireann, 2024a). July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2024b) states 2023's average shaded air temperature in Ireland is provisionally 11.20°C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record; however, 2023 was 0.38°C warmer (see Figure 6.1).

Figure 6.1: 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)



2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Considering the extraordinary 2023 data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

6.3.4 Future CCRA Baseline

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021b):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

TII's Guidance document PE-ENV-01104 (TII 2022c) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate, while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and is led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "least" (RCP2.6), "more" (RCP4.5) or "most" (RCP8.5) climate change, see Figure 6.2.

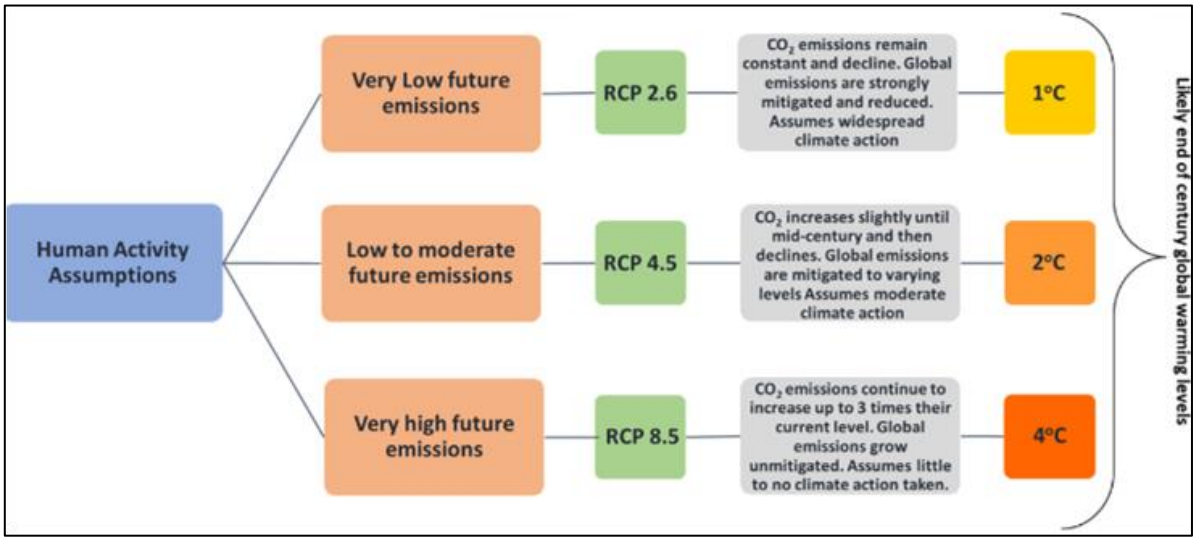


Figure 6.2 Representative Concentration Pathways associated emission levels.

*Source: TRANSLATE project storymap (*Met Éireann *2023)*

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5˚C ,2˚C, 2.5˚C, 3˚C or 4˚C. Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SSTs) (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24% (See Figure 6.3). Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.

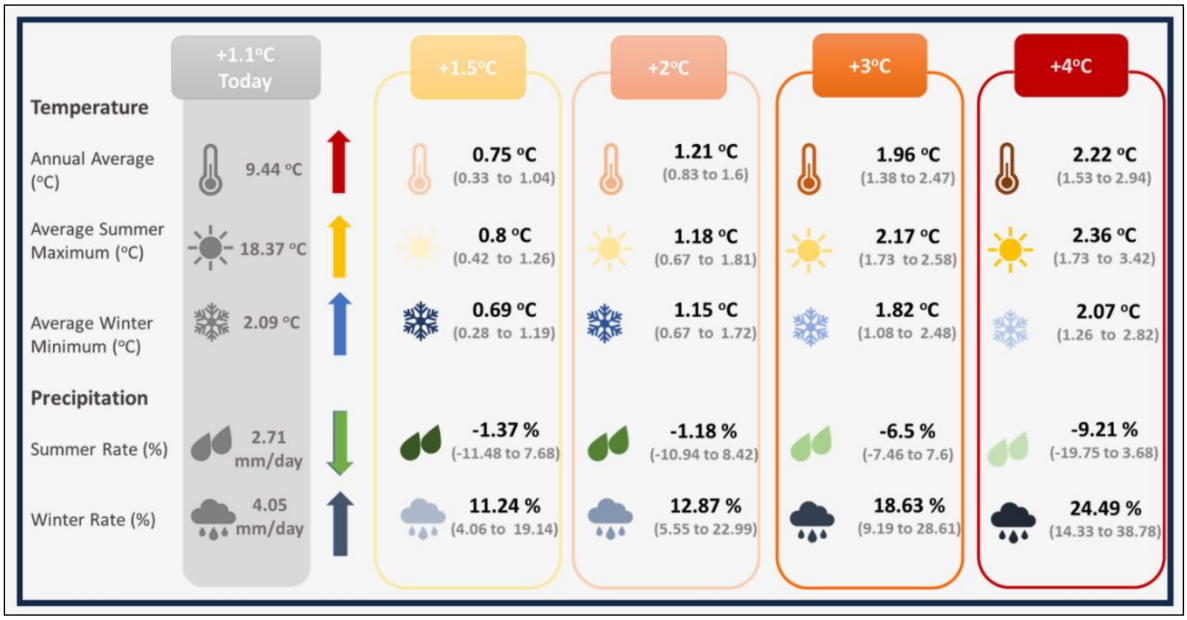


Figure 6.3 Change of climate variables for Ireland for different Global warming thresholds.

*Source: TRANSLATE project storymap (*Met Éireann, *2023b)*

The TRANSLATE research report (Met Éireann 2024d) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer (with an increase of 0.5°C to 3.5°C). Autumn is projected to have the highest increase in average minimum temperatures (with an increase of 1.1°C to 4.4°C). The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected, however this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

In January 2024 the EPA published Ireland's Climate Change Assessment Synthesis Report (EPA 2024e) which contained four volumes:

- Volume 1: Climate Science: Ireland in a Changing World
- Volume 2: Achieving Climate Neutrality by 2050
- Volume 3: Being Prepared for Ireland's Future Climate
- Volume 4: Realising the Benefits of Transition and Transformation

This report reinforces the existing and future risks arising from climate change. Volume 1 (EPA 2024e) states that under Early action, the temperature increase averaged across the island of Ireland relative to the recent past (1976 to 2005) would reach 0.91°C (0.44 to 1.10°C) by mid-century before falling back to 0.80°C (0.34 to 1.07°C) at the end of the century. Whereas under Late action, by the end of the century it is projected that the temperature increases could be 2.77°C (2.02 to 3.49°C). Heat extremes will become more frequent and more severe and cold extremes will become less frequent and less severe with further warming.

Precipitation was 7% higher over the period 1991 to 2020 than over the 1961 to 1990 period. The average future predicted increase in precipitation is <10% in annual mean accumulated. By 2100 projected additional rises in sea level range from 0.32 to 0.6m under early action to 0.63 to 1.01m under late action scenarios, with greater storm surges potentially effecting critical infrastructure along the coastline. Projections of changes in storminess are highly uncertain and translate into large uncertainties in future frequency and intensity of extreme waves.

Volume 3 (EPA 2024e) discusses how water supplies will face growing pressures resulting in increased water demand and how options need to be developed, including potential new sources. The report states the key role of critical infrastructure for delivering public services, economic development and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk due to climate change.

The report references the EPA's Critical Infrastructure Vulnerability to Climate Change report (EPA 2021a) as the most substantial research project in Ireland to date on climate change and critical infrastructure which assesses the future performance of Ireland's critical infrastructure when climate is considered. The Critical Infrastructure Vulnerability to Climate Change report states with respect to water availability and quality, that flood risk and heatwaves have a medium vulnerability index, and the underground supply network has a high vulnerability to snowstorms and cold spells. However, while the vulnerability is high, the exposure is likely to reduce due to future climate change resulting in less cold weather events. The risk assessment highlights the co-dependence of the water sector to the energy sector, and how vulnerability in the energy sector may have cascading impacts.

Volume 4 (EPA 2024e) calls for system change, including a transformation of urban settings. Stating that meaningful urban transformation can create a better living environment while simultaneously reducing emissions.

6.4 Predicted Impacts

6.4.1 Greenhouse Gas Assessment

6.4.1.1 Construction Stage

The most significant proportion of GHG emissions tend to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included in the construction phase assessment for the purposes of this EIAR. The assessment is broken down into the following stages as per Section **Error! Reference source not found.**6.2.3.1:

- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5); and
- Material replacement & refurbishment (B4 – B5).

The construction phase GHG emissions comprise stages A1 – A5 which includes the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50 year lifetime. Figure 6.4 shows the GHG emissions for the proposed development per life-cycle stage with both the output from the Carbon Designer for Ireland tool and TII Carbon Tool assessments included.

Construction materials make up the majority of GHG emissions for the proposed development making up approximately 79% of the total construction phase GHG emissions across the different building types. In relation to the housing units, the foundations and external walls elements are the areas with the highest GHG impact. Material transportation to site, site operations and material replacement make up the remainder of the construction GHG emissions.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. Where material types were not known, as these will not be selected until detailed design stage, the standard default material type was used.

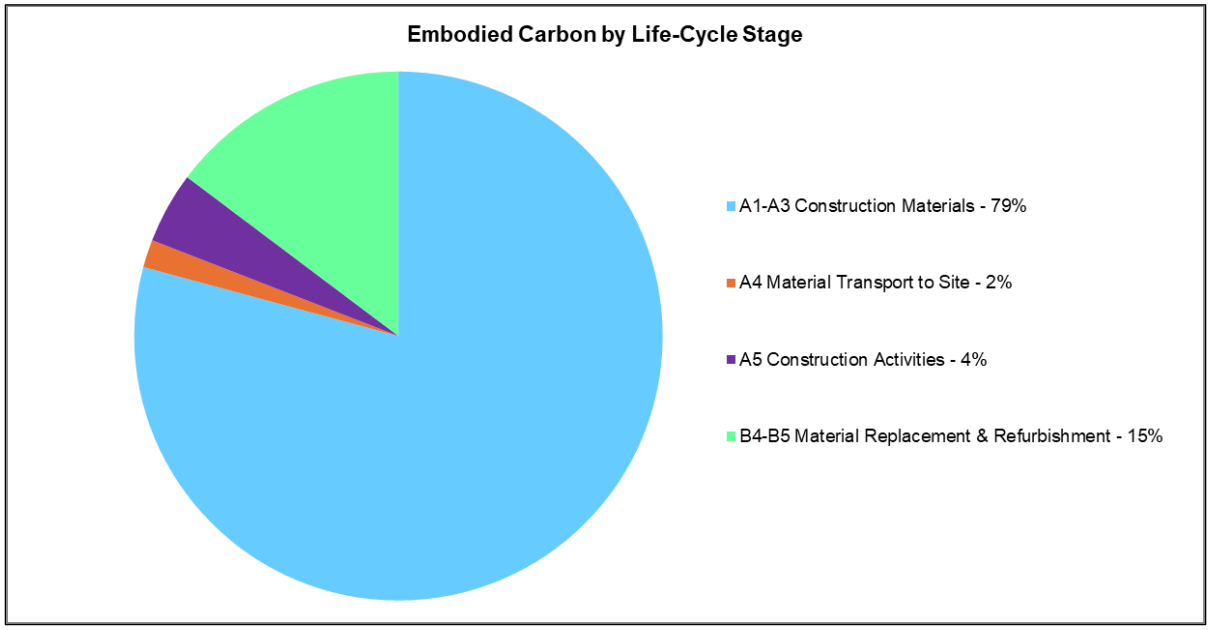


Figure 6.4 Embodied Carbon by Lifecycle Stage

It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 8,647 tonnes CO_2e (see Table 6.6). The GHG emissions from the development as a total cannot be compared against one specific sector 2030 carbon budget, the emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budget which are detailed in Table 6.6. The relevant sectoral emissions for the proposed development comparison include the Industry sector, Transport sector and Waste sector. The predicted emissions for the proposed development are annualised over the assumed 50 year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Table 6.6 GHG Assessment Results

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Relevant Sector for Carbon Budget Comparison	Annualised GHG Emissions as % of Relevant Carbon Budget
A1-A3	A1-A3 Materials	6,849	Industry	0.003%
A4	A4 Material Transport	147	Transport	0.00004%
A5	A5 Construction/Installation Process	351	Industry	0.0001%
A5	A5 Construction site material waste	20	Waste	0.00003%
A5	A5 Construction site material waste transport	6	Transport	0.000002%
B4 - B5	B4-B5 Maintenance Material	1,039	Industry	0.0004%
B4 - B5	B4-B5 Maintenance Material Transport	2	Transport	0.000001%
B4 - B5	B4-B5 Maintenance Material Waste	235	Waste	0.0004%
Total		**8,647**		

The predicted GHG emissions (as shown in Table 6.7) can be averaged over the full lifespan of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In Table 6.7, GHG emissions have been compared against the carbon budget for the industry, transport and waste sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2023 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 60-year proposed development lifespan, are equivalent to 0.0002% of Ireland's total GHG emissions in 2023 and 0.0004% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with transport-related activities are 0.00004% of the 2030 Transport budget, construction waste GHG emissions are 0.0004% of the Waste budget and industry-related activities are 0.003% of the 2030 Industry budget.

It should be noted that this is an estimate of the emissions associated with the project for this EIAR, the assessment has identified the areas where the greatest carbon impacts will occur and further consideration on how to reduce carbon impacts is to be conducted at detailed design phase. This can be done by selection of lower carbon alternative material types for example.

Table 6.7 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Annualised Development GHG Emissions	% of Relevant Target/Budget
Ireland's 2023 Total GHG Emissions (existing baseline)	60,620,000	Total GHG Emissions	0.0002%
Non-ETS 2030 Target	33,000,000	Total GHG Emissions	0.0004%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	0.003%
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	0.00004%
2030 Sectoral Budget (Waste Sector)	1,000,000	Total Waste Emissions	0.0004%

6.4.1.2 Operational Phase Energy Use

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 6.5 and are based on information provided in the Climate Action and Energy Statement prepared by Waterman Moylan Consulting Engineers for the proposed development.

During the operational phase the energy requirements from the buildings will be low. They will be constructed as Nearly Zero Energy Buildings (NZEB), in line with the Building Regulations Part L 2022 requirements, which means a building that has a very high energy performance. The development will have to comply with the requirements of the Dublin City Council Development Plan 2022-2028 in relation to climate and sustainability targets. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. Target U-values have been set out in the Climate Action Energy Statement prepared as part of the planning application by Waterman Moylan. The U-Value of a building element is a measure of the amount of heat energy that will pass through the constituent element of the building envelope. Increasing the insulation levels in each element will reduce the heat lost during the heating season and this in turn will reduce the consumption of fuel and the associated carbon emissions and operating costs. Table 6.8 lists the compliance values (Part L Dwellings and BOTDI), the proposed U-values, and the London Energy Transformation Initiative (LETI) recommendations for U-Values (LETI 2000). LETIs recommendations aim is to support the transition of the capital's-built environment to net zero carbon. The proposed ranges for the proposed development are within the ranges recommended by LETI.

Table 6.8: Target U-Values

Values	Range of Target Values Proposed	Part L 2022 (Dwellings) Compliant Values	Part L 2022 (BOTDl) Compliant Values	LETI Recommendations (Large Scale Housing)	LETI Recommendations (Commercial)
Floor	0.10 to 0.18 W/m²K	0.18W/m²K	0.21W/m²K	0.08 - 0.10 W/m²K	0.10 - 0.12 W/m²K
Roof (Flat)	0.12 to 0.20 W/m²K	0.20 W/m²K	0.20 W/m²K	0.10 - 0.12 W/m²K	0.10 - 0.12 W/m²K
Roof (Pitched)	0.10 to 0.16 W/m²K	0.16 W/m²K	0.16 W/m²K	0.10 - 0.12 W/m²K	0.10 - 0.12 W/m²K
Walls	0.10 to 0.18 W/m²K	0.18 W/m²K	0.21 W/m²K	0.13 - 0.15 W/m²K	0.12 - 0.15 W/m²K
Windows	0.9 to 1.4 W/m²K	1.4W/m²K	1.6W/m²K	1.0 (triple glazing) W/m²K	1.0 (triple glazing) W/m²K

6.4.1.3 Operational Phase Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. The change in traffic was reviewed against the PE-ENV-01104 screening criteria outlined in Section 6.2.3.2 (TII, 2022a) and a detailed climate assessment of traffic emissions was conducted.

The predicted concentrations of CO_2e for the future years of 2027 and 2042 are detailed in Table 6.9. The assessment has quantified the predicted CO_2e associated with the 'Do Nothing' scenario which assumes the proposed development is not in place in future years and the 'Do Something' scenario with the proposed development in place. This allows the difference in predicted GHG emissions both with and without the development to be determined. Further detail on the modelling scenarios and traffic data is included in Chapter 5 (Air Quality).

The predicted CO_2e emissions are significantly less than Ireland's national 2027 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2027 the proposed development will increase CO_2 emissions by 32 tonnes CO_2e. This equates to 0.00008% of the 2027 national emission ceiling or 0.0005% of the 2030 Transport sector emissions ceiling (see Table 6.9). Similarly low increases in CO2 emissions are predicted to occur in 2042 with emissions increasing by 21 tonnes CO2e. This equates to 0.00006% of the 2030 national emission ceiling or 0.0004% of the 2030 Transport sector emissions ceiling (see Table 6.9).

The development will meet the requirement of the provision of ducting for the future installation of car charging points to be made in all carparks with more than 10 parking spaces associated with multi-unit residential buildings. The development will also ensure that individual / own-door dwellings which have on curtilage parking are provided with ducting infrastructure to allow the future installation of e-car charging. The development will also include bicycle parking spaces to facilitate the uptake of active travel.

Table 6.9: Climate Traffic Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2027	Do Nothing	1,987
	Do Something	2,455
2042	Do Nothing	1,808
	Do Something	2,148
Increment Change in 2027		32
National Emission Ceiling 2026 (Tonnes) Note 1		**37,869,352**

Year	Scenario	CO_2e (tonnes/annum)
Impact in 2027 (as % of national emissions ceiling)		0.00008%
Transport Sector 2030 Emission Ceiling		**6,000,000**
Impact in 2027 (as % of transport sector emissions ceiling)		0.0005%
Increment Change in 2042		21
National Emission Ceiling 2030 (Tonnes) Note 1		**33,381,312**
Impact in 2042 (as % of national emissions ceiling)		0.00006%
Impact in 2042 (as % of transport sector emissions ceiling)		0.0004%

Note 1 Target under Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 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

6.4.1.4 GHG Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section **Error! Reference source not found.**6.5 has been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 6.2.3.3 and Table 6.3, the significance of the GHG emissions during the construction and operational phase is minor adverse. The proposed development has mitigated GHG impacts and is in line with Ireland's trajectory towards net zero.

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase, which is ***direct, long-term, negative*** and ***slight*****,** which is overall ***not significant*****.**

6.4.2 Climate Change Risk Assessment

6.4.2.1 Construction Stage

A detailed CCRA of the construction phase has been scoped out, as discussed in Section **Error! Reference source not found.**6.2.4 and Section 6.4.2.2, which state that there are no residual medium or high risk vulnerabilities to climate change hazards. Therefore, a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 6.5:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage including wind damage.

6.4.2.2 Operational Phase

To determine the vulnerability of the proposed development to climate change, the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate

hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 6.10 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined. This is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 6.4. The results of the vulnerability assessment are detailed in Table 6.10.

Table 6.10: Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flood (coastal, pluvial or fluvial)	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Cold	2 (Medium) - landscaping	2 (Medium)	4 (Medium Risk) – to be reduced to low through mitigation
Drought	1 (Low)	2 (Medium)	2 (Low Risk)
Wind	1 (Low)	2 (Medium)	2 (Low Risk)
Wildfire	1 (Low)	1 (Low)	1 (Low Risk)
Fog	1 (Low)	1 (Low)	1 (Low Risk)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low Risk)
Landslides	1 (Low)	1 (Low)	1 (Low Risk)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team as set out in the below subsections. This assessment was based on the best available information at the time of compiling this EIAR. There are certain elements of the development, such as, specific building material types that will not be developed until the detailed design stage of the project. Reasonable and conservative assumptions have been made where required within this assessment. The project team have been made aware of the necessary requirements to ensure that climate change vulnerability is accounted for adequately within the design of the proposed development. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections.

With future climate change increased flood, heat, cold, drought or wind events are likely to occur and therefore the exposure is classed as medium.

Flooding

A Site-Specific Flood Risk Assessment (SSFRA) was undertaken by Waterman Moylan and submitted with this planning application. This document was reviewed in order to inform the climate change vulnerability assessment and the potential for flooding at the proposed development site.

In relation to coastal flooding the SSFRA has concluded that the proposed development is not at risk coastal flooding. This site is located c. 13.1 km inland from the Irish Sea and c.4.7 km from the nearest location at risk of coastal flooding. Additionally, there is at least a 53.50m level difference between the

lowest proposed building floor level (56.45m) and the record high tide event and the site is outside of the 1-in-1,000 year flood plain.

The risk of fluvial flooding at the proposed development location has been assessed as extremely low, as per the SSFRA. The site is located outside the 1 in 1,000 year fluvial flood plain. The finished floor levels throughout the development have generally been set at least 300mm above the level of the adjacent road channel line. An appropriate overland flood route is also designed into the development to convey surface water runoff along the internal roads network, away from buildings.

There is the potential for pluvial flooding on site due to increased rainfall. However, a number of management measures have been incorporated into the design of the development to reduce the risk of pluvial flooding. The drainage design for the proposed development has been adequately designed with an additional 20% climate change allowance. This additional 20% accounts for the medium risk RCP4.5 future scenario, allowing an additional 30% would account for the high risk RCP8.5 future scenario. Therefore, the exposure has been closed as 'medium' in Table 6.10 above. However, the SSFRA has indicated that the overall risk to the proposed development as a result of surface water flooding is low with the appropriate design mitigations in place (see SSFRA for full details).

Overall, it can be concluded that the proposed development has a worst-case low vulnerability due to potential future flooding.

Extreme Temperatures (Heat & Cold) and Drought

Landscaping has been assessed as having a medium vulnerability to extreme cold temperatures based on the information available at the time of undertaking this assessment. The proposed planting scheme will need to take extreme cold temperatures into account which will reduce the vulnerability of the landscaping elements to low.

Extreme temperatures, both extreme heat and extreme cold, have the potential to impact the building materials and some related infrastructure. However, high quality, durable building materials will be selected for the proposed development at the detailed design stage. Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including; The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest available IPCC report. In addition, should the updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account. The proposed development has been designed to reduce the impact to climate where possible (see the project Climate Action Energy Statement prepared by Waterman Moylan for full details). This will primarily be through passive strategies such as an energy efficient envelope which in turn reduces the demands relating to items such as HVAC and renewable energy systems. However, these design elements in addition to reducing energy demand within the building also ensure that buildings are more resistant to extreme temperature events.

Wildfire

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2023), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a built-up, suburban area the risk of wildfire is significantly lessened, and it can be concluded that the proposed development is of low vulnerability to wildfires.

Extreme Wind, Lightning, Hail, Fog

In relation to extreme winds, the buildings shall be designed to the appropriate standards to account for the relevant wind loadings events for RCP4.5 and RCP8.5. If required as part of the building design, lightning protection shall be provided for. Hail and fog are not predicted to significantly affect the buildings due to their design.

Landslides

The site is considered flat, as can be seen in site sections - surrounding lands are similar in plain makeup, with no steep slopes or forested areas which indicates a low risk for landslides. In addition, the Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2024) was reviewed to inform the risk from landslides at the proposed development. There have not been any historical landslide events in the vicinity of the proposed development and the area is of low susceptibility to future landslides. Therefore, the vulnerability of the proposed development to landslides is classed as low.

Summary

Overall, the vulnerabilities identified for the proposed development are not considered significant. Provided the landscaping includes planting, which is resilient to extreme temperatures, this vulnerability can be reduced to 'low'. Therefore, no detailed risk assessment is required.

6.4.2.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are *direct, long-term, negative* and *imperceptible*, which is overall *not significant* in EIA terms.

6.4.3 Do Nothing Impact

In the Do-Nothing scenario, 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). The Do-Nothing scenario is considered neutral in terms of the climate assessment.

6.5 Mitigation Measures

6.5.1 Proposed Development

Construction Stage

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.
- Target embodied carbon rates for detailed design (LETI 2020):
    - Housing units: Reduce embodied carbon to <500 $kgCO^2/m^2$
    - Commercial units: Reduce embodied carbon or to <600 $kgCO^2/m^2$

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed. For example, The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest IPCC report.

Operational Stage

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 6.4.2.2). Landscaping planting elements shall be chosen with consideration for extreme cold temperatures as a result of climate change in future years.

The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. The Climate Action Energy Statement prepared by Waterman Moylan and submitted under separate cover with this planning application details a number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are:

- Achieve air tightness standards of 3 $m^3/m^2/hr$;
- Achieve a BER Rating in line with the *Part L 2022 Dwellings* requirements;
- Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.15W/m^2K or less;
- Meet or exceed minimum U-Value standards identified in *Part L 2022 Dwellings* (see Table 6.8);
- Provide an appropriate combination of technologies to ensure energy consumption is in line with *Part L 2022 Dwellings* requirements; and
- Approximately 50% of the total parking space provided in the proposed development shall be provided with functioning charging facilities for electric vehicles (EVs) and the remaining spaces designed to facilitate the relevant infrastructure to accommodate future EV charging.

These above identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals and relevant policies including the Climate Action Plan and objectives of the Dublin City Council Development Plan 2022-2028, including climate mitigation measures.

In addition to the above identified sustainability measures for the proposed development, the Land Development Agency Sustainable Development Strategy 2024 – 2028 was reviewed as the policies outlined within are of relevance to the proposed development as The LDA are partnering with DCC on this project. Where possible the sustainability objectives outlined by The LDA will be reviewed in the context of the proposed development and incorporated in so far as feasible. The Land Development

Agency Sustainable Development Strategy 2024 – 2028 outlines how The LDA aims to provide affordable, climate adaptive, low carbon homes. The LDA have identified six 'Sustainability Strategic Objectives' which are: Reduce Carbon; Promote Water Stewardship; Optimise Sustainable Land use and Stewardship; Enhance Biodiversity and Climate Resilience; Promote Circularity; and Support the Creation of Social Value. Figure 6.5 below includes the key aims under each of the strategic objective categories.

Strategic Objective	Aim
Reduce Carbon (Embodied & Operational Carbon)	Develop an LDA Climate Action Roadmap
	Develop capability for carbon accounting
	Pursue a design-led approach to embodied carbon reduction
	Design for energy efficiency and operational carbon reduction
	Minimise the performance gap for improved tenant comfort and affordability
Promote Water Stewardship	Develop LDA approach to water stewardship
	Ensure LDA sites are resilient to surface water and tidal flooding
	Reduce potable water usage and optimise supply
	Prevent water pollution and maintain water quality
Optimise Sustainable Land-Use & Mobility	Support compact growth
	Champion modal shift and sustainable mobility
Enhance Biodiversity & Climate Resilience	Measurably increase biodiversity
	Prioritise the use of Nature Based Solutions (NBS) to support climate resilience
	Develop LDA approach to climate adaptation
Promote Circularity	Maximise resource efficiency and circularity
	Design for changes in future use
	Treat waste as a resource
Support the Creation of Social Value	Develop a social value framework
	Promote community integration and betterment
	Support tenant well-being
	Champion universal access and life-long homes

Figure 6.5 LDA Strategic Objectives and Aims for Sustainable Development

Source: Land Development Agency Sustainable Development Strategy 2024 – 2028

The LDA have adopted the Irish Green Building Council's (IGBC) Home Performance Index (HPI) as its primary sustainability assessment methodology since November 2021. All LDA led projects are targeting certification with the HPI. Additionally, The LDA are an IGBC Gold member since 2023 and have been part of committees and steering groups regarding the establishment of best practice approaches to decarbonising the built environment in Ireland.

In relation to reducing embodied carbon The LDA have, in their Sustainable Development Strategy, outlined a number of actions to achieve this goal. These include development of a Climate Action Plan to determine LDA specific carbon reduction targets for 2030 and 2050 and minimising upfront carbon through the specification of lower carbon and bio-based materials and building systems. Additionally, in relation to operational carbon The LDA aims to adopt the ZEB standard in advance of the 2027 deadline. ZEB or 'Zero Energy Buildings' is included in the revision of the EU Energy Performance of Buildings Directive of March 2024 and is the new energy standard for buildings from 2027, replacing 'Nearly Zero Energy Buildings' (NZEB). A zero-emission building is defined as building with very high energy performance, requiring zero or a very low amount of energy, producing zero on-site carbon emissions from fossil fuels and producing zero or a very low amount of operational GHG emissions.

As the proposed development will be under the remit of The LDA, the policies and actions outlined with the Land Development Agency Sustainable Development Strategy 2024 – 2028 shall apply to the proposed development where relevant.

6.5.2 Cumulative Mitigation

With respect to cumulative assessment, there is no geographical constraints for a climate assessment and therefore the normal approach for cumulative assessment in EIA is not considered applicable as per PE-ENV-01104 (TII, 2022c). No specific cumulative mitigation is proposed. Residual Impacts

6.5.3 Proposed Development

The proposed development will result in some impacts to climate through the release of GHGs, however the projects Climate Action Energy Statement aims to minimise operational phase energy requirements. TII reference the IEMA guidance (2022) which states that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". As per the assessment criteria in Table 6.3 the residual impact of the proposed development in relation to GHG emissions is considered *direct, long-term, negative* and *slight*, which is overall *not significant* in EIA terms based on the information available at the time of compiling this assessment.

In relation to climate change vulnerability, it has been assessed that there is a low risk as a result of the majority of future climate change hazards with the exception of flooding and extreme cold associated with landscaping elements which have a medium risk. The design is currently in line with a low vulnerability to the moderate-risk future scenario (RCP4.5). Landscaping has a medium vulnerability to extreme cold temperatures. Available mitigation for this will be considered during detailed design. All other vulnerabilities to future climate change have been identified as low. The identified climate vulnerabilities are not considered a significant risk in relation to the proposed development based on the information available at the time of compiling this assessment.

Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including; The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest available IPCC report. In addition, should the updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account.

Worst Case Impact

The GHG assessment conducted has been based on the best available information at the time of completing this assessment. Exact material types were not known when carrying out this assessment and a worst-case approach was applied when inputting materials which will potentially over-estimate associated GHG emissions. There is the potential for the development to have lower GHG emissions once constructed if lower carbon intensive materials are chosen as part of the detailed design. However, this assessment has been based on a conservative, worst-case approach.

With respect to the climate risk assessment, in accordance with TII's Guidance document PE-ENV-01104 (TII 2022c), the high risk (RCP8.5) future climate change scenario has been considered. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken. This is considered the worst case scenario.

6.5.4 Cumulative

With respect to the requirement for a cumulative assessment the TII guidance (2022a) references the IEMA guidance (IEMA, 2022) which states that:

"*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area as well as all phases of the full masterplan development for the site. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered *direct, long-term, negative* and *slight*, which is overall *not significant* in EIA terms.

6.6 Difficulties Encountered

There were no significant difficulties encountered when compiling this assessment.

6.7 Interactions

Climate has the potential to interact with a number of other environmental attributes.

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for run-off from the building and the surrounding hardscaped areas in accordance with a minimum 1 in 100-year event plus 20% climate change allowance. Interactions between climate and hydrology are not considered significant.

Interactions between climate and Material Assets – Waste can occur. Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. Therefore, no significant interactions between climate and waste are predicted.

No other significant interactions between climate and other environmental topics have been identified.

6.8 Monitoring

There is no monitoring required for the construction or operational phases.

6.9 References

- Civil Engineering Standard Method of Measurement (CESSM) (2013) Carbon and Price Book database.
- Construction Industry Federation (2021) Modern Methods of Construction
- Department of Environment, Climate and Communications (DECC) (2023a) Climate Action Plan (CAP) 2024
- Department of Environment, Climate and Communications (DECC) (2023b) Long-term Strategy on Greenhouse Gas Emissions Reductions (draft)
- Department of Environment, Climate and Communications (DECC) (2024) National Adaptation Framework (NAF)

- Environmental Protection Agency (2020a) State of the Irish Environment Report (Chapter 2: Climate Change)
- Environmental Protection Agency (2020b) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024) Ireland's Provisional Greenhouse Gas Emissions 1990-2023
- Environmental Protection Agency (2024a) National Climate Change Risk Assessment (NCCRA)
- Environmental Protection Agency (2024d) Ireland's Greenhouse Gas Emissions Projections 2023-2050
- Environmental Protection Agency (2024e) Ireland's Climate Change Assessment Synthesis Report
- Environmental Protection Agency (EPA) (2021a) Critical Infrastructure Vulnerability to Climate Change Report No. 369
- Environmental Protection Agency (EPA) (2021b) Critical Infrastructure Vulnerability to Climate Change Report no. 369
- European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment
- European Commission (2014) 2030 Climate and Energy Policy Framework
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- European Commission (2017) Guidance on the preparation of the Environmental Impact Assessment Report
- European Commission (2021a) Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027
- European Commission (2021b) 2030 EU Climate Target Plan
- European Commission (2021b) Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change.
- European Union (2018) Regulation 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
- Government of Ireland (2015) Climate Action and Low Carbon Development Act
- Government of Ireland (2019) Climate Action Plan 2019
- Government of Ireland (2020) Climate Action Plan 2021
- Government of Ireland (2021) Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021)
- Government of Ireland (2022) Climate Action Plan 2022
- Government of Ireland (2023) Long-term Strategy on Greenhouse Gas Emissions Reductions
- Institute of Environmental Management & Assessment (IEMA) (2020a) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation
- Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy
- Institute of Environmental Management & Assessment (IEMA) (2022) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance
- Land Development Agency (2024) The Land Development Agency Sustainable Development Strategy 2024-2028
- LETI (2020) Climate Emergency Design Guide

- Met Éireann (2023a). Ireland's 30-year Climate Averages. Available from: https://www.met.ie/climate/30-year-averages
- Met Éireann (2023b) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate
- Met Éireann (2024) Met Éireann's 2023 Climate Statement
- Standard Method of Measurement (CESSM) (2013) Carbon and Price Book database
- Transport Infrastructure Ireland (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Transport Infrastructure Ireland (2022b) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document
- Transport Infrastructure Ireland (2022c) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects
- Transport Infrastructure Ireland (2022d) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- Transport Infrastructure Ireland (TII) (2022c) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

7 Noise and Vibration

7.1 Introduction

AWN Consulting Ltd has been commissioned to carry out a noise and vibration impact assessment of the proposed development on lands at Cherry Orchard.

In terms of the site, noise and vibration will be considered in terms of two aspects. The first is the outward impact of the development (i.e. the potential impact of the Proposed Development on existing sensitive receptors in the study area) and the inward impact of existing noise and vibration sources on the development itself (with a particular focus on road traffic and rail noise).

7.2 Methodology

The study has been undertaken using the following methodology:

- Baseline noise monitoring has been undertaken across the development site to determine the range of noise levels at varying locations across the site;
- A review of the relevant standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development, this is summarised in the following sections;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the project at the nearest sensitive locations (NSL's) to the site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the development site;
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development, and;
- The inward impact of noise of the surrounding environment (e.g. rail and road noise) into the proposed buildings has also been assessed to determine the requirements, for additional noise mitigation to provide suitable residential amenities.

7.2.1 Construction Phase Noise Criteria

There is no published statutory Irish guidance relating to the maximum permissible noise and vibration levels that may be generated during the construction phase of a project. It is common practice to use *BS 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites* (**the BS5228 guidance**) with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part One of this Standard.

7.2.1.1 Residential Receptors

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact is associated with the construction activities. Note that, in accordance with the BS5228 guidance, this assessment criteria is only applicable to residential receptors.

The closest neighbouring noise sensitive properties to the proposed development are the residential

dwellings on Cedarbrooke Estate that bound the east of the site, these are located approximately 40m from the development site at their closest point.

The **BS5228 guidance** sets out guidance on permissible noise levels relative to the existing noise environment. Table 7.1 sets out the values which, when exceeded, indicate a significant effect at the facades of residential receptors.

Table 7.1 BS5228 ABC Methodology

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A	Category B	Category C
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
Evenings and weekends	55	60	65
Night Time	45	50	55

Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

For the appropriate assessment period (i.e., daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. Baseline monitoring carried out as part of this assessment, as presented in Section 7.3, would indicate that noise sensitive receptors at this location can be considered Category A to B and a 65 to 70 dB $L_{Aeq,12hr}$ threshold should be applied. Figure 7.1 presents a map indicating properties that are identified as either Category A or B. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur, depending on context. A description of each receptor is provided below:

R1 – Residential estate on St Oliver's Park located approximately 60m to the north of the proposed masterplan site. A 65 dB $L_{Aeq,12hr}$ threshold is proposed at this location.

R2 – Residential estate on Cedar Brooke Avenue located approximately 40m to the east of the proposed masterplan site. A 70 dB $L_{Aeq,12hr}$ threshold is proposed at this location.

R3 – Residential estate on Barnville Park located approximately 65m to the south-east of the proposed masterplan site. A 70 dB $L_{Aeq,12hr}$ threshold is proposed at this location.

R4 – Residential estate off Park West Avenue located approximately 80m to the south-east of the proposed masterplan site. A 70 dB $L_{Aeq,12hr}$ threshold is proposed at this location.

R5 – Phase 1 of the Cherry Orchard masterplan, adjoining site to the south. A 70 dB $L_{Aeq,12hr}$ threshold is proposed at this location.

Figure 7.1 Construction Categories

7.2.1.2 Commercial Receptors

The **BS5228 guidance** 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".*

For non-residential locations it is considered appropriate to adopt the 75dB(A) criterion during the day. The non-residential properties are only considered to be noise sensitive during office hours.

7.2.1.3 Proposed Threshold Noise Levels

Considering the guidance documents outlined above and referring to the baseline noise environment monitored around the development site (see Section 7.3), BS 5228-1:2009+A1:2014 has been used

to inform the assessment approach for construction noise.

The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development: -

- For residential NSLs it is considered appropriate to adopt 65 - 70 dB(A) CNT depending on existing noise level. The appropriate categories are identified in Figure 7.1.
- For non-residential NSLs it is considered appropriate to adopt the 75 dB(A) CNT, given the urban environment, in line with BS 5228-1:2009+A1:2014 Annex E2.

7.2.1.4 Interpretation of CNT

In order to assist with interpretation of CNTs, Table 7.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of DMRB: Noise and Vibration and adapted to include the relevant significance effects from the EPA Guidelines (EPA 2022).

Table 7.2 BS5228 ABC Methodology

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	
Significant	Above CNT +15 dB	Very Significant to Profound	

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.

7.2.2 Construction Phase Vibration Criteria

There are two aspects to the issue of vibration that are addressed in the standards and guidelines: the risk of cosmetic or structural damage to buildings and the human perception of vibration. In the case of the proposed development, vibration levels used for the purposes of evaluating building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s. There is no published statutory Irish guidance relating to the maximum permissible vibration level. The following standards are the most widely accepted in this context and are referenced here in relation to cosmetic or structural damage to buildings:

- BS 7385: Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration (1993); and
- BS 5228: 2009 +A1 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

Building Damage

BS 7385-2 and BS 5228-2 advise that, for soundly constructed residential properties and similar light-framed 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 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz 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 of BS 5228-2 may 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. For buildings or structures that are structurally unsound, lower vibration magnitudes will apply, typically 50% of those for structurally sound buildings. Protected or historic buildings are not automatically assumed to be more vulnerable to vibration unless they have existing structural defects. The values are summarised in Table 7.3 relating to transient vibration.

Table 7.3 Transient Vibration Guide Values for Cosmetic Building Damage

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
	4Hz to 15Hz	15Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
Unreinforced or light framed structures. Residential or light commercial building types.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above.

Note 1 Values referred to are at the base of the building. *

Note 2 At frequencies below 4Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded. *

BS 5228-2 and BS 7485-2 state that minor structural damage can occur at vibration magnitudes greater than twice those in Table 7.3 and major structural damage can occur at vibration magnitudes greater than four times those in Table 7.3.

The guide values contained in Table 7.3 relate to transient vibration which does not give rise to resonant responses in structures, and to low rise buildings.

Human Perception

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of traffic, vibration is perceptible at around 0.5 mm/s and may become disturbing or annoying at higher magnitudes. Higher levels of vibration, however, are typically tolerated for single events or events of short duration. For example, during piling, one of the primary sources of vibration during construction, vibration levels may typically be tolerated at up to 2.5mm/s. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant to such activities during the night-time (or if they are trying to sleep during the daytime).

BS 5228-2 and DMRB Noise and vibration (UKHA 2020) provides guidance relating to the assessment of human response to vibration in terms of the peak particle velocity (PPV). Table 7.4 summarises the range of vibration values and the associated potential effects on humans.

Table 7.4 Guidance on effects of human response to PPV magnitudes

Vibration Level, PPV	Likely Effect (DMRB)	Significance Ratings (EPA)
≥10 mm/s PPV	Major	Significant to Very Significant
≥1 to <10 mm/s PPV	Moderate	Moderate to Significant
≥0.3 to <1 mm/s PPV	Minor	Not Significant to Slight
≥0.14 to 0.3mm/s PPV	Negligible	Imperceptible to Not significant
Less than 0.14 mm/s PPV		Imperceptible

7.2.3 Operational Noise Criteria

7.2.3.1 Additional Traffic on Public Roads

In order to consider the potential noise impact associated with the proposed development introducing additional traffic onto the existing road networks and given that vehicle movements on public roads are assessed using a different parameter (the ten-percentile noise level; L_{A10}), it is appropriate to consider the increase in traffic noise level that arises as a result of vehicular movements associated with the development in terms of the L_{A10} parameter.

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 7.5 offers guidance as to the likely impact associated with any change in traffic noise level (Source DMRB).

Table 7.5 Likely Impact Associated with Change in Traffic Noise Level

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
10+	Doubling of loudness and above	Major	Significant

7.2.3.2 Inward Noise Impact

The Professional 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 it's adoption 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; and,
- 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; and,
  - 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 7.2 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.

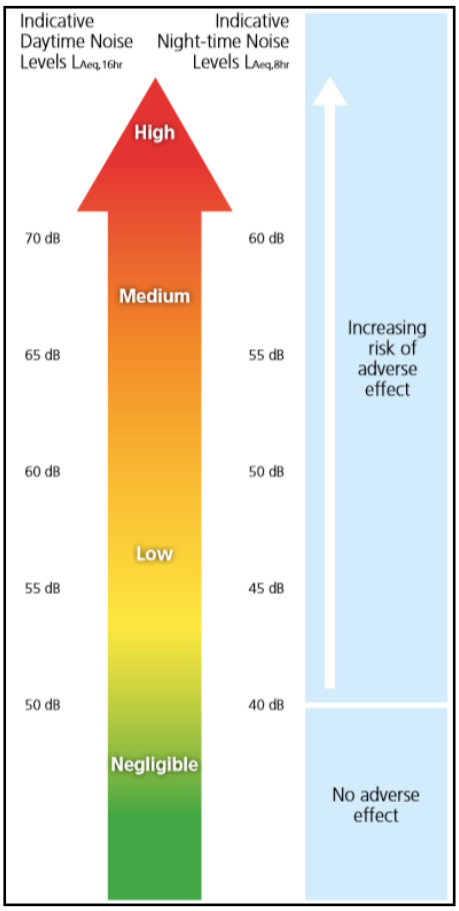


Figure 7.2 ProPG Stage 1 - Initial Noise Risk Assessment

It should be noted that a site should not be considered a negligible risk if more than 10 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). The recommended indoor ambient noise levels are set out in Table 7.6 and are based on annual average data, they omit occasional events where higher intermittent noisy events may occur.

Table 7.6 ProPG Internal Noise Levels

Activity	Location	(07:00 to 23:00hrs)	(23:00 to 07:00hrs)
Resting	Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq, 16hr}$	-
Sleeping	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$ 45 dB L_{AFmax}

*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.

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 $L_{Aeq,16hr}$."

7.2.3.3 Outward Noise Impact

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 2 dB penalty for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6 dB 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 +10 dB 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 impact. A difference of around +5 dB is likely to be an indication of an adverse impact, 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 impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

7.2.4 Operational Vibration Criteria

There are no expected sources of vibration associated with the operational phase, therefore vibration criteria have not been specified for this phase.

7.3 Baseline Environment

7.3.1 Description

The site is in Cherry Orchard, Dublin 10, Ireland. The site is bound by the M50 to the West and Park West Ave to the East. Phase 1 of the masterplan development lies to the south of the proposed development.

7.3.2 Environmental Noise Survey

An environmental noise survey has been conducted at the site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Specific details are set out below.

7.3.3 Choice of Measurement Positions and Survey Times

The attended noise survey was conducted between the following periods:

- 14:30 on 6th of July 2022 to 15:34 on 6th of July 2022.

The unattended noise survey was conducted between the following periods:

- 13:30hrs on 6th of July 2022 to 13:45hrs on 8th of July 2022.

The measurements cover a period that was selected in order to provide a typical snapshot of the existing noise climate, with the primary purpose being to ensure that the proposed noise criteria associated with the development are commensurate with the prevailing environment. The weather during the survey periods was variable with some heavy rainfall. Data for analysis has omitted these periods of adverse weather conditions and typical noise levels have been selected from a day and night of calm and dry weather.

It's noted that the surveys were undertaken in 2022 and that the noise environment is dominated by traffic noise. Given it takes an uplift of 25% in traffic flows to increase the noise level by 1 dB (an increase that would typically be imperceptible) and 100% to increase the noise level by 3 dB (an increase that would be just barely perceptible) it is considered that the survey remains relevant for this assessment.

Measurement locations were selected as shown in Figure 7.3 below.

Figure 7.3 Noise level measurement locations at the Cherry Orchard.

7.3.4 Personnel and Instrumentation

All measurements were performed by AWN Consulting. Attended and unattended measurements were made using a Rion NL-52 Sound Level Meter. Sample periods were 15 minutes for attended noise measurements and 5 minutes for unattended noise measurements.

Before and after the survey the measurement instruments were check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator.

7.3.5 Measurement Parameters

The noise survey results are presented in terms of the following parameters.

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_{A10} is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.

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.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{day} is the average L_{Aeq} noise level measured over the course of the daytime period, defined as 07:00hrs to 19:00hrs

$L_{evening}$ is the average L_{Aeq} noise level measured over the course of the daytime period, defined as 19:00hrs to 23:00hrs

L_{night} is the average L_{Aeq} noise level measured over the course of the daytime period, defined as 23:00hrs to 07:00hrs

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.

7.3.6 Survey Results and Discussion

The results of the surveys at the unattended monitoring locations are summarised in Table 7.7 to Table 7.10 below. Note that L_{Aeq} values are logarithmic averages over the stated period, whereas L_{A90} values are arithmetic averages.

Table 7.7 Unattended Survey Results at Location UT1

Date	Period	Measured Noise levels	
		dB $L_{Aeq,T}$	dB $L_{A90,T}$
06/07/2022	Day (07:00 – 23:00hrs)	65	59
	Night (23:00 – 07:00hrs	58	51
07/07/2022	Day (07:00 – 23:00hrs)	63	55
	Night (23:00 – 07:00hrs)	58	50
08/07/2022	Day (07:00 – 23:00hrs)	64	59

Table 7.8 Unattended Survey Results at Location UT2

Date	Period	Measured Noise levels	
		dB L_{Aeq}	dB $L_{A90,T}$
06/07/2022	Day (07:00 – 23:00hrs)	64	62
	Night (23:00 – 07:00hrs	60	55
07/07/2022	Day (07:00 – 23:00hrs)	63	61
	Night (23:00 – 07:00hrs)	59	54
08/07/2022	Day (07:00 – 23:00hrs)	64	62

Table 7.9 Attended Noise Measurements at Location AT1

Date/Time	Measured Noise levels				
	L_{Aeq}	L_{AFmax}	L_{Amin}	L_{A10}	L_{A90}
06/07/2022 14:30	62	71	58	63	60
06/07/2022 15:18	65	78	59	67	62
06/07/2022 16:09	64	73	58	66	61

Table 7.10 Attended Noise Measurements at Location AT2

Date/Time	Measured Noise levels				
	L_{Aeq}	L_{AFmax}	L_{Amin}	L_{A10}	L_{A90}
06/07/2022 14:57	62	67	59	63	61
06/07/2022 15:34	62	69	59	66	61
06/07/2022 16:29	61	74	57	64	58

Road traffic noise from the M50 motorway road was the dominant source of noise at the West side of the site. During the attended survey it was noted that noise emissions from the adjacent rail line intermittently contributed towards the overall noise levels, at location UT2.

L_{Amax} Results at Location UT2.

Given the proximity of the rail line it is appropriate to consider the maxima results at this location to account for rail movements during the more sensitive night period. Taking into account the allowance

by the guidance for 10 maximum events to exceed the threshold per night, it can be concluded that the typical L_{Amax} level is 67 dB at this location.

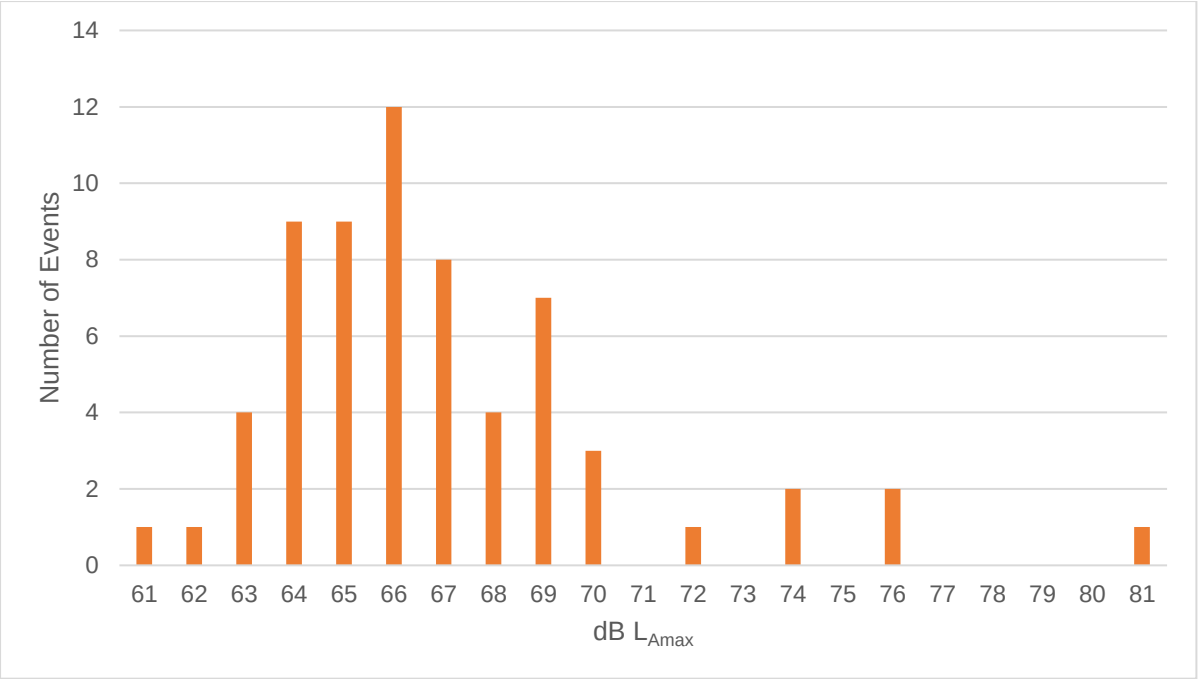


Figure 7.4 Nighttime maxima events

7.4 Predicted Impacts

7.4.1 Construction Phase – Noise Impact

The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from and around the site. However, the construction phase can be classed as a short-term phase.

BS 5228-1 contains noise level data for various construction machinery. The noise levels relating to site clearance, ground excavation and loading lorries (dozers, tracked excavators and wheeled loaders) reach a maximum of 81 dB $L_{Aeq,T}$ at a distance of 10 m. For this assessment, a worst-case scenario is assumed of 3 no. such items with a sound pressure level (SPL) of 81 dB at 10 m operating simultaneously along the closest works boundary. This would result in a total noise level of 86 dB at 10 m and an equivalent combined sound power level of 114 dB L_{WA}. This conservative scenario is the typical assumption made for developments of this size, on the basis that it is unlikely that more than 3 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other.

Guidance on the approximate attenuation achieved by barriers surrounding the site is also provided in BS 5228-1. It states that when the top of the plant is just visible to the receiver over the noise barrier, an approximate attenuation of 5 dB can be assumed, while a 10 dB attenuation can be assumed when the noise screen completely hides the sources from the receiver.

For this scenario it is assumed that construction will be partially screened from the local receptors by way of typical 2.4m site hoarding. Table 7.11 shows the potential noise levels calculated at various distances based on the assumed sound power level, a percentage on time of 66% and attenuation provided by the barrier of 5 dB.

Table 7.11 Predicted construction noise levels at varying distances

Description of Noise Source	Sound Power Level (dB Lw(A))	Calculated noise levels at varying distances (dB $L_{Aeq,T}$)				
		10m	20m	40m	60m	80m
3 no. items each with SPL of 81 dB at 10 m operating simultaneously.	114	80	74	68	64	62

The closest Category A receptors from the area of construction works are residential properties at R1 – St Oliver's Park at distances of greater than 60m. The construction noise predictions indicate that noise levels from construction works will be below the CNT set out within BS5228 and above the baseline noise levels. Reference to Table 7.2 indicates a negative, slight to moderate and brief to short-term construction noise impact will be experienced at these locations. Given the calculated noise levels are below the CNT, the overall impact is determined to be not significant.

The closest external Category B receptors from the area of construction works are residential properties at R2 - Cedar Brooke Avenue at distances of greater than 40m. The construction noise predictions indicate that noise levels from construction works will be below the CNT set out within BS5228 and above the baseline noise levels. Reference to Table 7.2 indicates a negative, slight to moderate and brief to short-term construction noise impact will be experienced at these locations. Given the calculated noise levels are below the CNT, the overall impact is determined to be not significant.

There is the possibility that Phase 1 of the Cherry Orchard masterplan may be operational during the construction phase of Phase 2. In this instance there is the potential for noise levels to reach 74 dB during the worst periods of construction works. This would occur when works are at the closest boundaries to the phase 1 buildings, however, it should be noted that for the vast majority of the construction works will be further from the boundary and associated noise levels will be much lower. Reference to Table 7.2 indicates a negative, moderate to significant and brief to short-term construction noise impact will be experienced at these locations.

Construction Traffic

In terms of the additional construction traffic on local roads that will be generated as a result of this development the following comment is presented. In order to increase traffic noise levels by 1 dB traffic volumes would need to increase by the order of 25% along the local road network. Additional traffic introduced onto the local road network due to the construction phase of the proposed development will not result in a significant noise impact.

7.4.2 Construction Phase – Vibration Impact

During rock breaking, there is potential for vibration to be generated through the ground. Empirical data for this activity is not provided in the BS 5228-2:2009+A1:2014 (BSI 2014b) standard, however the likely level of vibration from this activity is expected to be significantly below the vibration criteria for building damage on experience from other sites. AWN Consulting Ltd (the Author of the Noise and Vibration chapter) have previously conducted vibration measurements under controlled conditions, during trial construction works on a sample site where breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator; and
- 6 tonne hydraulic breaker on large Liebherr tracked excavator.

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 0.25 PPV (mm/s) to 0.2548 PPV (mm/s) at distances of 10m to 50m respectively from the breaking activities.

Using a 6 Tonne Breaker, measured vibration levels ranged between 1.4 PPV (mm/s) to 0.24 PPV (mm/s) at distances of 10m to 50m respectively.

Whilst these measurements relate to a breaking of concrete, the range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity. Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Section **Error! Reference source not found.**.

The predicted vibration impacts are not significant, and the worst-case effects can be described as ***short-term***, ***negative***, and ***imperceptible to not significant***.

7.4.3 Operational Phase – Additional Traffic on Existing Public Roads

The Traffic Impact Assessment predicts the following changes to Annual Average Daily Traffic (AADT) in the design year 2042. This is shown in Table 7.12 along with approximate corresponding changes to noise level. Note that all figures take account of committed developments in the area and the permitted and future overall masterplan lands. Figure 7.5 presents the location of each assessed junction.

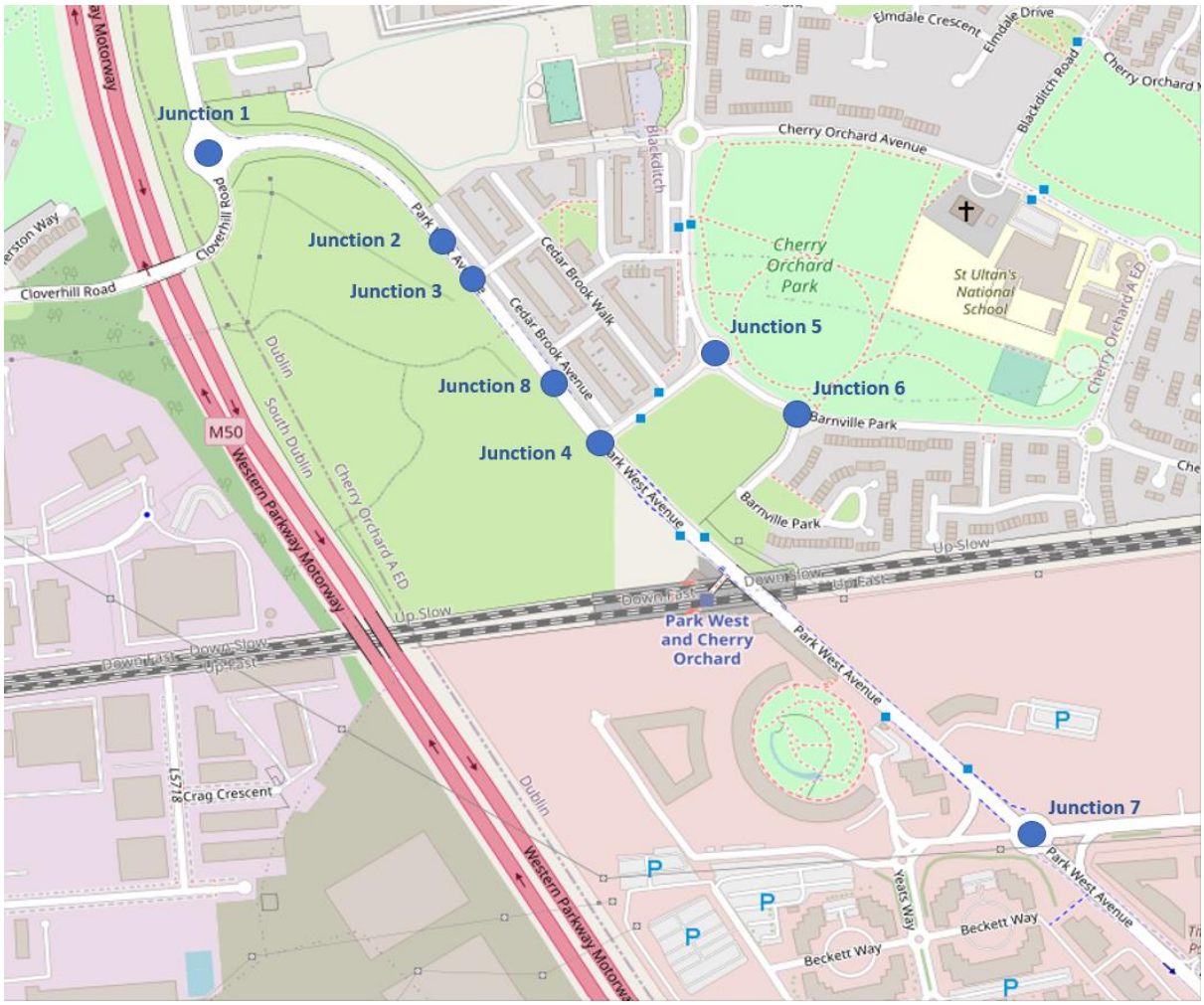


Figure 7.5 Location of assessed junctions

Table 7.12 Predicted changes in noise level with and without the development in place

Junction Arm	24 Hour AADT for Opening Year (2027)		
	Without Development	With Development	Increase (dB)
Junction 1_Arm A	11,555	13,412	0.6
Junction 1_Arm B	10,889	13,070	0.8

Junction Arm	24 Hour AADT for Opening Year (2027)		
	Without Development	With Development	Increase (dB)
Junction 1_Arm C	8,618	8,943	0.2
Junction 2_Arm A	10,859	13,039	0.8
Junction 2_Arm B	182	182	0.0
Junction 2_Arm C	10,882	13,506	0.9
Junction 3_Arm A	9,549	12,393	1.1
Junction 3_Arm B	1,957	1,957	0.0
Junction 3_Arm C	10,862	13,486	0.9
Junction 4_Arm A	9,566	12,627	1.2
Junction 4_Arm B	4,313	6,818	2.0
Junction 4_Arm C	11,863	14,375	0.8
Junction 5_Arm A	3,607	4,700	1.1
Junction 5_Arm B	1,356	3,252	3.8
Junction 5_Arm C	4,321	6,826	2.0
Junction 6_Arm A	1,351	3,200	3.7
Junction 6_Arm B	1,277	2,038	2.0
Junction 6_Arm C	465	2,639	7.5
Junction 7_Arm A	11,857	14,370	0.8
Junction 7_Arm B	9,543	10,743	0.5
Junction 7_Arm C	14,238	15,550	0.4
Junction 7_Arm D	4,818	4,818	0.0
Junction 8_Arm A	9,566	12,410	1.1
Junction 8_Arm B	9,566	12,627	1.2

The assessment indicates that a moderate noise impact may occur at Junction 6, Arm C due to a change in noise level. All other assessed junctions indicate that noise impacts will be imperceptible to slight and not significant with reference to Table 7.5.

Given that Junction 6 Arm C is indicating a moderate noise impact, it is appropriate to undertake a more detailed calculation to predict the noise level from road traffic at the receptor locations near to this junction.

The noise level associated with an event of short duration, such as a passing vehicle movement, may be expressed in terms of its Sound Exposure Level (L_{AX}). The Sound Exposure Level can be used to calculate the contribution of an event or series of events to the overall noise level in a given period.

The appropriate formula is given below:

$L_{Aeq,T} = L_{AX} + 10\log10(N) - 10\log10(T) + 10\log10(r1/r2)$ 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;

r1 is the distance at which LAX is expressed;

r2 is the distance to the assessment location.

The assumed mean value of Sound Exposure Level for cars and HGV's is in the order of 73 dB L_{AX} and 88 dB L_{AX} respectively at a distance of 5 metres. These values have been used to calculate the noise levels as a result of cumulative road traffic with the proposed development place and the full development of the masterplan lands.

The resultant noise level for receptors close to Junction 6 Arm C is 54 dB which is in line with baseline noise levels recorded as part of the baseline noise survey. Consequently, whilst the change in noise level can be described as a moderate impact, the overall noise level from the junction remains relatively low when considering the urban area and the local noise environment and hence a negative, not significant and long-term impact is calculated.

7.4.4 Inward Noise Impact

The development lands in question are in proximity to the M50 Motorway which lies to the west of the site and a rail line to the south of the site. Noise from the road and rail has the potential to impact the residential development proposed for the site itself.

7.4.4.1 Existing Noise Climate

The existing noise climate within the development lands was surveyed and the results summarised in Section 7.3 of this chapter. The results of the survey have indicated that the M50 contributes significant noise levels at the measurement locations on the west boundary of the site. In addition to this it was noted that noise emissions from the railway on the south boundary contributed to overall noise levels during the day period.

In order to determine the inward noise impact for noise sensitive properties proposed as part of the development, it is necessary to calculate the internal noise levels within the proposed buildings. These calculated levels can then be compared against appropriate internal noise criteria from BS 8233, as summarised in Table 7.6.

It is possible to calculate internal noise levels within the residential properties proposed within the site, taking account of the existing and future potential noise environment, proposed constructions and the relevant sound insulation provided by the building elements (i.e., walls, roof, glazing etc.).

7.4.4.2 Noise Model of Site

In order to calculate noise levels across the site, an acoustic model was developed in order to initially calibrate against noise survey data recorded on site. Proprietary noise calculation software was used for the purposes of establishing the prevailing noise levels on the proposed site. The selected software, Brüel & Kjær Type 7810 Predictor, calculates noise levels in accordance with the selected source.

The following information was included in the model:

- Site layout drawings of proposed development.
- Topographical survey of the development site, and;
- OS mapping of surrounding environment.

7.4.4.3 Noise Risk Classification of the Site

In order to calculate noise levels across the site, an acoustic model was developed in order to initially calibrate against noise survey data recorded on site. Proprietary noise calculation software was used for the purposes of establishing the prevailing noise levels on the proposed site. The selected software, Brüel & Kjær Type 7810 Predictor, calculates noise levels in accordance with the selected source.

The following information was included in the model:

- Site layout drawings of proposed development.
- Topographical survey of the development site, and;
- OS mapping of surrounding environment.

7.4.4.4 Noise Modelling

Following the methodology outlined in ProPG, as discussed in Section 7.2.3.2, the noise model has been used to predict noise levels across the site. The results of this exercise are presented in Figure 7.6 to Figure 7.9 for day and night periods.

Figure 7.6 Predicted Day Time Noise Contours (1.5m height)

Figure 7.7 Predicted Day Time Noise Contours (10m height)

Figure 7.8 Predicted Night Time Noise Contours (1.5m height)

Figure 7.9 Predicted Night Time Noise Contours (10m height)

Road traffic noise levels calculated across the majority of the site during daytime periods are between 60 and 70 dB $L_{Aeq,16hr}$. Night time noise levels are the order of 55 to 65 dB $L_{Aeq,8hr}$ across the site in this situation.

Giving consideration to the measured and predicted noise levels presented in the previous sections the initial site noise risk assessment has concluded that the level of risk across the site varies from medium to high noise risk.

Additionally, the Stage 1 Noise Risk Assessment requires analyses of the L_{AFmax} noise levels. In the case of the AWN survey, the L_{Afmax} noise levels typically measured less than 80 dB during the night with sporadic events also recorded above this level. ProPG guidance considers 20 night events over 80 dB to be a high risk, therefore this site would be considered a low to medium risk in terms of maxima events.

ProPG states the following with respect to medium and high risks:

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 Medium to High Risk and as such an Acoustic Design Strategy is 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."*

Therefore, following the guidance contained in ProPG does not preclude residential development on sites that are identified as having medium or high-risk noise levels. It merely identifies the fact that a more considered approach is required to ensure the developments on the higher risk sites are suitable designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

Façade Noise Levels

Noise levels have been predicted across the development site during day and night-time periods using the noise model developed to include the development buildings. 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 ventilating the dwellings with open windows. Therefore, for those properties 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.

Where façade levels are above these levels the sound insulation performance of the building façade becomes important and a minimum sound insulation performance specification is required for windows and vents to ensure the internal noise criteria are achieved.

Figure 7.10 identifies those facades where the noise levels are higher and where mitigation in the form of enhanced glazing and ventilation is required. The specification of this enhanced façade is discussed in Section 7.5. Once these mitigation measures are applied the inward impact is neutral, not significant and long-term.

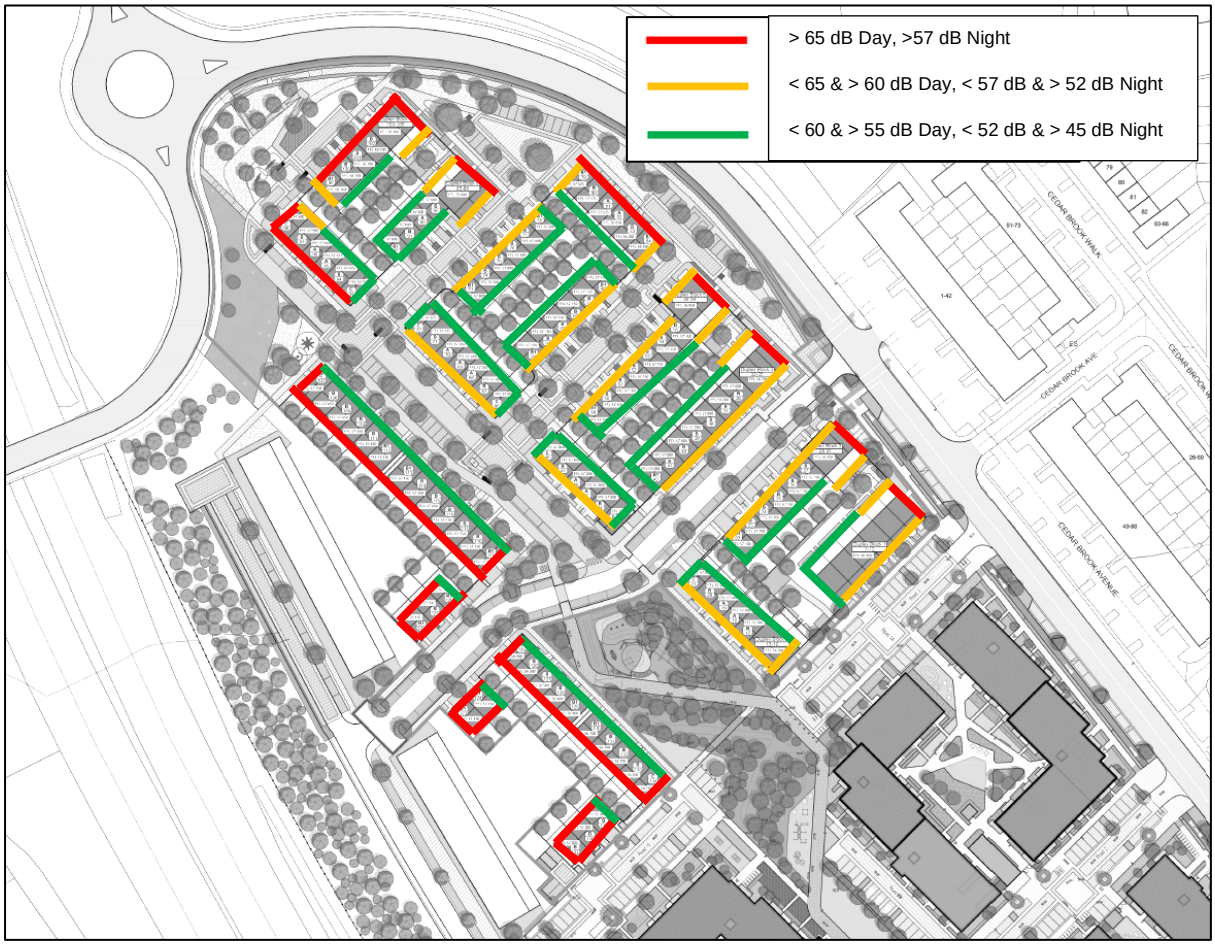


Figure 7.10 ***Façade Noise Levels***

External Noise Levels

Where external amenity areas are protected from traffic noise sources due to the layout of the proposed buildings these areas will typically be within the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$. Typically at areas closer to the M50 noise levels will be higher than the recommended noise levels, however, mitigation in the form of screening around these areas will not be sufficient to reduce noise to recommended levels due to the elevation of the M50 above the site ground floor level. Future phases of the development indicate large commercial buildings will be located closer to the M50, these would drastically reduce noise levels across the site when built.

The ProPG document allows for the impact of higher than desirable external noise levels to be off-set through assessment of a hierarchy of measures including “a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)”.

For this site there is a substantially sized publicly accessible park (New Cherry Orchard Park) available within 150m of the development as depicted in Figure 7.11. Given the distance away from the M50, the park will meet the recommended noise levels for external amenity areas. Hence, given that a large area of space within the masterplan development will provide amenity space that meets the ProPG guidance, and an additional public park is accessible in a 5 minute walk from the development, it is considered that the ProPG objectives for external space have been satisfied.

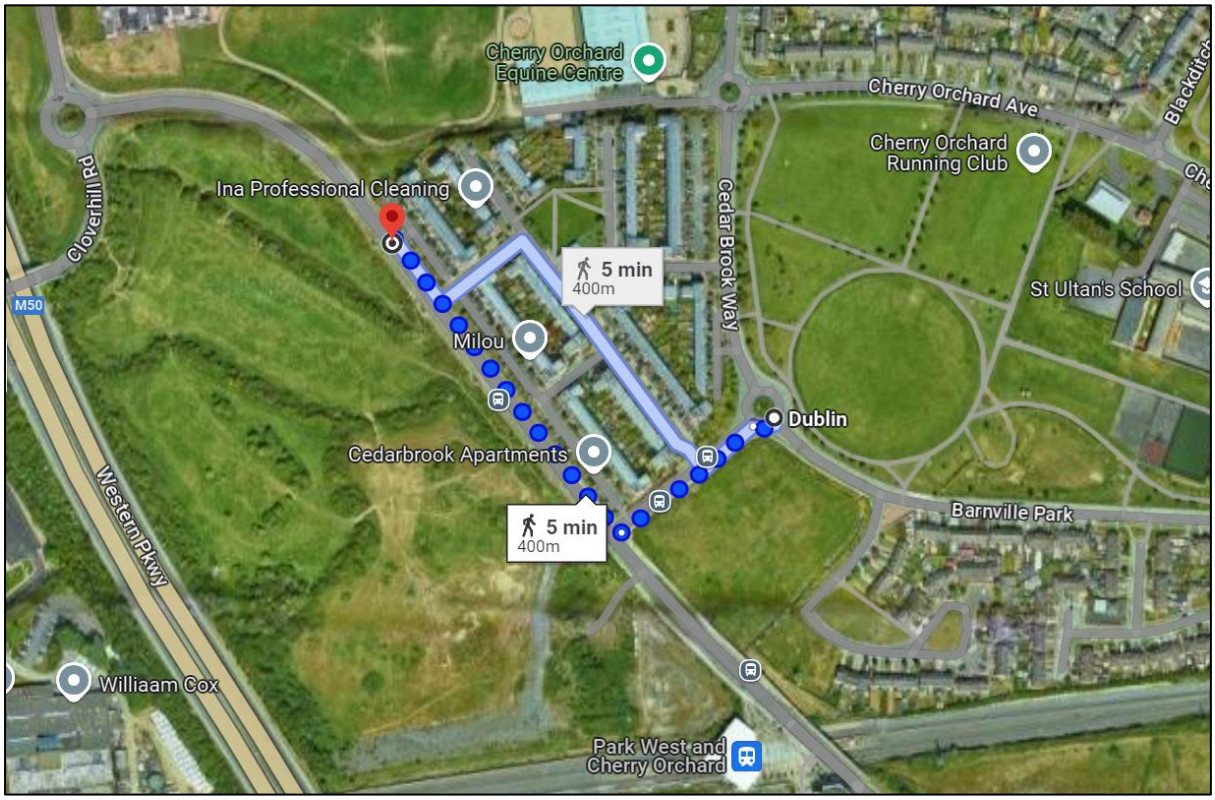


Figure 7.11 Location of Publicly Accessible Park

7.4.5 Operational Noise – Mechanical Plant and Services

BS 4142: 2014 +A1 2019: Methods for Rating and Assessing Industrial and Commercial Sound sets out a method for assessing the impact of a new continuous noise source to a residential environment such as plant items used to service the apartments and amenity areas. Residential units are the most sensitive to this source, therefore, control of impacts at these units ensures control elsewhere. It states that if the rating level of the item exceeds the background noise level by 5 dB, an adverse impact is likely to occur, while an exceedance of 10 dB is likely to cause a significant adverse impact, depending on the context.

The location or type of building services plant has not yet been established; therefore it is not possible to calculate the potential noise levels. In this instance, it is best practice to use the above guidance (BS 4142) to inform the detailed design during the selection and layout of building services for the development.

The background noise level at the boundaries of the site were determined through baseline noise surveys. The lowest average background noise levels were in the range 55 dB $L_{A90,16hour}$ during daytime periods and 50 dB $L_{A90,8hour}$ during night-time periods.

Based on the above, it is recommended that cumulative plant noise from mechanical plant associated with the development does not exceed 45 dB $L_{Aeq,15min}$ at the closest existing noise sensitive locations and does not contain audible tones at any noise sensitive locations.

Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself. Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, then 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.

7.5 Mitigation Measures

7.5.1 Construction Noise

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. Predictions indicate that moderate construction noise impacts are expected to occur when work is ongoing at boundary locations adjacent to noise sensitive locations, hence the contractor will ensure that all best practice noise and vibration control methods will be used. In this regard, various mitigation measures will be implemented during the construction of the proposed development, including:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise and vibration;
- monitoring typical levels of noise and vibration during critical periods and at sensitive locations;
- all site access roads will be kept even so as to mitigate the potential for vibration from lorries.

Furthermore, a variety of practicable noise and vibration control measures will be employed. These will include as standard:

- selection of plant with low inherent potential for generation of noise and/ or vibration;
- erection of barriers as necessary around noisy processes and items such as generators heavy mechanical plant or high duty compressors;
- placing of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

7.5.2 Mechanical Plant and Services

At the detailed design stage, best practice measures relating to building services plant will be taken to ensure there is no significant noise impact on noise-sensitive locations within the development. Due to the relative proximity of the NSLs within the development, this will also prevent a negative impact on NSLs in the surrounding area. The over-riding requirement is that the criteria in Section 7.4.5 is adhered to through implementation of best practice measures at the design stage including the following:

- 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 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 by 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.

7.5.3 Inward Noise Impact

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e. block work or concrete and spandrel elements) offer a high degree of sound insulation, much greater than that offered by the glazing systems. Therefore, noise intrusion via the wall construction will be minimal.

In this instance the facades highlighted in Figure 7.10 will be provided with glazing that achieves the minimum sound insulation performance as set out in Table 7.13. Any passive ventilation units will have to be carefully selected at the design stage to ensure that the composite sound reduction index of the façade is not compromised, for instance with a 42 dB $D_{n,e,w}$ vent for the Red facades and a 37 dB $D_{n,e,w}$ vent for the Orange facades.

Table 7.13 Sound Insulation Performance Requirements for Glazing, SRI (dB)

Façade Ref	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1k	2k	4k	
Red	27	26	33	39	39	47	37
Orange	24	22	29	39	33	38	33
Green							

The overall R_w outlined above is 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 7.13 or greater.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. In the context of the acoustic performance specification the ‘glazing system’ is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e., glass, frames, seals, openable elements etc.

The assessment has demonstrated that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses.

7.6 Residual Impact

7.6.1 Construction Noise

Mitigation defined in Section 7.5.1 will provide a further reduction of approximately 5 dB to construction noise levels. Given the distance to local receptors and the mitigation applied the residual construction noise impacts are predicted to be negative, short-term and slight to moderate. Overall, the impact is predicted to be not significant.

7.6.2 Construction Vibration

Given the distance to local receptors the residual vibration impacts are predicted to be ***negative***, ***short-term*** and ***not significant.***

7.6.3 Operational Stage – Inward Noise Impact

Following implementation of the sound insulation mitigation the residual impacts are predicted to be ***long-term, neutral and not significant.***

7.6.4 Operational Stage – Additional Traffic on Public Roads

All assessed junctions indicate that impacts will be neutral to ***negative, imperceptible to slight and long term.***

7.6.5 Operational Stage – Mechanical Plant

Once noise emissions from operational plant and activities are designed in accordance with BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound the residual impacts are predicted to be ***long-term, negative and not significant.***

7.7 Cumulative Effects

7.7.1 Construction Stage

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase, including the following:

Table 7.14 Development Planning permissions that can potentially overlap with the development

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	

	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022
	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018

SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	Granted 16/06/2022
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	Granted 31 Jul 2019

5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024
SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

Additionally, to the above Table 7.14 there are other Local Area Plan sites that have been advised by Dublin City Council (DCC) that could potentially overlap with proposed development during the construction phase, these are as follow:

Site 1 - DCC Affordable Purchase scheme delivering 172 new homes, targeting a construction completion date of Q1 2026.

Site 2 - Currently at design stage. A Part 8 is to be brought to council in Q1 2024 by DCC PPP section. Current iteration outlines 126 social and 47 affordable homes. There will be 3-4 shops. One 250sqm and the others in the region of 120sqm as per the LAP requirements.

The majority of the sites are located at distances greater than 200m from the proposed development and consequently there is likely to be no significant cumulative impacts associated with these developments.

If phases of the overall masterplan for Cherry Orchard Point proceed simultaneously then elevated construction noise emissions due to cumulative noise are likely to occur at receptor locations proximate to two or more construction sites as well as a potential increase in the length of time that the receptor will be exposed to construction noise. Hence, cumulative construction impacts will need to be considered and managed during the construction phase. It is recommended that liaison between

construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. With mitigation in place the impact of phases being constructed simultaneously will be negative, slight to moderate and brief to short-term.

7.7.2 Operational Stage

Traffic data already accounts for other projects within the area and also for the permitted, proposed and future stages of the overall Cherry Orchard masterplan, hence, the cumulative assessment has already been accounted for.

7.7.3 Do Nothing Impact

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts will not occur. Impacts from increased traffic volumes also do not occur. The local noise and vibration levels at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of noise and vibration.

7.8 Difficulties Encountered

No difficulties were encountered during this assessment.

7.9 Interactions

This chapter has used information from chapter **Error! Reference source not found. Error! Reference source not found.** and the architectural drawings to inform the assessment of noise and vibration impacts. With increased traffic movements, the noise levels in the surrounding area have the potential to increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site. In this assessment, the impact of the interactions between traffic and noise are considered to be imperceptible to not significant on all junctions.

7.10 References

- BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.
- British Standard BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound
- Design Manual for Roads & Bridges – LA111 Revision 2, 2020.
- British Standard BS 5228 (2009 +A1 2014): Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.
- British Standard BS 7385 (1993): Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- Calculation of Road Traffic Noise, Department of Transport Welsh Office, HMSO, 1988.
- ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- ISO 9613 (2024): Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation.
- EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports, (May 2022).
- Professional Guidance on Planning & Noise (ProPG), (IoA, 2017).

8 Biodiversity

8.1 Introduction

Proposed development on a site of c. 3.185 hectares, located on lands at Cherry Orchard, Dublin 10 (known as Development Site 4 in the Park West Cherry Orchard Local Area Plan 2019). The site is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, Park West and Cherry Orchard rail station to the south east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west. This is an appropriate assessment screening for the proposed phase 2 development on a site of c.3.185ha. hectares, located on lands at Cherry Orchard, Dublin 10 (known as Development Site 4 in the Park West Cherry Orchard Local Area Plan 2019). The site is bounded by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, Park West and Cherry Orchard rail station to the south east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west.

The development will consist of the construction of a residential scheme containing 137no. residential dwellings (comprising 31no. 2-bedroom units, and 106no. 3-bedroom units) through a mixture of houses, duplex units and own-door apartments. The proposed development will include a new access road connecting to the entrance point at Park West Avenue as approved under the Phase 1 scheme, new internal streets, landscaped public and communal open space, a new pedestrian connection to Cloverhill Road and all associated site and development works. The proposed development represents Phase 2 of the overall planned development for Development Sites 4 and 5 of the LAP lands. Phase 1 of the overall planned development was granted permission in July 2024 (Bord. Ref: ABP-318607-23). The proposed development (GFA of c. 13,280sqm) involves the construction of 137no. dwellings in a mix of houses, duplexes and own-door apartments ranging in height from 2 to 3 storeys comprising 31no. two-bed units (9no. two-bed three-person and 22no. two-bed four-person) and 106no. three-bed units (13,015 sqm total residential floor area), and all ancillary accommodation including bike and bin stores and ESB substation (265sqm total GFA). The proposed development also includes the provision of 2,133sqm landscaped public open space, in addition to 2,050sq.m of public open space as approved under the

Phase 1 permission (Bord. Ref: ABP-318607-23). The total public open space provided for Phase 2 totals 4,183 sqm (12.34% of the net site/development area (3,390ha) of Phase 2 lands). Communal open space for the duplex and apartment units is provided across three dedicated communal amenity areas (602sq.m in total area) with private open space to serve the proposed units to be delivered through a mixture of rear gardens and terraces.

The proposed development will also involve the provision of 141no. car parking spaces at curtilage and street level throughout the development, of which 7no. are accessible spaces and 71no. EV charging points (representing 50% of the total parking spaces). A total of 306no. bicycle parking spaces, of which 18no. are visitor spaces accommodated through a mixture of bike stores and external cycle parking stands. A total of 7no. motorbike parking spaces are also provided.

Vehicular, pedestrian and cycle access routes to serve the proposed development are provided via the approved Phase 1 entrance to the east of the site along Park West Avenue with further connections provided to the north and to the south to the approved Phase 1 scheme. Provision is also made for the installation of a signalised access junction with associated traffic lights and below ground infrastructure and the relocation of bus stop and shelter along Park West Avenue.

The need to provide a signalised junction requires minor alterations to the entrance to the development including adjustment to the paving as previously approved under the Phase 1 scheme (no further amendments to that permission are proposed under this application.) The proposed development also

includes the provision of off-street cycle lanes along Park West Avenue that will provide direct connectivity to the Rail Station to the southeast and Cherry Orchard Park to the east.

The development will also provide for all associated ancillary site development works including site clearance, boundary treatment, associated public lighting, internal roads and pathways, bin and bike stores, ESB substation, hard and soft landscaping, play equipment, and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

This environmental report assesses the likely significant effects (both alone and cumulatively with other projects) that the proposed development may have on Biodiversity, Flora and Fauna and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance which includes species and habitats with national and international protection under the Wildlife Acts 1976 as amended, EU Habitats Directive 92/43/EEC, as amended.

The Introduction provides a description of the legislation, guidance and policy context as they apply to Biodiversity i.e. the diversity of Flora and Fauna. This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors. A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.

Potential Cumulative effects in combination with other projects are fully assessed. Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures. The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity, Flora and Fauna. The following defines terms utilised in this chapter: For the purposes of this chapter, the entire project is referred to as 'the Proposed Development'. The following defined terms are utilised in this chapter:

For the purposes of this environmental report, the phase 2 of this project is referred to as 'the Proposed Development'.

For the purpose of this environmental report "Key Ecological Receptor" (KER) is defined as a species or habitat (of National or international importance) occurring within the zone of influence of the development upon which likely significant effects are anticipated.

"Zones of Influence" (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOIs differ depending on the sensitivities of particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.

8.2 National Legislation

The Wildlife Act, 1976, as amended (the Wildlife Act), is the principal piece of legislation governing protection of wildlife in Ireland. The Wildlife Act provides strict protection for species of conservation value. The Wildlife Act conserves wildlife (including game) and protects certain wild creatures and flora. These species are therefore considered in this report as Ecological Receptors as distinct from Key Ecological Receptors. Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that are designated for the protection of flora, fauna, habitats and geological sites. Only NHAs are designated under the Wildlife (as amended) Act. These sites do not form part of the Natura 2000 network of European sites and the AA process, or screening for same, does not apply to NHAs or pNHAs. Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, these sites are

considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future (NPWS, 2020).

The Flora (Protection) Order, 2022 (S.I 235/2022) lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Acts. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens and stoneworts. Under the Flora Protection Order. It is illegal to cut, pick, collect, uproot or damage, injure or destroy species listed or their flowers, fruits, seeds or spores or wilfully damage, alter, destroy or interfere with their habitat (unless under licence).

8.2.1 National Policy

Ireland's 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature. The 4th NBAP has been developed with the support, advice and input of the interdepartmental Biodiversity Working Group and the independent Biodiversity Forum. Ireland's 2nd National Biodiversity Conference was held to gather insights and recommendations for the development of the NBAP and a public consultation process was held to provide further opportunities to engage with the Plan.

The 4th NBAP strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. The aim is to ensure that every citizen, community, business, local authority, semi-state and state agency has an awareness of biodiversity and its importance, and of the implications of its loss, while also understanding how they can act to address the biodiversity emergency as part of a renewed national effort to "act for nature".

This National Biodiversity Action Plan 2023-2030 builds upon the achievements of the previous Plan. It will continue to implement actions within the framework of five strategic objectives, while addressing new and emerging issues:

- Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity
- Objective 2 - Meet Urgent Conservation and Restoration Needs
- Objective 3 - Secure Nature's Contribution to People
- Objective 4 - Enhance the Evidence Base for Action on Biodiversity
- Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives

The 4th National Biodiversity Action Plan (NBAP) (2023-2027) (Department of Culture, Heritage and the Gaeltacht, 2023) (the "Plan") demonstrates Ireland's continuing commitment to meeting and acting on its obligations to protect Ireland's biodiversity for the benefit of future generations through a series of targeted strategies and actions. The main objective of the Plan is to bring biodiversity into the mainstream of policy and decision-making. The 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2027. The Plan will aim to improve the governance of biodiversity in Ireland so that we can better respond to the biodiversity crisis. This means ensuring a 'whole of Government', 'whole of society' approach to this crisis, and properly recognising biodiversity's contributions to people, the economy and society. The Plan will also address the connections between biodiversity and climate change, and the need to enhance the evidence base for biodiversity conservation policy and practice.

Such policies have informed the evaluation of ecological features recorded within the study area and the ecological assessment process.

8.3 European Legislation

The EU Habitats Directive (92/43/EEC) (the “Habitats Directive”) (together with Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive), as subsequently codified by Council Directive 2009/147/EC on the conservation of wild birds) forms the cornerstone of nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. The Habitats Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance. The Habitats Directive and Birds Directive, which were transposed into Irish law through Part XAB of the Planning and Development Acts 2000 as amended (the PDA) (from a land use planning perspective) recognise the significance of protecting rare and endangered species of flora and fauna, and more importantly, their habitats. Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Habitats Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures.

In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both Annex II and Annex IV. The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) is expressly forbidden.

The “Birds Directive” requires Member States to take measures to maintain populations of all bird species naturally occurring in the wild within the EU (Article 2). Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species requiring special conservation measures in relation to their habitats have been identified in the Directive and are listed in Annex 1. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4). In summary, the species and habitats afforded National and International protection under these legislative and policy documents have been considered in the Ecological Impact Assessment carried out for the purpose of the proposed development. A detailed assessment of the likelihood of the proposed development having either a significant effect or an adverse impact on any relevant European Sites (i.e. SACs, cSACs, SPAs or cSPAs) has been carried out in the Appropriate Assessment Screening Report. A separate assessment has not been carried out in this chapter, to avoid duplication of assessments. However, the relevant conclusions have been cross-referenced and incorporated.

8.4 Scoping/Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the National Road Authority (NRA)’s Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2 (NRA, 2009) (referred to hereafter as the NRA Ecological Impact Assessment Guidelines), and the survey methodology is based on the NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type (NRA guidelines are considered best practice guidelines as the suggested

methodologies are applicable across a large range of projects that employ comparable construction materials and methods).. In addition, the following guidelines were consulted in the preparation of this document to provide the scope, structure and content of the assessment: Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal (CIEEM, 2018 updated September 2024) (the CIEEM Guidelines). This assessment has been carried out in accordance with this Environmental Impact Assessment guidance.

The EPA guidelines on EIAR have also been adhered to and this chapter contains information identifying, describing and assessing 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).'

In addition to the above, the following legislation applies with respect to habitats, fauna and water quality in Ireland and has been considered in the preparation of this report: The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971) S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009,as amended, and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003, as amended, which give further effect to EU Water Framework Directive (2000/60/EC),as amended. Planning and Development Acts 2000 – 2024.

Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011) apply with respect to non-native species.

8.5 Statement of Authority for Gerard Tobin BSc. (Zoology) MA

Gerard Tobin, BSc (Zoo), M.A., is an Ecological Consultant with 25 years' experience. He is a member of the Ecologist Panel with N.P.W.S. and a member of the Bat Expert Panel with both N.P.W.S and the Heritage Council.

His sample client list includes Tipperary County Council, South Dublin County Council, McConville and Associates Landscape Architects, Heritage Council, NPWS, William McGarry Engineers, Muyllaert & Associates Environmental Consultants., Fewer Harrington Lawlor & Partners Architecture & Engineering Specialists, Bluett and O`Donoghue Architecture and Engineering Specialists, among others.

He has been an ecological consultant on Hen Harrier and Corn Crake Farm Plans administered by NPWS under the Rural Environmental Program.

He worked for two years with Conservation Education Trust (CET), an environmental NGO in South County Dublin ,where he liaised with Dun Laoghaire Rathdown County Council`s Parks Department.

He has advised South Dublin County Council on the control and management of Giant Hogweed and Japanese Knotweed in the area around Loughlinstown, Co. Dublin.

He has advised farmers in the Hen Harrier Farm Plan scheme and landowners with planning applications on the control of Japanese Knotweed.

He is currently under contract to Russell Environmental and Sustainability Services to provide ecological reports about bats, squirrels and owls.

He is currently providing in-house ecological services for Mount Juliet Estate in Kilkenny.

From 1998 to 2019 he was a visiting lecturer in UCD, in the Science and Archaeology Departments, lecturing at post graduate (Masters Degree) level to students in a Sustainable Development Module (MSc. World Heritage Management).

8.6 Invasive species survey

During the walkover surveys, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

Buddleia davidii appears to be the sole invasive non-native species present especially in the plot across the main road to the east of the main site.

Survey limitations

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary screening approach with regard to the identification of KERs and Target Receptors. Following a comprehensive desk study, initial site visits (main ecological surveys of the site undertaken Site Visits **06/07/2022, 07/07/2022, 10/07/2022, 11/07/2022, 23/04/2023, 24/04/2023, 22/04/2024, 23/04/2024 10/11/2024)** and stakeholder consultation; “Target receptors” likely to occur in the zone of influence of the development were identified. The target receptors included habitats and species that were protected under the following legislation: Annexes of the EU Habitats Directive Qualifying Interests (QI) of Special Areas of Conservation (SAC) within the likely zone of impact. Species protected under the Wildlife Act. Species protected under the Flora Protection Order 2022.

Habitats were identified using “Guide to Habitats in Ireland”, Fossitt J., Heritage Council 2000. The site has the following habitat classifications;

There is one main habitat within the study area:

Mosaic of Dry Meadows and Grassy Verges (GS2), Recolonising Bare Ground (ED3). There are associated hedgerows (WL1) with an area of Scrub(WS1) to the east across the road .

The timing has certain limitations and certain flora and fauna may be missed due to the time of year. This limitation has been minimized by choosing seasonally diverse fieldwork timings.

Mosaic habitat: This is a heavily modified habitat as a result of human interference. The mosaic nature of the habitat stems from the years of neglect and has resulted in the encroachment of hedgerow into the meadow habitats. The grasses within the study area are all lodged and ungrazed.

The orchids are found clustered around the western boundary with the motorway in the recolonising bare ground section of the site at GR IO 07758 32794.

The sedges and rushes appear to occupy an area that at some stage was waterlogged within the recolonising bare ground.

The area currently bounding the railway track is characterised by Buddleia and Alder (Alnus spp.)

The boundary with the motorway is a substantial hedgerow with dense tree and ground flora. This area is outside the boundary of the proposed development site.

Flora

Holly (Ilex aquilfolium)

Elder (Sambucus niger)

Bramble (Rubus spp)

Elm suckers.(Ulmus spp,)

Ash (Fraxinus excelsior)

Willow (Salix spp.)

Lonicera spp. hedge.

Sycamore. (Acer pseudoplatanus)

Holly (Ilex spp)

Clevers, (Galium aparine),

Creeping buttercup, (Ranunculus repens,

Chickweed, (Stellaria media),

Nettle, (Urtica dioica),

Dock, (Rumex obtusifolius),

Bindweed, (Convolvulus arvensis),

Thistle, (Cirsium arvense),

Bramble, (Rubus fruticosus),

Sun spurge,(Euphorbia helioscopia),

Ribwort Plantain (Plantago lanceolata),

Dandelion,(Taraxacum officinale),

Hawks beard,(Crepis capillaries),

Clover, (Trifolium pratense),

Herb Robert,(Geranium robertianum),

Groundsel, (Senicio vulgaris),

Cranesbill,(Geranium dissectum),

Rose bay willow herb, (Epilobium angustifolium,

Daisy, (Bellis perennis),

Ivy (Hedra helix),

Fathen (Chenopodium album)

Fumitory (Fumaria officinalis),

Lesser Celidine (Ranunculus ficaria),

Fools Parsely (Aethusa cynapium),

Buddleja,

Yarrow, (Achillea millefolium),

Ragwort (Senecio jacobaea),

Hogweed (Heracleum sphondylium),

Burdock (Artium lappa)

Teasel (Dipsacus fullonum)

Alder (Alnus glutinosa)

Birch (Betula pubescens)

Silverweed (Potentilla anserine)

Blackthorn (Prunus spinosa)

Meadowsweet (Filipendula ulmaria)

Oxford Ragwort (Senecio squalidus) Along the boundary with the railway.

Willow (Salix spp)

Marsh Orchd (Dactylorhiza spp.)

Pyramidal Orchis (Anacamptis pyramidalis)

Sedges (Carex spp)

Rushes (Juncus spp.)

and grasses including; Yorkshire fog (Holcus lanatus) Scutch (Elymus repens), Annual meadow grass (Poa annua), Cocksfoot (Dactylis glomerata) and False oat (Arrhenatherum elatius).

Fauna

Fauna was identified by visual, and spraint evidence and the probable presence of certain species was ascertained by the availability of suitable habitat. Terrestrial vertebrate and invertebrate fauna on-site can be assumed to be mobile and capable of movement between the various habitats.

Invertebrates

Cinnabar Moth

Shield Bug (Acanthasomosa haemorrhoidale)

Earwig (Forficula auricularia)

Honey Bee (Apis mellifera spp.)

Ladybird (Coccinell 7-punctata)

Garden Spider (Araneus diadematus)

Woodlouse (Oniscus asellus)

Orange Tipped Butterfly (Anthocaris cardamines)

This is not an exhaustive list of the invertebrate species and is merely representative of the species found during field work.

Birds

Pied wagtail (Motacilla alba)

Thrush (Turdus philomelos)

Blackbird (Turdus merula)

Blue Tit (Parus caerulus)

Great Tit (Parus major)

Chaffinch (Fringilla coelebs)

Greenfinch (Carduelis chloris)

Magpie (Pica pica)

Jackdaw (Corvus monedula)

Hooded Crow (Corvus corone)

Rook (Corvus frugilegus)

Sparrow Hawk (Accipiter nisus)

Robin (Erithacus rubecula)

Starling (Sturnus vulgaris)

Wren (Trogolodytes trogolodytes)

Dunnock (Prunella modularis)

Woodpigeon (Columba palumbus)

Feral Pigeon (Columba livia)

Goldcrest (Regulus regulus)

Swallow (Hirundo rustica) ,

Greenfinch (Carduelis chloris)

House Sparrow (Passer domesticus)

Tree Creeper (Certhia familiaris)

Meadow pipit (Anthus pratensis) nesting in the recolonizing bare ground

Herring Gull (Larus argentatus)

Buzzard (Buteo buteo)

Were all seen and heard during site visits.

Brent Geese are unlikely to forage in the area as they need cropped grass as a food source and the hedgerows present will prevent access to the open area for a species that need a glide path to land.

Mammals

No suitable roosting areas were seen for Bats (Chiroptera) within the site but a foraging presence is present (see bat surveys G. Tobin 06/07/2022 and 07/07/2022. 23/05/2023, 24/05/2023, 22/04/2024, 23/04/2024)

Pipistrelle (Pipistrellus pipistrellus)(Red Data Book 2,Hab. Dir. 4,Bern Convention 3)

Soprano Pipistrelle (P. pygmaeus) (as per common)

Leislers Bat(Nyctalus leisleri)(Red Data Book 2,Hab. Dir. 4,Bern Convention3)

Fox (Vulpes vulpes) denning within the site

Rat (Rattus norvegicus)

Hedgehog (Erinaceus europaeus) (Red Data Book 2,Bern Convention 3)

Field mouse (Apodemus sylvaticus)

Pygmey shrew (Sorex minitus)

Rabbit (Orcytolagus cuniculus)

Stoat (Mustela erminea)

Can all be expected on-site.

No badger setts were found and the absence of available forage areas would suggest that badgers are absent as a breeding species in the locality.

Determining Importance of Ecological Receptors

The importance of the ecological features identified within the study area was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. The guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

High Value:

International Importance

National Importance

County Importance

Local Importance (higher value)

Low Value:

Local Importance (lower value)

The Guidelines clearly set out the criteria by which each geographic level of importance can be assigned.

Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and are of importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally Important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the guidelines and have been

followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors. Any ecological receptors that are determined to be of National or International, County or Local importance (Higher Value) following the criteria set out in NRA (2009) are considered to be KERs for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be Key Ecological Receptors.

There are no Key Ecological Receptors present on site. The mosaic habitat is of Local Importance only (Low Value). Habitas of national and international importance are not present and species of national or international importance, such as bats, forage solely on the boundaries of the site and will not be impacted by this proposed development.

Characterisation of Impacts and Effects

The proposed development will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM Guidelines. These guidelines are the industry standard for the completion of Ecological Impact Assessment in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA guidance (EPA 2022). The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below: Positive or Negative. Assessment of whether the proposed development results in a positive or negative effect on the ecological receptor.

Extent is the description of the spatial area over which the effect has the potential to occur.

Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.

Duration is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.

Frequency and Timing relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.

Reversibility is a consideration of whether an effect is reversible within a ‘reasonable’ timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

8.7 Determining the Significance of Effects

The ecological significance of the effects of the proposed development are determined following the precautionary principle and in accordance with the methodology set out in Section 5 of CIEEM (2018). For the purpose of Ecological Impact Assessment (EcIA), ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018). When determining significance, consideration is given to whether:

Any processes or key characteristics of key ecological receptors will be removed or changed.

There will be an effect on the nature, extent, structure and function of important ecological features.

There is an effect on the average population size and viability of ecologically important species.

There is an effect on the conservation status of important ecological habitats and species.

The EPA Guidelines on information to be included in Environmental Impact Assessment Reports (EPA, 2022) and the Guidelines for assessment of Ecological Impacts of National Road Schemes, (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines. The terminology used in the determination of significance follows the suggested language set out in the EPA Guidelines (2022)

Criteria for determining significance of effect, based on (EPA, 2022) guidelines.

Effect Magnitude Definition:

No change: No discernible change in the ecology of the affected feature.

Imperceptible effect: 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 significant consequences.

Slight effect: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate effect: An effect that alters the character of the environment that is consistent with existing and emerging trends.

Significant effect: An effect which, by its character, its 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 effect: An effect which obliterates sensitive characteristics. As per TII (NRA, 2009) and the CIEEM CIEEM Guidelines, the following key elements should also be examined when determining the significance of effects.

The likely effects on 'integrity' should be used as a measure to determine whether an impact on a site is likely to be significant (NRA, 2009). Integrity, in the context of EIAR, refers to the coherence of the ecological structure and function, across the entirety of a site, which enables it to sustain all of the ecological resources for which it has been, valued (NRA, 2009). Impacts resulting in adverse changes to the nature, extent, structure and function of component habitats and effects on the average population size and viability of component species, would affect the integrity of a site, if it changes the condition of the ecosystem to unfavourable.

There are no habitats or species characterised as Key Ecological Receptors on site.

Conservation status

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. According to the CIEEM Guidelines the definition for conservation status in relation to habitats and species are as follows: Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

Its natural range, and areas it covers within that range, are stable or increasing.

The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.

The conservation status of its typical species is favourable.

The conservation of a species is favourable when:

Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.

The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.

There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the NRA/CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological feature 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).

Incorporation of Mitigation Section assesses the potential effects of the proposed development to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

There are no Key Ecological Receptors on site and as such mitigation measures are unnecessary to protect these.

Limitations

The information provided in this assessment accurately and comprehensively describes the baseline ecological environment following surveys on numerous dates during all seasons and over a number of years (**Site Visits 06/07/2022, 07/07/2022, 10/07/2022, 11/07/2022, 23/04/2023, 24/04/2023, 22/04/2024, 23/04/2024 10/11/2024)** provides an accurate prediction of the likely ecological effects of the proposed development; prescribes best practice and mitigation as necessary; and, describes the residual ecological impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. The habitats and species on the site were readily identifiable and comprehensive assessments were made during the field visit. No significant limitations in the scope, scale or context of the assessment have been identified.

8.8 Establishing the Ecological Baseline

8.8.1 Desktop Study

A survey of published material was consulted as part of the desk study for the purposes of the ecological assessment. It provides a baseline of the ecology known to occur in the existing environment. Material reviewed includes the Site Synopses for designated sites within the zone of influence, as compiled by the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht, bird and plant distribution atlases and other research publications.

Identification of the Designated Sites within the Likely Zone of Influence of the Proposed Development

The potential for the proposed development to impact on sites that are designated for nature conservation was considered in this chapter of the EIAR. Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under the EU Habitats Directive and EU Birds Directive, respectively and are collectively known as ‘European Sites’. The potential for significant

effects and/or adverse impacts on the integrity of European Sites is fully assessed in the AA Screening Report that accompanies this application. As per EPA Guidance 2022, "*a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement" but should "incorporate their key findings as available and appropriate".*

The potential for effects on these designated sites is fully considered in this Biodiversity chapter of the EIAR. Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in this EcIA. The following methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the proposed development: Initially the most up to date GIS spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 06/05/2023.

The datasets were utilised to identify Designated Sites which could feasibly be affected by the proposed development. All designated sites within a distance of 15km (as set out under DoEHLG, (2010) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.Town D0177-01. Environmental Protection Agency) surrounding the proposed development site were identified. In addition, the potential for connectivity with European or Nationally designated sites at distances of greater than 15km from the proposed development was also considered in this initial assessment.

All European Designated Sites are fully described and assessed in the Screening for Appropriate Assessment report submitted as part of this planning application. The designation features of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 29/01/2025. Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.

8.8.2 Conclusions of the Desktop Study

The desktop study has provided information about the existing environment in Cherry Orchard, within which the proposed development site is located.

The site is not nationally important and is of Low value, Local Importance.

A review of bat roost records for the area did not identify any roosts within or immediately adjacent to the proposed development. The mammal species recorded during the desk study informed the survey methodologies undertaken during the site visits. The desk study also provided useful information to inform the ecological surveys undertaken on site as well as the identification of pathways for potential impact on sensitive ecological receptors.

Ecological Walkover Survey Results

Description of Habitats and Flora within the Ecological Survey Area The habitats on the site of the proposed development were the subject of a detailed survey and assessment No invasive species, listed on the Third Schedule of the S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, were recorded within the study area. The only non-native invasive species recorded on site include butterfly bush (Buddleja davidii). Although an invasive species, this are not listed on the Third Schedule. No botanical species protected under the Flora (protection) Order (as amended 2022) were recorded during the survey.

Significance of Habitats

Ecological evaluation follows a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). The habitats within and

adjacent to the proposed development site were evaluated in accordance with the criteria developed by the NRA (2009b), which classifies sites in terms of their ecological importance, i.e. 'international importance', 'national importance', 'county importance', 'local importance (higher value)' or 'local importance (lower value)'. Following the extensive surveys that were undertaken, it is concluded that the habitats within the study are those that are classed as Low value, Local Importance.

Fauna

Dedicated faunal walkover surveys were undertaken at the site on the following dates: **06/07/2022, 07/07/2022, 10/07/2022, 11/07/2022, 23/04/2023, 24/04/2023, 22/04/2024, 23/04/2024 10/11/2024.**

In addition to the above targeted surveys, additional faunal signs/sightings were also recorded during other surveys including habitat assessments, bat surveys and bird surveys. The site was also visited on numerous additional occasions during the undertaking of bat surveys throughout the period of time that site walk overs were undertaken.

Bat surveys were undertaken on 06/07/2022, 07/07/2022, 23/05/2023, 24/05/2023 22/04/2024 and 23/04/2024 in accordance with Scottish Natural Heritage Guidance (SNH 2019), form the core dataset for the assessment of effects on bats at the proposed development site. It is supplemented by additional data derived from surveys undertaken on the site which were designed in accordance with the Bat Conservation Trust's guidelines. Bat surveys included roost survey, manual transects surveys and ground-level static surveys.

Other Fauna

During the walkover survey, signs of the following mammal species were recorded: Fox (Vulpes vulpes) scat was recorded at various locations throughout the study area. As signs of fox were regularly recorded throughout the site, the distribution of the species has not been mapped. Hare (Lepus timidus hibernicus) was not recorded throughout the study area nor were its droppings and footprints. The species would be expected to be widespread throughout the habitats present but local trespass and poaching are a factor in its non-occurrence.

Small mammal species such as pygmy shrew (Sorex minutus) and wood mouse (Apodemus sylvaticus) but also larger mammals such as stoat (Mustela ermina) and mink (Mustela vison) were detected or expected from the proposed development site.

Limited suitable habitat occurs on site for protected faunal species. No signs of any additional protected fauna were recorded within the study area during the field survey. The study area provides habitat for a range of other faunal species as described in the preceding sections.

However, due to the footprint and nature of the proposed development, they are likely to be significantly affected by the proposed development. They are however not considered to be Key Ecological Receptors. For this reason, these species are not considered further in this EIAR. Incidental records of invertebrate were recorded during the walkover surveys of the site.

Bats The habitats surrounding the proposed works location are likely to be utilised by a bat population of Local Importance (higher value). All bat species in Ireland are protected under both national legislation – (Wildlife Act, 1976, as amended in 2017) and European legislation – (Habitats Directive (92/43/EEC). Bats are likely to forage and commute within the vicinity of the proposed development. No potential bat roosting features were identified within or adjacent to the proposed development footprint.

Commuting and foraging recorded during field work indicates that species are currently following a route through the southern tip of the proposed development. The bats are flying at an approximate height of 30m (based on receiver strength of the bat detectors and infra-red observation).

Do-Nothing Effect If the proposed development were not to proceed, the site would continue to deteriorate as more scrub intrusion and trespass/fly tipping become more prevalent.

Effects on Designated Sites

None of the elements of the proposed development are located within the boundaries of any Nationally or European designated sites important for nature conservation There will be no direct effects on any designated site as a result of the construction and operation of the proposed development.

This screening process was carried out to ascertain if the project was likely to have significant effects on the Natura 2000 sites within the threshold distance of the project site. If this were the case, then it would be necessary to carry out an Appropriate Assessment.

While noting that EPA guidelines indicate that biodiversity reports should not repeat a detailed assessment of potential effects on European sites it is important to note that following an Appropriate Screening it was concluded that the project poses no potential for significant effects on Natura 2000 sites and as such requires no further Appropriate Assessment.

The proposed development will result in the loss of areas of habitat that are of Local Importance (Lower Value) and are not identified as KERs. Any direct or indirect impacts on these habitats are not significant in either a local or national context.

Effects on Protected Fauna During Construction

The proposed development has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded on the site but were not included as KERs. Although foxes are not a protected species should fox dens be discovered during construction work then avoidance of the den site will be initiated until completion of breeding is achieved.

Effects on Habitats Post Construction

The operation of the proposed development will not result in any additional negative impacts on protected species or habitats.

These habitats are not considered to be a KER in the context of the operation of the proposed development.

The addition of new plantings post construction will broaden the habitat base resulting in new “niche” opportunities opening for both flora and fauna.

Effects on Fauna during Operation

The operation of the proposed development has the potential to result in significant effects on the terrestrial fauna at the site of the proposed development. There is alternative habitat available within the current road margins along the M50 and species may relocate here.

None of the species currently occurring are deemed to be Key Ecological Receptors.

8.9 Mitigation Measures

Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

There are no Key Ecological Receptors on site and as such mitigation measures are unnecessary to protect these.

Bats currently commute/forage along the southern boundary with the railway at a height of c. 30 m (Bat surveys G, Tobin). The current proposed development will not negatively impact on this activity.

8.10 Cumulative impact

The proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on European Sites, Nationally designated sites and protected species. This included a review of online Planning Registers and served to identify past and future plans and projects, their activities and their predicted environmental effects. This proposed development will have little significant negative impact in combination or cumulatively with other planned projects proposed for the locale.

There is a number of planning applications and grants of planning to be considered as part of this chapter.

4313/22 (Part 8 Application) Cherry Orchard Green, Dublin 10 Proposed construction of a residential development comprising 172 no. dwellings (141 no. 3- bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot City Council – Approved 03.10.2022.

312290 Park West Avenue and Park West Road, Park West, Dublin 12 750 no. apartments, creche and associated site works. Granted 16.06.2022.

3403/21 Site (1.26 ha) at Blocks 70 and 72 Park West Avenue and Park West Road, Park West, Dublin 12. Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72. Granted 21.10.2021.

SD188/0006 (Part 8 Application) New Nangor Road, Clondalkin, Dublin 22. Social Housing Development comprising of two and three storey housing and apartment Part 8 Approved by Council 08.10.2018.

4313/22 (Part 8) Key Development Site 1

The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3 bedroom two-storey terraced houses and 31 no. 2- bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on- street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces. Granted 03-10-2022.

Key Development Site 2 None

Key Development Site 3a None

Key Development Site 3b None

318607 Key Development Site 4

Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys Granted 09-07-2024.

Key Development 5 None

312290 Key Development Site 6

The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm Granted 16-06-2022.

Key Development Site 7 None

Key Development Site 8 None

Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary

3403/21 Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted. Granted 6/12/2021.

SD188/0006* (Part 8) New Nangor Road, Clondalkin, Dublin 22.

Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3- bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.

The following applications are South Dublin County Council:

SD21A/0100* Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,

Construction of a revised two storey mono-pitched Discount Foodstore. Granted 17/06/2021.

3999/21 Unit 55, Park West Road, Park West Industrial Park, Dublin 12

PERMISSION; RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately. Granted 04/02/2022.

312290 Park West Avenue and Park West Road, Park West, Dublin 12

Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site

known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floor space Granted 16/06/2022.

SD20A/0309*; SD22A/0093* 3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22

Provision of 4 new information and communications technology (ICT) facility Granted 23 Mar 2021

SD19A/0185* 3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.

Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068. Granted 31 Jul 2019

5311/22 Block 7, Parkwest Business Campus, Parkwest, Dublin 12

The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works. Granted 05Apr 2023

SD22A/0060* Cloverhill Industrial Estate, Cloverhill Road, Dublin 22

Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use. Granted 19 Jul 2022.

SD24A/0106* Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, Dublin 22.

The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business. Granted 12 Sep 2024

SD24A/0125W Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin

Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level. Granted 4th July 2024

SDZ22A/0010 The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and Whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin. The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit. Granted 2nd May 2023

The area is heavily developed with many residential and commercial projects already completed.

Potential proposals for the remainder of this site will entail similar connection to existing services and little impact from this accumulation of construction projects, both completed and proposed, is expected.

Cumulative impacts are of greater concern when there are Key Ecological Receptors present or where there is a potential to negatively impact on national or internationally important sites. In this proposed development there are no KER`s present and no potential to impact national or international sites.

In considering this proposal the current mix of residential and commercial units on all adjoining sites was considered as was the potential for future development on the remaining portion of this site. Future plans for sites elsewhere in the locality are constrained by the paucity of available, suitable, sites. Any future developments in this area will not cumulatively impact the present site as it is already degraded by fly tipping, antisocial behaviour, lack of grazing and the pressures on flora and fauna resulting from these. Development of this site and other sites within the environs will result in the creation of new habitats and niche opportunities. The removal of habitats and species that are not KERs will result in the loss of either habitats or species that are considered to be KERs.

The residual construction and post operational/construction impacts of the proposed development are considered cumulatively with other plans and projects as described above. Particular focus has been placed on those plans and projects that are in closest proximity to the proposed development.

All other construction activity in the locality is completed with mixed commercial and residential units evident in adjoining sites.

Potential future plans for the remainder of this site have been considered.

As such, there is no potential for the proposed development to contribute to any significant cumulative habitat loss when considered in combination with any other plans and projects.

No significant effects as a result of the proposed development in relation to disturbance, displacement or mortality of faunal species has been identified. Therefore, there is no potential for the proposed development to contribute to any cumulative effect in this regard. The proposed development will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects. In the review of the projects that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Specifically, there will be no loss of Key Ecological Receptor habitats or species. There will be no impact on population numbers of Key Ecological Receptors.

There will be no fragmentation of Key Ecological Receptor habitats or species.

There will be no negative impacts on Natura 2000 sites within the potential impact zone.

There will be no effect on the natural range of protected habitats or species, and areas they cover within that range, are stable or increasing.

The specific structure and functions which are necessary for the long-term maintenance of species and habitats exist and are likely to continue to exist for the foreseeable future.

The conservation status of habitats and species is favourable.

There will be no effects on the population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.

The natural range of the species will neither being reduced nor is likely to be reduced for the foreseeable future.

There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

8.11 Biodiversity Interactions

All environmental factors are interlinked to a degree such that interrelationships exist on numerous levels. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions which can be influenced by the proposed development. The purpose of examining these interactions is to draw attention to significant interaction and interrelationships in the existing environment. In preparing and co-ordinating this EIAR, each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development, ensuring that appropriate mitigation measures were incorporated into the design process.

Biodiversity / Soils

When soil is exposed after vegetative clearance there may be increased run-off and evaporation. Mitigation measures will be implemented during construction to prevent this run-off water from discharging directly to watercourses. Potential construction stage effects arising from the general loss and fragmentation of some habitats and reduction of associated opportunities for biodiversity are considered neutral to slight negative during the construction phase, while potential operational stage effects are considered imperceptible neutral as new planting/landscaping matures. Residual soils arising as a result of excavation at the development site will be used in landscaping works in the proposed public open space as much as possible rather than transporting off-site.

Biodiversity / Water

When land surfaces are exposed after vegetative clearance there may be increased run-off and evaporation. Mitigation measures will be implemented during construction to prevent this run-off water from discharging directly to watercourses. As concluded in the Appropriate Assessment Screening Statement submitted with the application there are no elements of the proposed development that are likely to give rise to significant effects on the local Natura 2000 sites. The implementation of construction and operational phase soils and water management proposals, together with the site drainage design will adequately reduce such potential impacts arising from the proposed development site on these aquatic habitats in the wider area. Potential construction and operational phase effects on biodiversity associated with aquatic habitats in the wider area are considered imperceptible neutral with the implementation of soils and water management proposals.

Biodiversity / Noise /Air Quality

Increased noise levels during the construction phase will only be temporary and are not expected to have a long-term significant adverse effect upon remaining fauna within the wider landscape. Operational noise will be audible at a low level in the ambient noise and the impact is predicted to be minor.

Exposed soil during the construction phase of the proposed scheme may give rise to increased dust emissions. However, the implementation of dust management and dust control measures will ensure that the proposed development will not give rise to the generation of any significant quantities of dust.

Biodiversity / Landscape

The landscape masterplan proposed as part of the proposed development will retain and enhance the remaining hedgerows features with native planting, tree cluster/treelines, small areas of wildflower

meadow and parkland/garden habitat. Potential construction stage effects arising from the general loss and fragmentation of some habitats and reduction of associated opportunities for biodiversity are considered neutral to slight negative during the construction phase, while potential operational stage effects are considered imperceptible neutral as new planting/landscaping matures. Due to the existing degraded nature of the habitats on site the loss of these will have little residual negative impact on this locality and no residual impact in the national or international context. Otherwise, the successful implementation of the mitigation measures as outlined in this EIAR and accompanying documents, together with the landscape masterplan will minimise the potential impacts of the proposed development on local biodiversity such that its residual impact on other habitats, flora and fauna will be imperceptible neutral overall. There will be an increase in ecological niche availability associated with the post construction phase of this proposed development. The removal of some vegetation within the development footprint and surrounding areas is likely to result in a change to the visual landscape during the construction phase, which will become part of the normal landscape of the wider area for the duration of the operational phase. The visual effect of this change is considered to be long-term, localised and slight.

8.12 Conclusion

Following desktop and fieldwork scoping studies it can be shown that there will be no significant adverse effects as a result of the proposed development in relation to disturbance, displacement or mortality of faunal species has been identified.

Equally it has been shown that there will be no significant adverse impacts on habitats or species of conservation concern.

Therefore, there is no potential for the proposed development to contribute to any cumulative effect to a loss of Key Environmental Receptors. The proposed development will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects.

Specifically:

- There will be no loss of Key Ecological Receptor habitats or species. There will be no impact on population numbers of Key Ecological Receptors.
- There will be no fragmentation of Key Ecological Receptor habitats or species.
- There will be no negative impacts on Natura 2000 sites within the potential impact zone.
- There will be no effect on the natural range of protected habitats or species, and areas they cover within that range, are stable or increasing.
- The specific structure and functions which are necessary for the long-term maintenance of species and habitats exist and are likely to continue to exist for the foreseeable future post construction.
- The conservation status of habitats and species is favourable.
- The natural range of species of conservation concern will neither be reduced nor is likely to be reduced for the foreseeable future.
- There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.
- There will be a net increase in biodiversity post construction with the creation of new habitats and an increase in available ecological niches. Currently the habitat on site is a degraded mosaic habitat. With the proposed development new habitats will be created i.e. Amenity Grassland (GA2), Scattered Trees and Parkland (WD5), Buildings and Artificial Surfaces (BL3), Treelines (WL2) and Hedgerows (WL1) with associated new niche opportunities for flora and fauna.

8.13 Bibliography

- Cabot, D. (2021) Irish Birds (New Edition) William Collins Books, Harper Collins Books, Ringsend, Dublin 4
- CIEEM CIEEM Version 1.2 Updated Sept 2024 GUIDELINES FOR ECOLOGICAL IMPACT ASSESSMENT IN THE UK AND IRELAND Terrestrial, Freshwater, Coastal and Marine (Chartered Institute for Ecology and Environmental Management)
- CIRIA, (2002). Control of Water Pollution on Construction Sites- Guide to Good Practice (SP156). 6 Storey's Gate, Westminster, London.
- CIRIA, (2001). Control of Water Pollution from Construction sites- Guidance for Consultants and Contractors (C532). 6 Storey's Gate, Westminster, London.
- CIRIA, (2006). Control of Water Pollution from Linear Construction Projects -Technical Guidance (C649). 6 Storey's Gate, Westminster, London.
- CIRIA, (2006). Control of Water Pollution from Linear Construction Projects- Site Guide (C649). 6 Storey's Gate, Westminster, London.
- CIRIA, (2005). Environmental Good Practice – Site Guide (C650). 6 Storey's Gate, Westminster,London.
- Dempsey E.,O'Cleary M. "The Complete Guide to Ireland's Birds" 2nd Edition., Gill and Macmillan 2002.
- DoEHLG, (2010) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.Town D0177-01. Environmental Protection Agency..
- EEC" (2019/C 33/01) "Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/
- EEC" (2021/C 437/01) "Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/
- DoEHLG, (2010) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin. Town D0177-01. Environmental Protection Agency..
- EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (HabitatsDirective) 1992.
- Environmental Protection Agency(2022) "Guidelines on the information to be contained in Environmental Impact Assessment Reports"
- European Commission. 2000. Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- European Commission. 2002. Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2000) Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2000a) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Luxembourg: Office for Official Publications of the European Communities.
- European Commission (2002) Assessment of Plans and Projects significantly affecting Natura 2000 sites, Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EC. Luxembourg: Office for Official Publications of the European Communities.
- European Commission (2002) Managing Natura 2000 sites: The provisions of Article 6 of 'The Habitats' Directive 92/43/EEC.

- European Commission (2006) Nature and Biodiversity Cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2007) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC.
- European Commission (2007a) EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons for overriding public interest, compensatory measures, overall coherence. Opinion of the Commission.
- European Commission (2007) Directorate-General for Environment, Terry, A. and Temple, H., The status and distribution of European mammals, Publications Office, 2007,
- European Commission (2013) Interpretation Manual of European Union habitats EUR 28.
- European Commission (2017) Natura 2000 and spatial planning, Publications Office, 2017, https://data.europa.eu/doi/10.2779/2947.
- European Commission (2019) Managing Natura 2000 sites: The provisions of Article 6 of 'The Habitats' Directive 92/43/EEC. (Commission Notice 2018)
- European Commission (2020) Directorate-General for Environment, Guidance document on wind energy developments and EU nature legislation, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2779/095188
- European Commission (2021) Assessment of plans and projects in relation to Natura 2000 Sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EC. Available at: https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX%3A52021XC1028%2802%29
- European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive. (Commission Notice 2018) Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=PI_COM:C(2021)7301
- European Commission (2021) The strict protection of animal species of Community interest under the Habitats Directive, Guidance document – A summary. Directorate-General for Environment, Publications Office of theEuropean Union, Available at: https://data.europa.eu/doi/10.2779/3123
- European Commission (2022) Directorate-General for Environment, Europeanredlist of birds 2021, https://data.europa.eu/doi/10.2779/959320
- European Commission. 2007. Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC
- European Commission. 2007. EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission. IEEM. 2006.
- Fossitt J., "A Guide to Habitats in Ireland", The Heritage Council 2000.
- Hayden T and Harrington R., 2000, "Exploring Irish Mammals" Town House and Country House Ltd, .
- IFI, (2010). IFI Biosecurity Protocol for Field Survey Work. Inland Fisheries Ireland, Swords Business Campus, Swords, Co. Dublin, Ireland.
- IFI, (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, Swords Business Campus, Swords, Co. Dublin, Ireland.
- Marnell, F, Kingston, N and Looney, D. NPWS, Ireland Red List no. 3 Terrestrial Mammals, Dept. Of the Environment, Heritage and Local Govt. Dublin 2009.
- NPWS . Site synopses of Natura sites accessed July 2024
- NPWS (2013a) The Status of EU Protected Habitats and Species in Ireland. Habitat Assessments Volume 2. Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

- NPWS (2013b) The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- NPWS Conservation Objectives Natura Sites accessed July 2022
- NRA, (2010). Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads. National Roads Authority, St Martin's House, Waterloo Roads, Dublin 4.
- OPR (2021) Appropriate Assessment Screening for Development Management, Practice Note PN01. Office of the Planning Regulator March 2021.
- OPR (2021) Environmental Impact Assessment Screening, Practice Note PN02. Office of the Planning Regulator June 2021.
- Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. (2010)Ireland Red List no. 4 Butterflies, NPWS, Dept. Of the Environment, Heritage and Local Govt. Dublin 2009.
- Webb D.A., Parnell J. and Doogue D., 1996 “An Irish Flora”, Dungalgan Press Ltd, Dundalk.
- Whilde A., 1993 “The Irish Red Data Book 2: Vertebrates”, HMSO Belfast
- https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

9 Archaeological, Architectural and Cultural Heritage

9.1 Introduction

This archaeological, architectural and cultural heritage assessment was undertaken at Cherry Orchard, Dublin 10 in advance of future development. The objective of the study was to identify and record the location, nature and dimensions of archaeological or cultural heritage features, fabric or artefacts that may be impacted by proposed development, gauge the level of impact and include recommendations for potential mitigations necessary. The study included an examination of existing documentary sources, which was completed in tandem with non-intrusive walkover, geophysical survey and licensed archaeological test trench assessment.

The study was undertaken by Maeve McCormick BA MSc Archaeological Director with Archer Heritage Planning Ltd who has 6 years experience in archaeological and cultural heritage impact assessments with an additional 10 years of archaeological field experience. She has been eligible to conduct licenced archaeological excavations (under Section 26 of the National Monuments Act 1930 (as amended) since 2019.

Site 4 covers an area of c.11.28ha (hectares). It is roughly rectangular in shape and bounded by high galvanised steel fencing on all sides. Remnants of land divisions which can be related to early OSI map sources can be identified in the form of hedgerows. The boundary between Clondalkin and Ballyfermot parishes runs roughly through the middle of this site. The southern half was previously stripped of topsoil. The northern part comprises three smaller fields.

The subject Site is c. 3.185 hectares and is located within the *Park West – Cherry Orchard Local Area Plan 2019* lands. It is comprised of Site 4 (M50/ Cedarbrook Avenue) as identified in the LAP.

Site 4 covers an area of c.11.28ha (hectares). It is roughly rectangular in shape and bounded by high galvanised steel fencing on all sides. Remnants of land divisions which can be related to early OSI map sources can be identified in form of hedgerows. The border between Clondalkin and Ballyfermot parishes runs roughly through the middle of this site. The southern half was previously stripped of topsoil and disturbed during previous construction activities unrelated to the current application. The northern part comprises a Greenfield area set out in rough pasture.

9.1.1 Definitions

Heritage is anything of value which may inherited from previous generations, and which is worthy of preservation. For the purposes of this chapter, a distinction is made between tangible and intangible heritage assets.

Tangible heritage assets are taken to refer to ‘man-made’ things such as monuments, buildings, architecture, landscapes and objects of heritage value. These could be collectively termed as built heritage.

Intangible heritage assets are taken to include language, place names, folklore, storytelling and local knowledge. These could be collectively termed as cultural heritage.

9.1.2 Guidance and Legislation

Archaeological and cultural heritage protection in Ireland is provided by several international and national mechanisms. These include but are not limited to:

- National Monuments Acts 1930-2014;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999;

- Planning & Development Act. 2000 (as amended);
- European Convention on the Protection of the Archaeological Heritage. 1992.

The Framework and Principles for the Protection of the Archaeological Heritage (1999) publication outlines the State's general principles in relation to the management and protection of archaeological heritage. It states that avoidance of developmental impacts on archaeological heritage and preservation in situ of archaeological sites and monuments are always the preferred option. When a site, or part of a site, must be removed due to development, then preservation by record must be undertaken (i.e. through licensed excavation and recording).

We note that the National Monuments Act 1930 (as amended) will be replaced by provisions contained in the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (the 2023 Act). The 2023 Act is not yet in force as of the date of this report, however, once the relevant provisions are commenced, the 2023 Act will replace the 1930 Act.

In circumstances where the relevant provisions of the 2023 Act are commenced, it is not foreseen that any of the conclusions in relation to potential impacts on receptors, mitigation, monitoring or licensing requirements contained in Chapter 9 Archaeological, Architectural and Cultural Heritage are likely to be changed as a result of the 2023 Act being commenced. No additional mitigation measures relating to the Phase 2 lands are envisaged over and above those already set out in the Parent EIAR i.e., monitoring of groundworks, excavation of a Fulacht Fia and a photo survey of a townland boundary none of which will change as a result of the new Act.

10 Landscape and Visual

10.1 Introduction

This Landscape and Visual Impact Assessment (LVIA) report assesses the potential effects of the proposed development on the receiving environment in respect of the landscape and key views/visual amenity.

Mitchell + Associates was engaged on behalf of The Land Development Agency, by van Dijk Architects in February 2022, to prepare a Landscape and Visual Impact Assessment (LVIA) for the proposed Cherry Orchard Point residential scheme. The parent LVIA for Phase 1 was completed in October 2023. This LVIA deals with Phase 2. The development site is located to the north of Cherry Orchard railway station and Park West, between the M50 motorway and Park West Avenue.

This LVIA has been prepared with reference primarily to the 'Guidelines for Landscape and Visual Impact Assessment', prepared by the Landscape Institute and the Institute of Environmental Assessment, 3rd Edition 2013 (GLVIA) and with reference to the 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' - Environmental Protection Agency (EPA), May 2022.

The assessment has been carried out by Feargus McGarvey BA (Hons) Dip LA Greenwich University, Associate Director with Mitchell + Associates, Landscape Architects. Feargus is a full member and former president of the Irish Landscape Institute, the professional body for landscape architects in Ireland. He has over 33 years' experience in working as a Landscape Architecture. He has written and collaborated on many LVIA and VIA in both an urban and rural context, including Dundrum Town Centre LVIA, Donaghcumper Cellbridge Town Centre LVIA, Wonderful Barn Leixlip LVIA, Dun Laoghaire HarbourCruise Berth Marina LVIA, Hermitage Clinic, Liffey Valley VIA, Office Development Dawson Street/ Nassau Street Dublin LVIA, Merrion Road Office Development VIA, Marry's Pig Farm Boyne Valley LVIA, Rathgar (Rathdown Motors) Residential Development VIA, Chivers Coolock LVIA, Project Liver (Naas Rd) LVIA and Southwest Gate (also Naas Rd) LVIA

Figure 10.1 View of the proposed Cherry Orchard Point Phase 2 scheme (courtesy CCK architects)

10.2 Methodology

This LVIA describes the impact of the proposed development on the landscape character and visual amenity of the site and on the contiguous landscape and its environs. It describes the landscape character of the subject site and its hinterland, together with the visibility of the site from key viewpoints in the locality. It includes descriptions of the receiving environment (baseline), an outline of the methodology utilised to assess the effects, descriptions of the potential impacts of the development and of the resultant potential effects. Mitigation measures introduced to ameliorate or offset impacts are outlined and the resultant predicted (residual) effects are assessed.

'Landscape' can be described broadly as the human, social and cultural experience of one's surroundings. It is derived from the interplay between the physical, natural and cultural components of our surroundings, as experienced by people. The combination of these components elicits responses whose significance will be partially dependent on how people perceive a particular landscape and how much changes will matter in relation to other senses, as experienced and valued by those concerned. This assessment seeks to understand the potential effects of a development on the landscape as a 'resource', but also considers the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive. Despite the extremely large part played by our visual experience in forming our views on landscape, one's perception and indeed memory also play an important part, if the changes brought about in landscape character are to be fully understood. It is clear therefore that different people doing different things will experience the surrounding landscape in different ways. Such sensitivities and variations in response, including where and when they are likely to occur, are broadly taken into consideration in the assessment.

Visual amenity as expressed through views, refers to the interrelationship between people and the landscape. In accordance with the guidelines, the effects on views and visual amenity are assessed separately from the effects on landscape, though the two are inherently linked. Visual assessment is concerned with the changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity. Generally, these are evidenced by the comparison of baseline (existing) images and photomontages illustrating the proposed development in context.

10.2.1 Use of the Term 'Effect' vs 'Impact'

The Guidelines for Landscape and Visual Impact Assessment recognise the complex and potentially confusing nature of terminology used within LVIAs as part of Environmental Impact Assessments, particularly the use of the words 'impact' and 'effect.' The Guidelines advise that these terms should be clearly distinguished and consistently used in the preparation of an LVIA and that these terms should clearly be defined at the outset to avoid any confusion or misinterpretation.

'Impact' is defined as the action being taken. In the case of the proposed works, the impact would include the construction of the proposed development.

'Effect' is defined as the change or changes resulting from those actions, e.g., a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focuses on these effects.

10.2.2 Methodology for Landscape Assessment

The assessment of potential landscape effects involves (a) classifying the sensitivity of the receiving environment (i.e., the nature of receptors), and (b) identifying and classifying the magnitude of landscape change (i.e., the nature of the effect), which would result from the proposed development. These factors are combined to arrive at a classification of significance of the landscape effects.

10.2.2.1 Landscape Sensitivity

The sensitivity of the landscape is a function of its land use, patterns and scale, visual enclosure, the distribution of visual receptors, and the value placed on the landscape. The nature and scale of the development in question is also taken into account, as are any trends of change, and relevant policy. Five categories are used to classify sensitivity (refer to Table 10.1 below).

Table 10.1: Categories of Landscape Sensitivity

Sensitivity	Description
Very High	Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change is very low. These attributes are recognised in policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The landscape character is such that it has limited/low capacity to accommodate change. These attributes are recognised in policy or designations as being of national, regional or county value and the principal management objective for the area is the conservation of existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no notable change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character is such that its capacity to accommodate change is high; where development would make no discernible change or would make a positive change. Such landscapes include derelict industrial lands, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

10.2.2.2 Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape by the proposed development, with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Landscape receptors include individual aspects of the landscape, e.g., landform/topography, vegetation, and the density, mix, pattern and scale of building typologies, which may be directly changed by the development. The surrounding landscape character areas are also receptors whose character may be altered by these changes. Five categories are used to classify magnitude of change (refer to Table 10.2 below).

Table 10.2 Categories of Magnitude of Landscape Change

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.
Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is limited in scale, resulting in no alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character.

10.2.2.3 Landscape Effects

A conclusion on the relative importance of landscape effects (whether on the physical landscape elements or on the landscape character), can be arrived at by combining the landscape sensitivity and the magnitude of landscape change - this is indicated in Table 10.3 below.

Table 10.3: Classification of the relative importance of Landscape Effects

		Sensitivity of the Landscape				
		Very High	High	Medium	Low	Negligible
Magnitude of Change to the	Very High	Profound	Profound	High	High-Moderate	Moderate-Slight

	High	Profound	High	High-Moderate	Moderate	Moderate-Slight
	Medium	High	High-Moderate	Moderate	Moderate-Slight	Slight
	Low	High-Moderate	Moderate	Moderate-Slight	Slight	Imperceptible
	Negligible	Moderate-Slight	Moderate-Slight	Slight	Imperceptible	Imperceptible

The classifications of the relative importance of landscape effects as set out in Table 10.3 above and as used throughout this LVIA, may be defined as follows:

Table 10.4: Description of the classifications of Landscape Effects

Importance	**Description**
Imperceptible	An effect which may be capable of measurement but is without important consequences.
Slight	An effect which causes few noticeable changes in the character of the environment but without important consequences.
Moderate-Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with the landscape context and with existing and emerging baseline trends.
High-Moderate	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
High	An effect which, by its character, magnitude, duration or intensity, alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

10.2.2.4 Quality of effects

The quality of potential visual and landscape effects is assessed according to EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports Table 10.4 above Descriptions of Effects as follows:

Table 10.5 Quality of Effects

Quality	Definition
Positive Effects	Changes which affect the quality of the landscape/view.
Neutral Effects	Changes which do not affect the quality of the landscape/view.
Negative Effects	Changes which reduce the quality of the visual environment or adversely affect the character of the landscape.

10.2.3 Methodology for Visual Assessment

10.2.3.1 Methodology for Assessment of Visual Effects

Assessment of visual effects involves identifying a number of key viewpoints in the site's receiving environment which overall, are representative of the existing visual environment, and for each viewpoint: (a) classifying the visual sensitivity of the viewpoint/visual receptor (i.e., the nature of the receptor), and (b) classifying the magnitude of change imposed on the view by the proposed development (i.e., the nature of the effect). These factors are combined to arrive at a classification of relative importance of the effects on the visual amenity/views.

10.2.3.2 Visual Sensitivity

Viewpoint/visual receptor sensitivity is a function of two main considerations:

Susceptibility of the visual receptor to change; this depends on the occupation or activity of the people experiencing the view, and the extent to which their attention is focussed on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include for example, residents at home, people engaged in outdoor recreation focused on the landscape (e.g., trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience. Visual receptors less sensitive to change include for example, travellers on road, rail, and other transport routes (unless on recognised scenic routes), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

Value attached to the view; this depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g., scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status.

Five categories are used to classify a viewpoint/visual receptor's sensitivity (refer to Table 10.6 below):

Table 10.6: Categories of Viewpoint Sensitivity

Sensitivity	Description
Very High	Iconic viewpoints (views towards or from a landscape feature or area) that are recognised in policy or otherwise designated as being of national or international value. The composition, character and quality of the view are such that its capacity for change is very low. The principal management objective for the view is its protection from change.
High	Viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features focused on the landscape). The composition, character and quality of the view may be such that its capacity for accommodating change may or may not be low. The principal management objective for the view is its protection from change that reduces visual amenity.
Medium	Views that may not have features or characteristics that are of particular value, but have no major detracting elements, and which thus provide some visual amenity. These views may have capacity for appropriate change and the principal management objective is to facilitate change to the composition that does not detract from visual amenity, or which enhances it.
Low	Views that have no valued feature or characteristic, and where the composition and character are such that there is capacity for change. This category also includes views experienced by people involved in activities with no particular focus on the landscape. For such views an important management objective is to facilitate change that does not detract from visual amenity or enhances it.
Negligible	Views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g., in derelict landscapes). For such views the principal management objective is to facilitate change that repair, restores, or enhances visual amenity.

10.2.3.3 Magnitude of Change to the Visual Amenity/Views

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e., its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g., in full view, partial or peripheral view, or in glimpses). It also takes into account the geographical extent of the change, as well as the duration and reversibility of the visual effects.

Five categories are used to classify magnitude of change to visual amenity/views (refer to Table 10.7 below):

Table 10.7 Categories of Magnitude of Visual Change

Magnitude of Change	Description

Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

10.2.3.4 Visual Effects

As for landscape effects, to classify the relative importance of visual effects, the magnitude of change to visual amenity/views is measured against the sensitivity of the viewpoint and a conclusion on the relative importance of visual effects (whether on visual amenity or on the views), can be arrived at by combining the visual sensitivity and the magnitude of visual change - this is indicated in Table 10.8 below.

Table 10.8: Classification of the relative importance of Visual Effects

		Sensitivity of the Visual Amenity/View				
		Very High	High	Medium	Low	Negligible
Magnitude of Change to the Visual Amenity/View	Very High	Profound	Profound	High	High-Moderate	Moderate-Slight
	High	Profound	High	High-Moderate	Moderate	Moderate-Slight
	Medium	High	High-Moderate	Moderate	Moderate-Slight	Slight

	Low	High-Moderate	Moderate	Moderate-Slight	Slight	Imperceptible
	Negligible	Moderate-Slight	Moderate-Slight	Slight	Imperceptible	Imperceptible

The classifications of the relative importance of visual effects as set out in Table 10.8 above and as used throughout this LVIA, may be defined as follows:

Table 10.9 Description of the classifications of Visual Effects

Importance	Description
Imperceptible	An effect which may be capable of measurement but is without important consequences.
Slight	An effect which causes few noticeable changes in the character of the environment but without important consequences.
Moderate-Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with the visual context and with existing and emerging baseline trends.
High-Moderate	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
High	An effect which, by its character, magnitude, duration or intensity, alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

10.2.3.5 The Use of Photomontages and the Selection of Viewpoints

The primary method adopted for the assessment of visual effects relies largely on a comparative visual technique, whereby accurate verified views (photomontages), incorporating the proposed development are compared to the existing corresponding baseline photograph so that an assessment of effects can be made. These 'before' and 'after' images are prepared for each of the selected viewpoints.

The selection of viewpoints has been carried out in accordance with the 'Guidelines for Landscape and Visual Impact Assessment', prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge, 3rd Edition 2013. The guidance on viewpoint selection and baseline photography requires that the proposed development is considered in context and that photomontages used to illustrate the proposed development include sufficient landscape context for proper assessment. Whilst the potential for views was considered up to a radius of approx. 1 km from

the proposed development site, practical choices have to be made regarding the viewpoints which are most likely to illustrate the greatest maximum impact. This resulted in the selection of the original 16 views submitted in the parent LVIA (Oct 2023), which are representative of the landscape context and the proposed development site. A total of 9 views have been selected for this Phase 2 LVIA, from the same viewpoints as the original and re-numbered for this report as 1-9. They range from approx. 500m to 20m distant from the site. The photomontages are prepared by experienced specialists, to a specific detailed methodology to ensure accuracy. The adopted methodology for the preparation of photomontages is described by the photomontage specialist in the A3 document of photomontages (verified views) submitted with the planning application. The timescale of the project allowed for winter and summer views to be assessed as best practice and in the interest of thorough evaluation of the visual effects.

In recognition of the potential sensitivities of this location and to enable a full and detailed assessment of the development proposal, a total of 9 views were selected for photomontage preparation. Figure 10.4 below illustrates the location of viewpoints selected for assessment and for which photomontages are included in the separate A3 document prepared by GNET3D Ltd, submitted with the planning application.

10.2.4 Quality and Timescale

10.2.4.1 Quality of Effects (Landscape and Visual)

The quality of effects can be assessed as 'positive' or 'negative' depending on whether the change is considered to improve or reduce the quality of the landscape character or visual environment. The quality of impact/effect may also be assessed as 'neutral' if the quality of the environment is unaffected. The assessment of quality needs to consider and weigh-up a range of issues and potentially conflicting standpoints. The nature of the proposed change, its context, appropriateness, quality of design and the sensitivities of the viewers may all be important considerations for this aspect of assessment.

10.2.4.2 Duration of Effects (Landscape and Visual)

The duration of effects is another aspect of assessment needing consideration. Effects may range from temporary to permanent. The temporary/short term effects during the construction of the proposed development are also considered in this assessment. The categorisation of effect duration outlined in the EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' 2022, (Section 3.7 Assessment of Effects), is used for this assessment, whereby effects arising from the proposed development may be considered in terms of duration as follows:

- Temporary: Effects lasting less than one year
- Short-term: Effects lasting one to seven years
- Medium-term: Effects lasting seven to fifteen years
- Long-term: Effects lasting fifteen to sixty years
- Permanent: Effects lasting over sixty years

10.3 Baseline Environment

10.3.1 Receiving Environment – Policy Context: Dublin City Development Plan

10.3.1.1 Planning context

The Dublin City Development Plan 2022-2028 sets out policies and objectives for the city. Chapter 10 contains specific landscape-related policies and objectives under the heading of Green Infrastructure and Recreation. These include Policies specifically relevant to: Green Infrastructure including

Ecosystem Services; Biodiversity; Landscape; Parks and Open Spaces; Rivers and Canals; the Coast and Dublin Bay; Urban Forest; and Sports, Recreation and Play.

Chapter 13 sets out Strategic Development Regeneration Areas (SDRA), with SDRA 4 Park West/Cherry Orchard identifying sites 4 & 5 of the development plan for this project, noting the drive in development of the area which stalled at the time of the economic downturn, leaving many vacant sites, including the subject site.

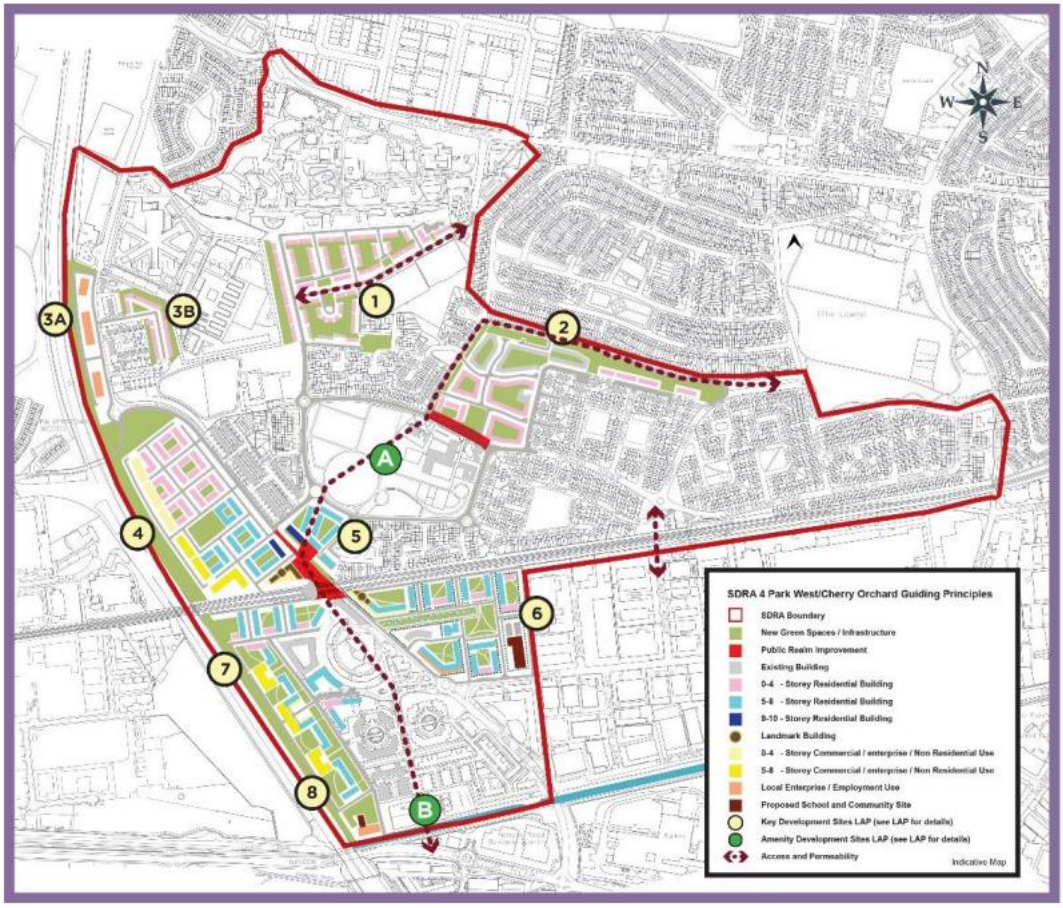


Figure 10.2: Extract of the SDRA4 Park West/Cherry Orchard 'Guiding Principles' map.

The SDRA4 identifies guiding principles of the area, including an adjacent landmark building to the south-east of the railway station. It also advocates a landmark building to the north of the railway station on the site, as well as varying heights for residential buildings from 0-4, 5-8 and 9-10 storeys on the development site, as well commercial buildings to 8 storeys. It is based on the earlier Park West and Cherry Orchard Local Area plan dating from 2019 which also addresses urban planning, compact cities, climate change resilience, and green infrastructure issues. This in turn in is underpinned by national and regional policies such as:

- National Planning Framework: Ireland 2040 - Our Plan
- National Adaption Framework: Planning for a Climate Resilient Ireland 2018
- Smarter Travel – A Sustainable Transport Future 2009 – 2020
- Regional Spatial and Economic Strategy (RSES) 2019-2031
- Transport Strategy for the Greater Dublin Area 2016 – 2035

- Dublin City Development Plan 2016-2022 (now superseded by CDP 2022-2028 and including SDRA4)
- Dublin City Biodiversity Action Plan 2015 – 2020
- Dublin City Local Economic and Community Plan (LECP)
- "Making Cherry Orchard Better" Area Action Plan 2017

10.3.1.2 Zoning

The proposed development is located within the lands covered by the Park West and Cherry Orchard Local Area Plan 2019 and the CDP Land-Use Zoning refers back to the SDRA4 noted above.

10.3.1.3 Protected Spaces

There are no protected spaces in the vicinity of the site. However, the development objectives in the Park West and Cherry Orchard LAP 2019 indicate that the townland boundaries should be retained where feasible, along with the green buffer along the M50 corridor as follows:

- *The residential quarter shall include provision of a new neighbourhood park linking into the overall Green Strategy for the LAP. Where feasible, retention of planting to old field boundaries will be encouraged.*
- *A green buffer zone shall be accommodated along the boundary with the M50 as part of a green corridor. Existing green infrastructure in the form of mature trees and hedgerows shall be retained and incorporated into landscape proposals for the central open space to be provided within the residential development area of the site, and the open space located at the northern end of the site.*

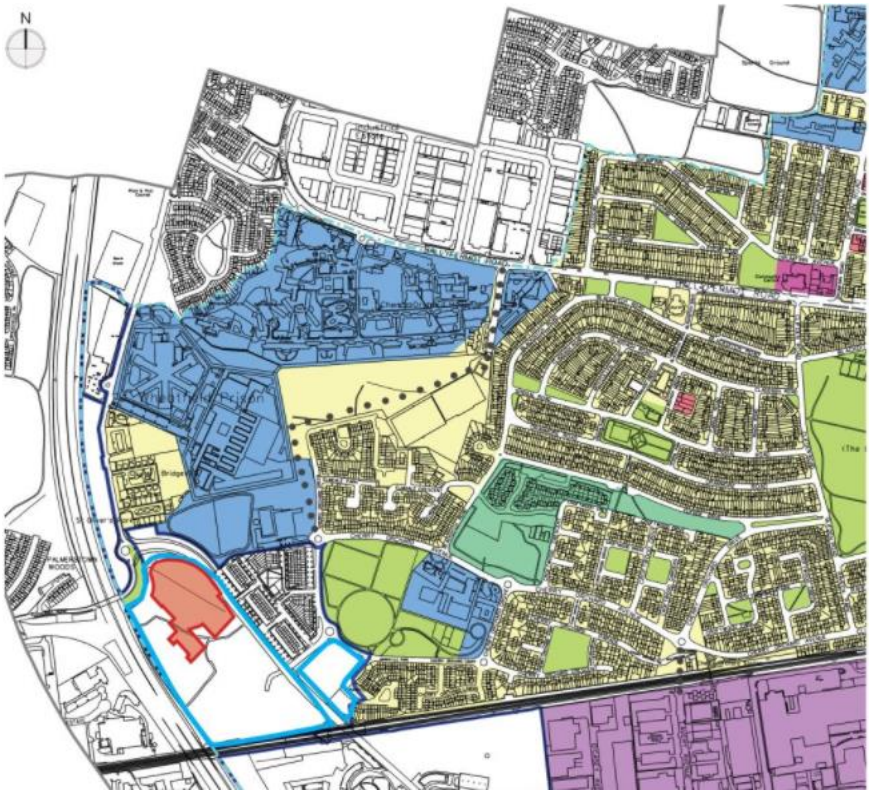


Figure 10.3 Extract from Dublin City Development Plan 2022-2028. Areas within the city boundary to the east of the M50 are part of the SDRA4. (Site mark-up in red courtesy of CCK architects)

10.3.1.4 Views

There are no protected views in the vicinity of the site.

10.3.1.5 Built Heritage

There are no conservation areas or protected structures in the vicinity of the site.

10.3.2 Receiving Environment – Site Character

10.3.2.1 Introduction

The proposed development site is part of a development plan site within the Park West Cherry Orchard Local Area Plan. It is currently a brownfield site of approx. 3.1 ha within the broader parcels of land that form the development plan, of which Phase one to the southern end has a grant of permission. It is located to the north of Cherry Orchard railway station and to the west of residential area of Cherry Orchard. It is defined on its eastern and northern boundaries by Parkwest Avenue. To the south, from parts of the site, the Dublin mountains are visible beyond high voltage cables.

10.3.2.2 Physical context – land use, topography and vegetation

The broader landscape setting is of the long-established Cherry Orchard residential area to the east, consisting of two-storey terraced housing forming a ring around Cherry Orchard Park. In between, Cedarbrook is a more recent residential development of 2-4 storey apartments. To the south, beyond the railway station, are the Academy, Crescent and Concert buildings which are residential and commercial. A vacant site sits between the Academy building, and another vacant site is on the eastern side of Park West Avenue to the south of the railway line. The site in discussion therefore forms another development site in a series of sites to the west of Cherry Orchard.

The site consists of the remnants of fields, including a townland hedgerow. The confluence of this hedgerow with two other townland boundaries is conserved in the approved Phase 1 development to the south. Much of the land is degraded pasture, and there are large swathes stripped of soil which are regenerating. The land is secured by a high palisade fence along Parkwest Avenue, behind which the boundary is mounded, reducing visibility into the site. Within the site, at the time of the initial site visit, there were horses grazing, amongst horse carcasses and burnt-out cars.

The lands are relatively flat, and levels are defined by the adjacent infrastructure, with the M50 elevated to some extent, and Park west Avenue rising southwards to a bridge that crossed over the M50. There are maturing trees to the southern end of the site – at this point part of the overall development plan site – presumably planted as part of the Parkwest Avenue and bridge scheme.

There are no water courses on the site, although the ditch and dyke formation of the townland boundary hedgerows forms a channel in places, and the compacted quality of the stripped soil also holds water after rain.

Figure 10.4 A view across Cherry Orchard Park, with a swale in the foreground, and horses grazing on pitches beyond. The view shows two storey housing to the right, punctuated by taller buildings with Wheatfield prison in the middle distance, and Cedarbrook to the left.

Figure 10.5: View of the southern boundary, railway cutting and Cherry Orchard railway station, with the Concert and Crescent buildings in the background.

Figure 10.6: View from the site looking southwards. Note the embankment vegetation to the right with Cedarbrook beyond, the Parkwest buildings to the south and the townland hedgerow to the right.

Figure 10.7: Looking south-westwards across the development plan site towards the M50 and the pylons, note the remains of an advertising hoarding structure to the right. The stripped and compacted ground holds water after rain.

Figure 10.8 View looking southwards with remnants of a fire. Pylons and M50 are visible in the background, with Dublin mountains beyond.

10.3.3 Views and Visual Amenity

10.3.4 Summary of Landscape Characteristics and Values

10.3.4.1 Introduction

The design for the proposed development is outlined in the submitted drawings. The Architectural Design Report, prepared by CCK Architects, contains a full description of the development, including the design rationale, and materials proposed.

The Landscape Design Report prepared by Mitchell + Associates describes the proposed landscape strategy and design for the scheme. These are all included separately with the submission. documents.

10.3.5 Project Description

10.3.5.1 Proposed Scheme Design

The site is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West Avenue to the east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west.

The proposed development (13,280sq.m GFA) involves the construction of a residential scheme consisting of 137no. units (31no. two-bed units and 106no. three-bed units) ranging in height from two to three storeys. The proposed development also includes the provision of landscaped public open space of 2,133sq. m. in addition to 2,050sq.m of public open space that was proposed as part of the approved Phase 1 application. Communal open space for the duplex and apartment units is provided across three dedicated communal amenity areas (602sq.m in total area) with private open space to serve the proposed units to be delivered through a mixture of rear gardens and terraces.

The proposed development will also involve the provision of sufficient car parking (including accessible and EV car parking spaces), bicycle parking spaces at surface level and motorbike spaces throughout the development. The development will also provide for all associated ancillary site development infrastructure including site clearance, boundary treatment, associated public lighting, internal roads and pathways, bin and bike stores, ESB substation, hard and soft landscaping, play equipment, boundary walls, and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

Please refer to the statutory notices for full and complete description of the proposed development

Figure 10.9: Aerial mark-up of the site (courtesy of Google and CCK)

The scheme terminates the northern end of the development site, completing the proposed built urban form along Parkwest Avenue and linear open space of Phase 1.

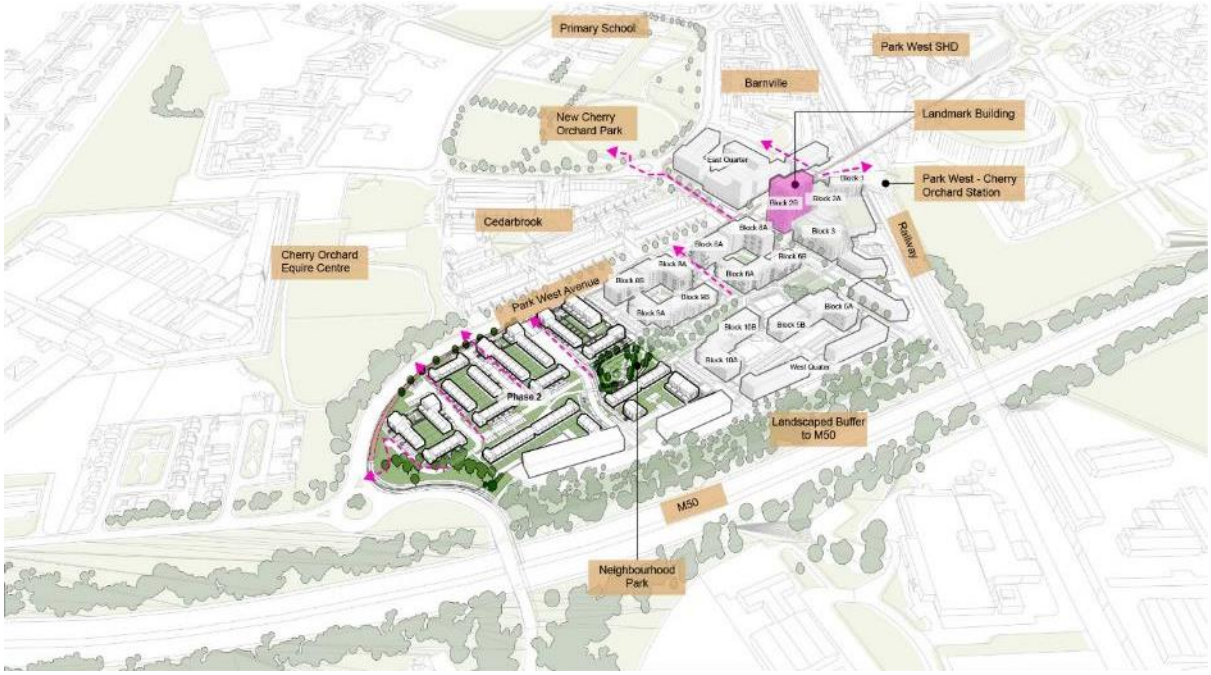


Figure 10.10 Aerial diagram of the development plan for the site (courtesy CCK Architects)

The open space is structured in a way to have passive supervision over a series of amenities incidental and free play and linking to the linear open space of phase 1. This hierarchy of linked spaces responds to the ambitions of the Park West and Cherry Orchard Local Area Plan in relation to Green Infrastructure. It supports biodiversity and climate change resilience through its retention and creation of habitats and inclusion of nature-based drainage systems that ultimately link to groundwater or the river Camac.

Figure 10.11:CGI of a street in the scheme. (courtesy CCK)

Figure 10.12: CGI view of a homezone in the scheme (courtesy CCK Architects)

10.4 Predicted Impacts

10.4.1.1 Introduction

A proposed development such as this has the potential to impact upon the landscape and visual aspects of the existing environment in a number of ways, at both construction and operational stages. Effects can be short or long term; temporary or permanent. The purpose of this section of the report is to outline and describe the potential effects of such proposed development; upon the visual and landscape aspects of the immediate area, and further afield, where relevant.

10.4.1.2 Construction Phase

Potential impacts during the construction phase are related to temporary works, site activity, and vehicular movement within and around the subject site. Vehicular movement may increase in the immediate area, and temporary vertical elements such as cranes, scaffolding, site fencing, gates, plant and machinery etc., will be required and put in place. Most of the construction impacts will be temporary, and may include the following:

- Site preparation works and operations (including tree protection measures as appropriate);
- Site excavations and earthworks;
- Site infrastructure and vehicular access;
- Materials storage, spoil heaps etc;
- Construction traffic, dust and other emissions;
- Temporary fencing/hoardings, site lighting and site buildings (including office accommodation);
- Cranes and scaffolding;

Where trees are to be felled, or hedgerows cleared, these impacts will be permanent, however any proposed new planting will offset such effects, increasingly so as the proposed development matures.

10.4.1.3 Operational Phase

The designed scheme seeks to consolidate a key part of the urban plan and harmonise and integrate the development within the existing landscape and the broader urban environment, in line with the Dublin City Development Plan 2022-2028, the Park West and Cherry Orchard LAP, and associated policies and objectives. It must do this whilst adhering to national planning policy which seeks the densification and the provision of increased height on appropriate urban sites. The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials;
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass
- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration;
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible);
- Simplification and rationalisation of the proposed roof lines.
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities.
- The provision of secure private gardens
- Sustainable approach to drainage and biodiversity
- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

In terms of potential visual impacts, whilst the proposed scheme is not uncharacteristic within the broader context, there is a clear change of scale between the relatively green site and what is proposed. Sensitivities may well be somewhat dulled by the degraded nature of the site and the expectation of new homes and infrastructure. The quality of the proposed buildings and their setting offers a coherent and vibrant completion of this quarter. The potential for a measure of visual impact, experienced by people visiting, living in, or using these areas, is therefore reasonably high. The selected viewpoints for the preparation of photomontages takes this into account by taking views from corresponding locations.

The design rationale adopted and the architectural and landscape architectural approach to the design of the proposed scheme and the details employed, seek to respond to such issues and to mitigate negative effects on both the broader landscape character and visual amenity of the area – these are outlined further in, Mitigation Measures, below.

10.4.2 Landscape Effects

10.5 Predicted Effects

10.5.1 Introduction

In assessing landscape and visual effects, there are two main inter-related aspects to be addressed in considering the impact of the development proposals:

- The landscape as a resource and landscape character – these relate primarily to the landscape's physical components, which may include: topography; vegetation; built elements etc, and how they translate into the perceived character of the existing landscape of the site in its context. How is this physical landscape impacted by the proposal and how do people perceive the change? This will include assessment of the effects of the proposed development on the social and cultural amenity aspects of landscape. The predicted landscape effects are outlined below.
- The visual amenity and the proposed views of the development, relative to the existing site and the associated impact on the visual environment and on visual amenity. These are outlined in below.

The effects of each are assessed for the Operational Phase of the proposed development, in accordance with the methodology for each, as set out below, and a qualitative value is included. The duration of effects is also assessed below, and the Construction Phase effects are considered and assessed below. The cumulative effects caused by the proposed development when considered in conjunction with other proposed developments of the same or different types, are assessed in below.

10.5.1.1 Duration of effects

The duration of effects is determined by the life of the proposed development, as tempered by any mitigating effect of the maturing designed landscape which is proposed as an integral part of the development. In this case the development may have an expected/design life of up to 60 years or beyond. Effects on both landscape character and visual amenity during the Operational Phase of the proposed development are therefore deemed to be of ***long-term or permanent*** duration in this instance. Construction Phase effects are generally of much shorter duration and are considered in Section 8.3 below.

10.5.1.2 Construction Phase Effects

Initially the erection of site hoarding and hedgerow/ tree protection measures will be completed, site access points established, and site accommodation units placed. Early in the construction period, demolitions, surface/topsoil stripping, tree/shrub removal and the required excavations for the construction of building foundations will commence. The erection of cranes and/or scaffolding as appropriate will take place and temporary site lighting will be established. Removal and/or storage of excavated materials from site and the delivery of construction materials will generate increased traffic within, to and from the site. As construction progresses over the construction period, impacts will vary with the on-going business of construction, delivery and storage of materials, the erection of the buildings, etc. Mitigation measures have been proposed to minimise the impact of the construction works on the site environs and generally where this occurs, they are effective in limiting construction phase effects.

The landscape and visual effects of these changes are most likely to be experienced as adverse effects by adjacent residents and users of Park West Avenue and Cedarbrook Way.

Generally, landscape and visual effects during the Construction Phase are likely to vary from ***slight***

and neutral to ***moderate and negative***, depending on the stage of construction, and the intensity of site activity. The construction impacts will be of ***short-term*** duration.

10.5.1.3 Operational Phase - Landscape Effects

The landscape of the site currently has a rather degraded nature and appearance. The poor quality across the site represents a neglect through lack of impetus in developing the site dating since the most recent economic downturn. The proposed new buildings, infrastructure and its associated landscape provide an appropriate contemporary and designed solution for the area which fits with the longer-term aspiration as expressed in its development plan and the Local Area Plan. The resultant proposed scheme is not uncharacteristic within the context of this and similar parts of the city close to transport hubs. The design for the proposed development is a well-considered, high-quality scheme which is appropriate to the area and includes both design and specific mitigation measures that successfully address localised potential adverse landscape impacts. It also creates a number of landscape, and public realm improvements with positive attributes and which, with the appropriate future maintenance and management will further improve as the scheme and its community mature over time.

10.5.1.4 Landscape Sensitivity

The existing site is a degraded green- and brownfield site. It has no landscape designations or policies which protect its status. In light of its current condition and the contrast this represents with its surroundings, it is not considered sensitive to change. Overall, the sensitivity of the landscape subject to change, is assessed to be ***low***.

10.5.1.5 Magnitude of change

The scale of change proposed may be considered substantial in terms of the quantum of development and building height proposed. The proposed changes are from a degraded green- and brownfield site to a new residential quarter, and associated improvements in scale and character to the adjacent streetscapes. The magnitude of change is assessed as ***high***.

10.5.1.6 Landscape effects

It is important to note that the proposed development is located on lands on the urban periphery which are zoned for the proposed type of residential and mixed-use development. The regeneration of degraded lands for higher density residential and mixed use is an ongoing trend in this landscape context.

The proposed development has been designed to introduce a consolidated urban quarter and greater connectivity to and through the site by way of the integration with the existing and proposed network of routes in the area, taking into account phase 1 of the development plan, and in respect of the Local Area Plan. Landscape effects created by such new development on this compartmentalised site are relatively localised and will not be notably evident in the wider landscape.

The landscape effect resulting from a low landscape sensitivity, and a high magnitude of change, is ***moderate***. Qualitatively the landscape effect is ***positive***.

10.5.2 Visual Effects

10.5.2.1 Operational Phase - Visual Effects

The assessment of visual effects, using comparative ‘before’ and ‘after’ photomontages assists in identifying the nature and magnitude of the proposed change on the visual environment. The value placed on these is inevitably influenced by the perceptions of the receptor and what they are engaged in at the time. The visual effects of the proposed development will primarily be felt by residents who live

nearby, in this case, to the east of the site. In these cases, the effects of the development are experienced by people near to the site, where the effect is potentially greater and is frequently recurring. Views from a distance tend to occupy smaller portions of the field of view and there are many more competing elements within the view – this creates a diluting effect. It should also be remembered that the visual qualities of a place contribute significantly to its character, and these create a large proportion of one's memory of a place – this is particularly so for say, visitors whose experience is often fleeting.

The photomontages are important in illustrating the effects of the proposed scheme from the more sensitive viewpoints. In this instance, they also serve to support and illustrate an aspect of the assessment of effects on landscape character. It is important to remember that whilst photomontages are a useful tool in illustrating comparative visual impact, they are recognised as having their limitations. The guidelines for their use in assessment clearly advocate their use in the context of a site visit to the viewpoint locations and point out that photomontages alone should not be expected to capture or reflect the complexity underlying the full visual experience (refer to the GLVIA, 3rd Edition).

In general, the changes to the visual environment created by this proposed development will produce noticeable visual effects upon a range of receptors that are considered ***moderate*****,** where visible, in the context of the LAP and the local developments that it is driving. The definition of moderate in the EPA Guidelines is *An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends*. The illustrated views are a representative selection of views from around the proposed development site, which are considered potentially the most sensitive. In accordance with the guidelines, they are also selected in order to provide sufficient landscape context to be able to properly assess the nature and scale of the effect.

Because the expected life of the proposed development is up to 60 years or beyond, the duration of predicted visual effects for all views is assessed as ***long term or permanent*** - as is the case for predicted landscape effects.

10.5.2.2 Assessment of views

A total of 9 viewpoints has been selected for which photomontages (verified views) have been prepared - these are included in the submission documents, within a separate A3 report prepared by GNET3D Ltd. The locations are illustrated in Figure 10.13 below. They illustrate the visual effect of the proposed development on the selected views taken from the surrounding landscape.

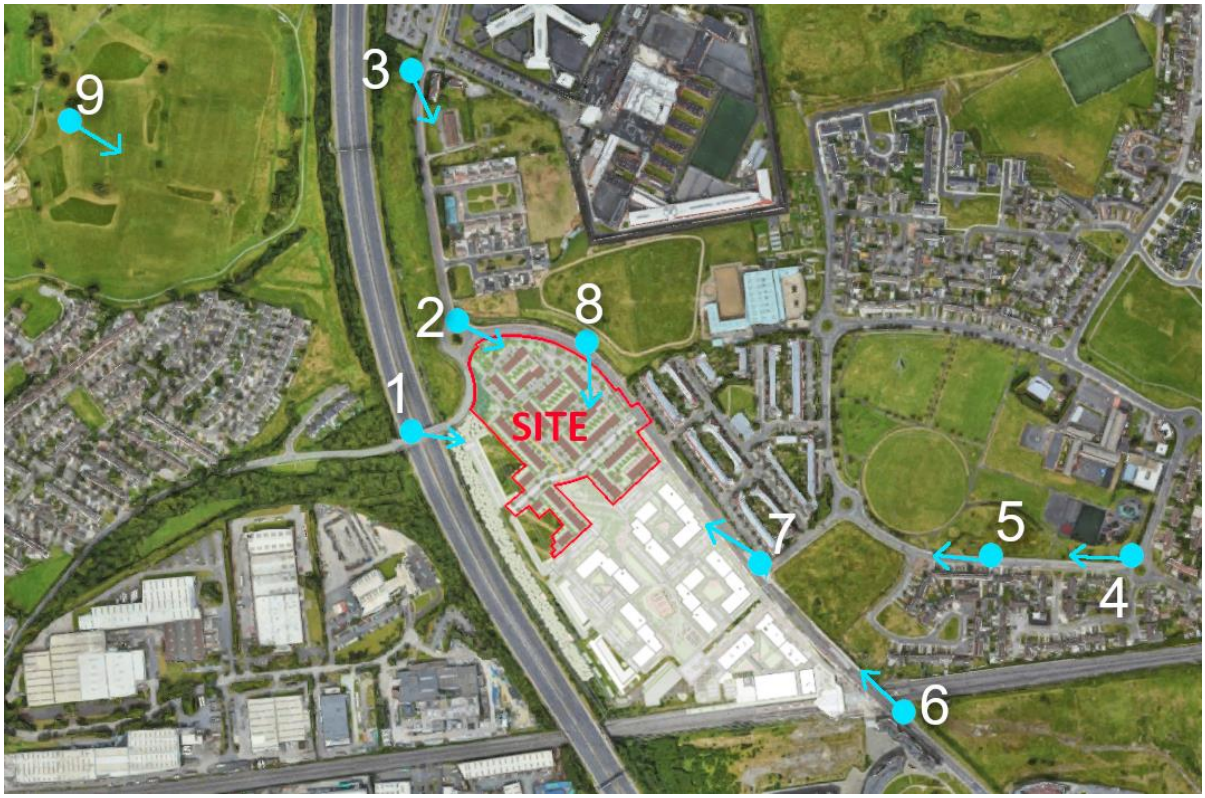


Figure 10.13 Map showing view locations (courtesy GNET)

The assessment of the visual effects of the proposed development from these viewpoints is provided as follows:

10.5.2.2.1 View 1

Existing View 1

This is a view from the Cloverhill Road bridge over the M50. It is close to the northern end of the development plan site looking south eastwards in the direction of Cherry Orchard railway station. It is looking through the protective mesh fence on the bridge. The foreground consists of the degraded greenfield site and scrub vegetation, and tree screening and acoustic barrier to the M50 motorway. In the distance to the left is the Cedarbrook development, and to the right are the apartment buildings of the development to the south of the railway station at Park West.

Proposed view

The proposed view shows the phase 2 scheme in the near distance. The roofs are visible, and some of the pale coloured facades above existing vegetation in the summer view, with greater visibility of the facades in the winter view. Some brick facades are also partially visible. The angle of the view looks diagonally across the rectilinear layout, giving an understanding of the depth and articulation of the blocks. There is a sense of urban consolidation and generation of place.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive***.

10.5.2.2.2 View 2

Existing View 2

This is a view is looking southwards towards the site from close to the junction of Park West Avenue and Cloverhill Road. The view is directly of the galvanised palisade security fence to the site. There is a similar fence on the left-hand side of Park West Avenue as it sweeps around the corner towards the Cedarbrook residential blocks. The scale Cedarbrook gives a welcome definition to the alignment of Park West Avenue in an otherwise poor-quality setting defined by road infrastructure and palisade fencing.

Proposed view 2

The proposed view shows the proposed scheme addressing the street in the form of two and 3 storey terraced houses, with the 3-storey unit addressing the corner to the left. A complete streetscape defines the edge with hedge, trees and the swale vegetation, even in the winter view.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive***.

10.5.2.2.3 View 3 (formerly view 11 in the parent LVIA)

Existing View 11

This is a view from the northern part of Cloverhill Road, close to St Oliver's Education and Training Centre to the north of the site. It is looking southwards along the road towards the roundabout junction with Park West Avenues. The site's galvanised palisade fence boundary is barely visible in the distance The Dublin mountains can be seen on the horizon. The streetscape is defined by trees and scrub vegetation to the right, and a small boundary wall and some trees to the left, beyond which are some single storey residential buildings and a two-storey community hall.

Proposed view

The proposed view shows part of the roofscape of phase 2 between the roofs of the existing houses in the middle ground. The red line outline denotes the rest of the development that cannot be seen in either the summer of winter views.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***slight*** and ***neutral***.

10.5.2.2.4 View 4

Existing View 4

This is a view from Cherry Orchard Court, which is adjacent to the Cherry Orchard Park, looking westwards towards the site. This view along the street shows two storey red brick and render terraced houses to the left, looking across to Cherry Orchard Park on the right. The park is defined by a green fence on a plinth wall. Cedarbrook Way is seen in the distance. The street has no tree planting, but maturing trees are within the park boundary.

Proposed view 4

The proposed view shows the proposed phase 2 scheme as a red line outline beyond Cedarbrook Way. Although small parts of the roofs may be visible between blocks at Cedarbrook Way, it is not perceptible at this distance.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***imperceptible***.

10.5.2.2.5 View 5

Existing View 5

This is a view along the same street as view 4, now called Barnville Park, but closer to the site. Site 5 of the LAP which forms part of the overall development plan is more visible as a fenced and mounded field of rough grass. Cedarbrook is also more visible to the right. The two-storey red brick and render houses are to the left.

Proposed view 5

The proposed view shows the scheme as a red line outline. It cannot be seen due to topography and existing buildings.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***imperceptible***.

10.5.2.2.6 View 6

Existing View 6

This is a view from the front of the Cherry Orchard railway station looking northwards towards the site. The open and unfinished streetscape lacks a civic quality and demonstrates the stall in the development in the area. There is unregulated parking on the edge of the station's plaza.

Proposed view 6

The proposed view shows the phase 2 scheme in the distance, where some roofs and part of the 3rd floor of the buildings are visible. In the winter view, a little more of the façades is seen. The view begins to give definition to the site in the distance.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***slight*** and ***positive***.

10.5.2.2.7 View 7 (formerly view 16 in the parent LVIA)

Existing View 7

This is a view looking northwards along Park West Avenue. The uninviting streetscape is defined by the long, galvanised palisade fence to the site's boundary. The scrub vegetation on the mounding behind the fence means the site is screened at street level. There is some respite in the maturing tree planting associated with Cedarbrook on the right side of the image.

Proposed view

This is a view looking northwards along Park West Avenue. Some roofs and part of the 3rd floor of the buildings are visible. In the winter view, a little more of the façades is seen. The view begins to give definition to the site in the distance.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive***.

10.5.2.2.8 View 8 (formerly view 12 in the parent LVIA)

Existing View 12

This is a view adjacent to the site looking southwards towards the railway station along Park West Avenue. An imposing galvanised palisade fence runs the length of the site on the left. The residential scheme of Cedarbrook is partially visible beyond trees on the right. In the distance, the buildings of the Academy, Crescent and Concert can be seen behind the railway station. The street appears as an uncomfortable place for cyclists and pedestrians, despite the cycle track.

Proposed view

The proposed view shows the phase 2 residential buildings addressing the street, with a new streetscape of footpaths, swales, hedging and tree planting. The 3 storey buildings address the scale of the street. The articulation of massing and roof form, and the light buff colour of brick facades give a distinct character to the place.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive***.

10.5.2.2.9 View 9 (formerly view 10 in the parent LVIA)

Existing View 10

This is a view is taken from Collinstown Park which lies to the north east of the site across the M50. The view looks across the playing pitches towards the site. A belt of mature tree planting in the park defines the horizon line, and a longer vista of the Dublin Mountains is seen to the right.

Proposed view

The proposed view shows the phase 2 scheme as a red line outline as it cannot be seen through topography and vegetation, even in the winter view.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***imperceptible***.

10.5.3 Cumulative Effects

10.5.3.1 Introduction

Current guidelines suggest that a determination should be made as to whether cumulative effects are likely to occur – these are outlined in the current GLVIA guidelines (3rd edition) as '*additional effects caused by the proposed development when considered in conjunction with other proposed developments of the same or different types*'. Such determination needs to be made in respect of any permitted development of a similar nature which will have a bearing on the assessment of the proposed development - this is subject to the assessor's judgement in the matter. The predicted cumulative effects currently related to the proposed development are discussed below.

A list of permitted schemes in the area is contained in the Environmental Report at Chapter 13 Population and Human Health, Section 13.5.5 Planning and Development Pipeline. There are 3 residential schemes and 2 commercial schemes within the LAP area. There is a total of 5 no. residential

planning applications, of which the 4 noted above are within the Dublin City administrative boundary and 1 within the South Dublin administrative boundary. Section 13.5.5 goes on to say:

It should also be noted that Dublin City Council are intending progressing proposals for the redevelopment of Development Site 2 as identified in the LAP under Part 8 procedures in Q1-Q2 2024. As this scheme has not progressed through the planning process at the time of writing (23 October 2023) and is still therefore liable to material adjustments, both in scale and scope, prior to lodgement, it was not considered appropriate to assess its potential cumulative impacts with the subject development.

The DART + South West is the second of the infrastructural projects of the DART+ Programme expected to be delivered. The Rail Order Application for this has been submitted for statutory approval for its design, as of March 2023.

It is expected that once this project is delivered, it will increase the train capacity to double the current (12) trains per hour per direction and increase passenger capacity from the current peak capacity of approximately 5,000 passengers per hour to around 20,000 passengers per hour per direction.

Córas Iompair Éireann (CIÉ) has applied planning permission to An Bord Pleanála for a Rail Order in relation to the DART+ South West project. The subsequent granted approval of the Rail Order will authorise CIÉ to carry out all associated railway works necessary to enable construction, operation, maintenance, and improvements to the railway line between Hazelhatch and Celbridge Station, County Kildare to Heuston Station County Dublin (extending c. 16km) on the Cork Mainline, and Heuston Station to Glasnevin via the Phoenix Park Tunnel Branch line.

CIÉ / Iarnód Éireann are proposing a new substation and compound, a temporary access road, a temporary works compound and a track access point, all to be located on the subject lands. Utility diversions on the east side of Park West Avenue, within 'Site 5', are also required.

Of the schemes noted above, and excluding those not yet permitted, the permitted scheme with the planning reference 312290 for 750 no. apartments, creche and associated site works. is most relevant, being adjacent to the southern side of the railway line. It too proposes a landmark building. It will consolidate the residential aspects of the LAP at the area adjacent to Park West Avenue and the railway station. Unlike the other schemes noted above, it appears in some of the cumulative views.

10.5.3.2 Cumulative Landscape effects

The cumulative effects are generated by schemes noted above and in the context of the Park West Cherry Orchard Local Area Plan. It is clear from the assessment that the gap sites are causing urban dereliction and antisocial behaviour, with a notable effect on the quality of the public realm. The granting of schemes and the completion of permitted development will further consolidate the ambitions of the LAP and SDRA4 of the Dublin City Development Plan. As schemes are permitted following national, regional and local guidance, it is fair to assume that the quality of design remains appropriate. In that regard, the generation of a good senses of place and innate wayfinding and definition in the streetscape, and the provision of public realm is seen in a positive light. Increasing the population and amenity in proximity to public transport and connecting it through green infrastructure to the local area, should be a positive way to make new, integrated communities. The cumulative effects are therefore seen as ***moderate*** and ***positive*****.**

10.5.3.3 Cumulative Visual Effects

Each of the 9 verified views have been assessed for the visual cumulative effects. These views represent key aspects of the scheme, noting the proposed phasing of the development. The basic block forms of buildings are generally shown to demonstrate mass and scale only, although the Phase 1

scheme is shown as proposed in the grant of permission. The views are based on the winter photography. The selected views best demonstrate the potential for cumulative effects.

Cumulative View 1

Cumulative Proposed view

The proposed phase 2 is not visible and shown as a red line outline as it is obscured by the later commercial phase of the development shown in white block form. The phase 1 scheme is shown in the background. view shows the next phase of the development plan towards the viewer. They have the effect of completing the scheme by filling in the area of scrub beyond the M50. The blocks obscure the lower parts of the medium density area, but the landmark building can still be seen. The landmark building associated with the grant of permission 312290 appears to be behind the proposed scheme and is not visible in this view. There is a sense of urban consolidation and generation of place.

Visual Effect;

The cumulative visual effect of the proposed development in this view is assessed as ***imperceptible***.

Cumulative View 2

Cumulative Proposed View

This is a view is looking southwards towards the site from close to the junction of Park West Avenue and Cloverhill Road. The view shows the proposed phase 2, with a small portion of the upper floors of the landmark tall building for phase one above the rooftop in the middle of the image.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***slight*** and ***positive***.

Cumulative View 3

Cumulative Proposed View

The proposed view shows the upper floors of the tall landmark building of Phase 1 in the distance to the left.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***neutral*****.**

Cumulative View 4

Proposed View

This is a view from Cherry Orchard Court, which is adjacent to the Cherry Orchard Park, looking westwards towards the site. This view shows the massing of the proposed blocks on site 5 of the LAP; the step down from Park West Avenue towards to Cherry Orchard Park, and the existing two storey terraced housing. It has the effect of consolidating the edge of the park and supporting the landmark building by strengthening the composition of buildings around it. Phase 2 is not visible and is denoted by a red line outline.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive*****.**

Cumulative View 5

Proposed View

This is a view from Barnville Park which is adjacent to the Cherry Orchard Park, looking westwards towards the site. This view shows the massing of the proposed blocks on site 5 of the LAP; the step down from Park West Avenue towards to Cherry Orchard Park, and the existing two storey terraced housing. It has the effect of consolidating the edge of the park and supporting the landmark building by strengthening the composition of buildings around it. The view may be mitigated further by design detail that is not available in the outline massing. Phase 2 is not visible and is denoted by a red line outline.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***neutral*.**

Cumulative View 6

Proposed View

The proposed view shows the phase 1 scheme in detail addressing the station and Park West Avenue. The buildings are grounded by the street tree planting which is particularly effective in summer. The streetscape is also demonstrating civic amenity in planting, seating. The formalisation of parking bays allows the unregulated parking to be removed. At this distance, the pale and warm brick facades also show detailing in texture which emphasises form and pattern, particularly associated with the windows and balconies. The balconies serve to add life and vibrancy above street level, indicating a vitality to the scheme. Phase 2 is not visible and is denoted by a red line outline.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive*.**

Cumulative View 7

Proposed View

The view shows the proposed phase 1 scheme which completes this section of Park West Avenue making a composite urban streetscape of cycle route, parking, street trees and nature-based drainage swales, buffer planting to define the building edges and balconies overlooking the street. A gap in the block signals one of the homezone routes into the site. Phase 2 is not visible and is denoted by a red line outline, except for a small section that appears in the distance on Park West Avenue.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive*.**

Cumulative View 8

Cumulative Proposed view

The proposed view shows the streetscape completed, and the landmark building in the distance, with building mass stepping down to the medium density part of the phase 1 scheme leading to the phase 2 scheme in the foreground. The articulation of massing and colours of brick facades and balconies are becoming more visible at this distance.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive*.**

Cumulative View 9

Cumulative Proposed view

The proposed view shows the phase 1 landmark building beyond the belt of mature trees. At this distance the detail is hard to see, but there is an impression of the massing being defined by shadow and brick colour. The phase 2 scheme is not visible and is denoted by a red line outline.

Visual Effect;

The visual effect of the proposed development in this view is assessed as ***moderate*** and ***positive*.**

The visual effects are summarised in the following table:

Table 10.10: Summary of views

View	Location	Effects	
1	Cloverhill Road M50 Bridge	Moderate	Positive
2	Park West Avenue	Moderate	Positive
3	Cloverhill Rd	Slight	Neutral
4	Cherry Orchard Court	Imperceptible	
5	Barnville Park	Imperceptible	
6	Cherry Orchard Station	Slight	Positive
7	Cedarbrook and Park West Avenue	Moderate	Positive
8	Park West Avenue	Moderate	Positive
9	Collinstown Park	Imperceptible	
Cumulative			
1	Cloverhill Road M50 Bridge	Moderate	Positive
2	Park West Avenue	Slight	Positive
3	Cloverhill Rd	Moderate	Neutral
4	Cherry Orchard Court	Moderate	Positive
5	Barnville Park	Moderate	Neutral
6	Cherry Orchard Station	Moderate	Positive
7	Cedarbrook and Park West Avenue	Moderate	Positive
8	Park West Avenue	Moderate	Positive
9	Collinstown Park	Moderate	Positive

In summary, the assessment from a low baseline of a poor-quality environment, combined with a strong urban design plan that follows the guidance of the Park West and Cherry Orchard Local Area Plan and the SDRA4, as well as thoughtful detailing leads to generally ***moderate*** and ***positive*** effects when the scheme is visible.

10.5.4 Construction Phase Mitigation Measures – Landscape And Visual

10.5.4.1 Construction Phase

The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. The perimeter site hoarding will screen from view much of the construction activity and materials at ground level. Other mitigation measures proposed during this delivery stage of the development, revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures, etc. Such mitigation will be set out in the Construction Management Plan prepared for the scheme. This will be a working document which will be continually reviewed and amended through the construction phase to ensure effective mitigation throughout.

The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

Daily and weekly working hours;

- Agreed haul routes for incoming materials;
- Licensed hauliers to be used;
- Disposal sites;
- Travel arrangements for construction personnel;
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;
- Temporary construction entrances to be provided;
- Wheel wash facilities if required;
- Road cleaning and sweeping measures to be put in place if required;
- Temporary construction signage to be put in place and maintained.

The planning application includes an Outline Construction Management Plan, prepared by Waterman Moylan Consulting Engineers, which outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. This Outline Construction Management Plan forms the basis for the required measures to be included in the appointed Contractor's Construction Management Plan. As such it references construction phase mitigation measures which are relevant to the assessment of Landscape and Visual Impact.

10.5.5 Operational Phase Mitigation Measures – Landscape And Visual

10.5.5.1 Operational Phase

The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials;
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass.

- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration;
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible);
- Simplification and rationalisation of the proposed roof lines, including green roofs
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities, in turn combining with internal cultural spaces.
- The provision of secure communal spaces with each residential block.
- Sustainable approach to nature-based drainage and to enhance biodiversity.
- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

10.6 Residual Impacts

The proposed development will impact on the urban landscape to varying degrees in terms of its perceived nature and scale. These effects are tempered and conditioned by sensitivities associated with the receptor. The duration of such impacts is however determined by the design life of the proposed development. In this case the building development has a design life of up to 60 years. Impacts on landscape character are therefore deemed to be of long-term duration in this instance.

In assessing the landscape character impacts, there are three main inter-related aspects to be addressed in considering the development proposals, namely:

- The perceived character of the area, how it is affected by the proposal and how well it integrates, particularly in the context of a changing environment.
- Effects of the proposed development on social and cultural amenity
- The proposed views of the development, relative to the existing site and context and the associated impact on visual amenity

10.7 Difficulties Encountered

There were no difficulties encountered in the assessment.

10.8 Interactions

The landscape and visual aspects of the development invariably intertwine in relation to the social qualities of passive and active amenities and civic qualities in the public realm, transport, natural heritage particularly relating to enhancing biodiversity and creating resilience to climate change.

10.9 Summary of Mitigation Measures and Residual Impacts

10.9.1 Introduction

The assessment for Cherry Orchard Point identifies mitigation measures for minimising the impacts and effects of the scheme which are summarised below.

10.9.2 Mitigation Measures

The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials;
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass
- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration;
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible);
- Simplification and rationalisation of the proposed roof lines.
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities.
- The provision of secure private gardens
- Sustainable approach to drainage and biodiversity
- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

10.9.3 Landscape and Visual

Construction phase mitigation measures – landscape and visual

The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

Daily and weekly working hours;

- Agreed haul routes for incoming materials;
- Licensed hauliers to be used;
- Disposal sites;
- Travel arrangements for construction personnel;
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;
- Temporary construction entrances to be provided;
- Wheel wash facilities if required;
- Road cleaning and sweeping measures to be put in place if required;
- Temporary construction signage to be put in place and maintained.

10.10 Residual Impacts

The proposed development will impact on the urban landscape to varying degrees in terms of its perceived nature and scale. These effects are tempered and conditioned by sensitivities associated with the receptor. The duration of such impacts is however determined by the design life of the proposed development. In this case the building development has a design life of up to 60 years. Impacts on landscape character are therefore deemed to be of long-term duration in this instance.

In assessing the landscape character impacts, there are three main inter-related aspects to be addressed in considering the development proposals, namely:

- The perceived character of the area, how it is affected by the proposal and how well it integrates, particularly in the context of a changing environment.
- Effects of the proposed development on social and cultural amenity
- The proposed views of the development, relative to the existing site and context and the associated impact on visual amenity

10.10.1 Landscape and Visual

The degree of impact is seen as ***moderate*** in the context of a baseline of a brown and greenfield site with appropriate zoning and a landscape character that is not particularly sensitive in this locality.

The design of the scheme produces a neutral to ***positive*** quality in this context.

10.10.2 Construction Stage

No residual Impacts; the conclusion of the construction stage will be the completion of the scheme, and the temporary nature of the effects will no longer exist. Operational Stage

In demonstrating the trend for increased density for housing as a national policy the scheme is demonstrating an intensification of the current suburban and derelict landscape. The effect is described as ***moderate*** in that it follows the principles and trends currently extant in the neighbourhood, and ***positive*** in that it asserts these new spatial definitions in a considered way and brings with it the vibrancy of a consolidated urban plan.

The assessment of visual effects concludes for the most part that the established residential areas will benefit from the views. Moderate effects occur closer to the subject site, and the massing and treatment of the facades tends to lead towards a ***positive*** effect.

10.11 Cumulative Effects

The cumulative effects are generated by schemes in the context of the Park West Cherry Orchard Local Area Plan. It is clear from the assessment that the gap sites are causing urban dereliction and antisocial behaviour, with a notable effect on the quality of the public realm. The granting of schemes and the completion of permitted development will further consolidate the ambitions of the LAP and SDRA4 of the Dublin City Development Plan. As schemes are permitted following national, regional and local guidance, it is fair to assume that the quality of design remains appropriate. In that regard, the generation of a good senses of place and innate wayfinding in the streetscape, the provision of public realm is seen in a positive light. Increasing the population and amenity in proximity to public transport and connecting it through green infrastructure to the local area, should be a positive way to make new, integrated communities. The cumulative effects are therefore seen as ***moderate*** and ***positive***.

10.12 Summary

In summary, the landscape significance of effects resulting from a low landscape sensitivity, and a high magnitude of change, is ***moderate***. Qualitatively the landscape effect is ***positive***.

10.13 References

- Guidelines for Landscape and Visual Impact Assessment, prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge, 3rd Edition 2013.
- 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' - Environmental Protection Agency (EPA), May 2022.
- Visual Representation of Development Proposals: Technical Guidance Note 06/19, Landscape Institute UK (LI) September 2019.
- Urban Development and Building Heights Guidelines (2018)
- The Dublin City Development Plan 2022-2028.
- Park West and Cherry Orchard Local Area Plan 2019

11 Land, Soils, and Geology

11.1 Introduction

This chapter of the Environmental Report - Addendum to Approved Phase 1 Parent EIAR has been prepared by Waterman Moylan on behalf of Dublin City Council, In Partnership with The Land Development Agency and provides an assessment of the impact that the proposed development at Cherry Orchard Point – Phase 2, Park West Avenue, Dublin 10 will have on the surrounding land, soil and geology within the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational.

11.2 Assessment Methodology

This assessment has been carried out generally in accordance with the following guidelines:

- Guidelines on the Information to be contained in Environmental Impact Assessment reports (EPA) (2022).
- Guidelines for Planning Authorities & An Bord Pleanála on carrying out an Environmental Impact Assessment (2018).
- Advice notes for preparing Environmental Impact Statements (EPA – DRAFT – 2015).
- Advice notes on Current Practice in the preparation of Environmental Impact Statements (EPA – 2023).
- Guidelines for the preparation of Soils Geology & Hydrogeology Chapters of Environmental Impact Statements (IGI – 2013).
- Geology in Environmental Impact Statements, A Guide (IGI – 2002).
- Control of water pollution from sites (CIRIA – 2001).
- Environmental Handbook for Building and Civil Engineering Projects (CIRIA – 2000).

The assessment follows a phased approach for the Proposed Cherry Orchard Point - Phase 2 Subject Site as outlined in the EPA and IGI guidelines.

The **first phase** of this assessment determined the type, scale, and location of the Proposed Cherry Orchard Point - Phase 2 development as well as establishing the baseline conditions via a desktop study to classify the geological features related to the site. The Geological Survey of Ireland (GSI) was consulted, and the following maps reviewed:

- National Irish Historic Maps produced by Ordnance Survey Ireland (OSI)
- Bedrock Geology Map
- Bedrock Aquifer Map
- Groundwater Vulnerability Map

The information obtained were utilised to establish the baseline conditions on site.

The **second phase** of this assessment was the incorporation of direct and indirect investigations and studies. At the time of writing the approved Phase 1 Parent EIAR for the Approved Phase 1 development, this information was primarily provided by geotechnical site investigations carried out by Ground Investigations Ireland in November 2022 for both sites, Site 4 to the west of Park West Avenue and Site 5 to the east. A further report, Waste Analysis Classification Report, was also produced by Ground Investigations Ireland (GII). These documents were submitted as part of the approved Phase 1 Parent EIAR.

A subsequent site investigation report and waste classification report were undertaken by GII for the masterplan development in July and August of 2024, respectively. The updated 2024 site investigation report findings are in-line with the 2022 report findings. The 2022 GII Site Investigation Report, 2024

GII Site Investigation Report, and 2024 GII Waste Classification Report are appended to the Proposed Cherry Orchard Point - Phase 2 Preliminary Construction Environmental Management Plan, submitted as part of this application.

Phase 2(a) of the assessment was the refinement of the design layout to mitigate by elimination and replacement, any items that would have the potential to negatively impact the environment by their design, material components, or method of construction/installation. It should be noted that in certain circumstances, alternative designs may have been available however, in order to meet the requirements of the Local Authority or Responsible Bodies, these alternatives were not accepted. An example of this would be the preliminary design of the foul drainage for Site 4 which had 2 potential outfall locations. However, Uisce Eireann have precisely instructed the location for the foul water outfall from Sites 4 & 5, so as to align the drainage design for the masterplan development with their strategic infrastructural plans for the locality.

Phase 2(b) of the assessment was a detailed review of the proposed design and a study to determine the potential risks and impacts of the design and strategies.

Phase 3 is a continuation of the Phase 2(b) works whereby the identified risks and impacts where then further assessed against mitigation measures which provided a residual risk. Where a residual risk was determined to be high, the item was isolated and returned to Phase 2(a) to repeat the process of identifying alternatives methods and measures to reduce the residual risk.

Phase 4 was the completion of this Proposed Cherry Orchard Point - Phase 2 Subject Site's Environmental Report, Chapter 11, based on a full understanding of the baseline, proposed development design layout, and construction strategies, incorporation of the mitigation measures, identified risks and residual risks.

11.3 Baseline Environment

The overall Cherry Orchard Development, referred here within as the masterplan lands, is comprised of 2 No. Sites identified in the Park West – Cherry Orchard LAP. Site 4 & Site 5 are bisected by Park West Avenue and lie to the west and east of this roadway respectively, as per Figure 11.1 overleaf. The Proposed Cherry Orchard Point - Phase 2 of the masterplan development is located on the northern portion of Site 4.

The 2022 and 2024 Site Investigation Reports undertaken by Ground Investigations Ireland (GII) for the overall/masterplan development, which is included as an appendix to the Preliminary Construction Environmental Management Plan submitted as part of this Proposed Cherry Orchard Point - Phase 2 application, determined that Site 4 is a combination of Greenfield and Brownfield, with evidence of fill material in the area of the site previously used as a construction compound. Site 5 is predominantly a brownfield site, with fill material found for the same reason.

Site 4 is bound to the west by the M50, to the south by the Dublin-Kildare rail line and the Park West & Cherry Orchard station, and to the east and north by Park West Avenue. Site 5 is bound to the west by Park West Avenue, the northwest by Cedar Brook Way, the northeast and east by Barnville Park, and to the south by the Dublin-Kildare rail line and the residential unit of 62 Barnville Park.

Site 4 is currently accessed via a secured gate from Park West Avenue. Site 5 is accessed via a similar arrangement from Cedar Brook Way.

The area of the subject application, Proposed Cherry Orchard Point - Phase 2 of the development, is indicated by the red boundary line, also shown on Figure 11.1: Site Location Map (Source: Google Earth).

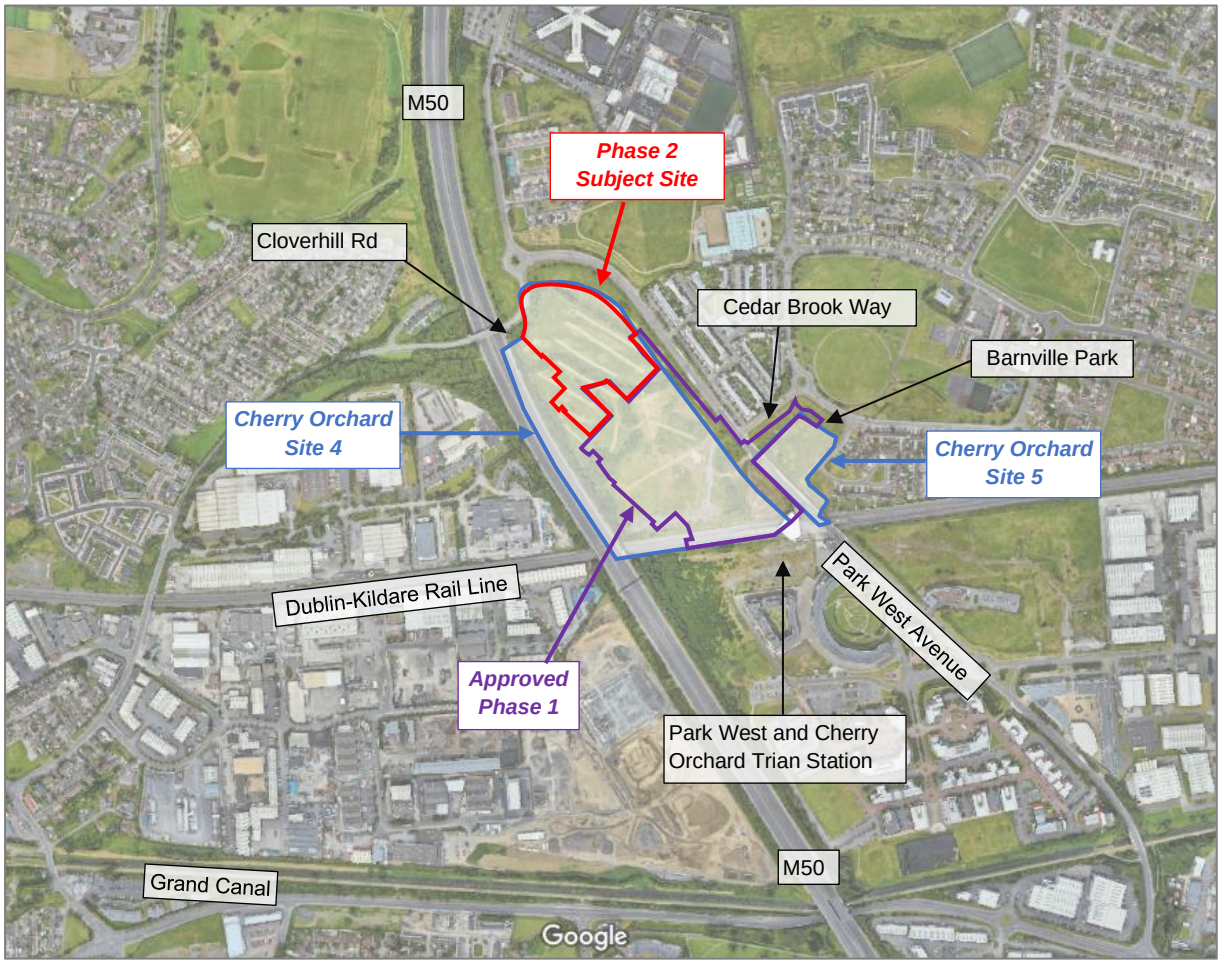


Figure 11.1: Site Location Map (Source: Google Earth)

The overall Cherry Orchard Development area as per the blue line boundaries is c. 13.02ha, with Site 4 being c. 11.41 ha and Site 5 being c. 1.61ha. The area of the Cherry Orchard Point - Phase 2 proposed development as indicated by the redline boundary, including for works in the public domain, is 3.185ha (31,850m²).

For Site 4, the topographic survey of the area indicates that the low point of the site has a level of 55.72m OD. This is located on the eastern site boundary approximately 140m north of the junction of Park West Avenue and Cedar Brook Way. The remainder of the site generally slopes to this location owing to the embankments and subsequent site grading from the Dublin-Kildare Rail line to the south, M50 to the west, and approach road to the overpass on the M50 to the north.

Site 5 has a central high point with a level of 58.05m OD, and slopes outwards to all boundaries. The boundaries of Site 5 typically have levels between 54.80m and 56.00m, with the higher of these levels being located to the south of the site, adjacent to the retaining wall of the Park West Avenue Bridge over the rail lines. Site 5 does not have any form of surface drainage network and conveys rainfall directly to the soils via its grassed landscape.

Ordnance survey and topographic survey mapping indicates that Site 4 contains static ditches with no outfall. These ditches previously had hydrological connectivity and flow, which has been cut-off by the construction of the M50 to the west and the Cedar Brook housing development to the east, as discussed later in this Chapter. These ditches normally remain dry except in heavy rainfall events where water that is not percolated via the site's naturally grassed landscaping, would collect locally in these static ditches for infiltration to the groundwater table. There is potential during heavy rainfall events, that the ground may become saturated and unable to further infiltrate rainfall, which would then run from the surface, over the boundary and to the adjacent road networks to outfall to the storm drainage networks

serving these roads. The sites are located in the catchment of the Blackditch stream, a tributary of the Camac River which has an ultimate outfall to the River Liffey at Heuston Station.

11.3.1 Phasing

Sites 4 and 5 are being developed in four phases as shown on Figure 11.2.

Figure 11.2: Masterplan Development – Indicative Project Phasing

11.3.2 Site Development

Currently, the sites are primarily greenfield in nature (scrubland) however, it is known that more recently the sites have both been used as construction compounds and are a mix of greenfield and infill material. The 2022 and 2024 GII Site Investigation Reports confirm this.

11.3.3 Historic Land Use

Historic maps for the locality have been reviewed. These do not record any previous settlement or development on the site.

As noted above in respect to the static ditch system, a detailed review of historic maps for the locality, from the national historic maps dashboard produced by Ordnance Survey Ireland (OSI), indicates that the ditch system noted as present in Site 4 previously had hydrological connectivity from the east, merging on the site and flowing to the west. It is clear that this hydrological connectivity has been cut-off on the west by development of the M50, and to the east by residential development. Refer to Figure 11.3 below for an extract of this historic map.

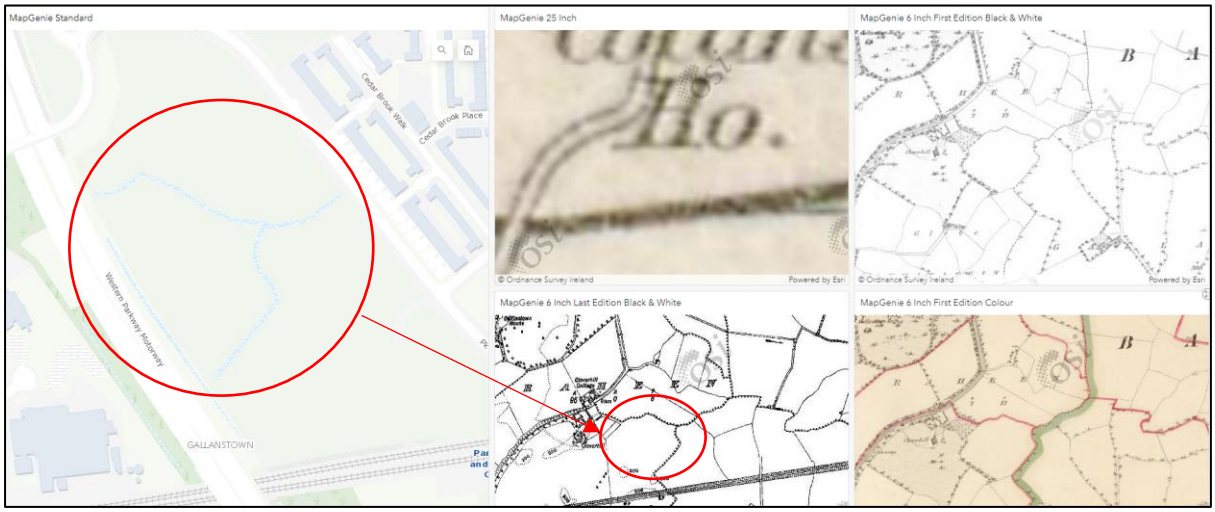


Figure 11.3: Site location (Source: OSI Viewer Historic Maps)

The project archaeologist, Archer Heritage Planning Ltd., has found the ploughed remains of a Fulacht Fia on-site, on the southern side of the confluence of the 2 No. static ditches noted above. The archaeologist has recommended that the remains of the Fulacht Fia be preserved by record, prior to any works commencing on-site. Further detail is provided in the Archaeology Chapter of this Environmental Report submitted as part of this planning application.

11.3.4 Ground Investigation

2022 Site Investigation Reports

Site investigations for the masterplan lands (including the Proposed Phase 2 Subject Site) were undertaken in 2022 by GII. The technical Site Investigation report was completed in November 2022, and the Waste Analysis Classification report was completed in October 2022.

The 2022 Site Investigation report tests undertaken are summarised below:

The fieldworks comprised a programme of 14 No. trial pits with dynamic probes, and 11 No. soakaway tests. 14 No. Cable percussion and 19 No. rotary boreholes, 3 No. groundwater monitoring and geotechnical and environmental laboratory testing was also undertaken.

Trial pits were excavated using an 8.5T tracked excavator. The Trial Pits were sampled, logged, and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, ground water encountered, and the characteristics of the strata encountered and are presented on the trial pit logs, which are provided in Appendix 2 of the Site Investigation report.

The soakaway testing was carried out in selected trial pits at the locations indicated. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the masterplan lands. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE digest 365.

The dynamic probe tests (DPH) were carried out at the locations shown in accordance with B.S. 1377: Part 9 1990. The dynamic probe logs are provided as an appendix to the Site Investigation report.

The cable percussion boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing. The standard method of boring in soil for site investigation is known as the Cable Percussion method. The cable percussion borehole logs are provided in Appendix 5 of the Site Investigation report.

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown. The rotary boreholes were complete from the ground surface or alternatively, where noted on the individual

borehole log, from the case of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring. The rotary borehole logs are provided in Appendix 5 of the Site Investigation report.

Groundwater monitoring installations were installed upon the completion of selected boreholes to enable sampling and the determination of the equilibrium groundwater level. The installation details are provided on the exploratory hole logs in the appendices of the Site Investigation report.

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design. Environmental and chemical testing as required by the specification, including the Rilta Suite, pH, and Sulphate testing was carried out by Element Materials Technology Laboratory in the UK.

2024 Site Investigation Reports

An updated Site Investigation Report and Waste Classification Report was undertaken by GII in July and August of 2024, respectively, for the masterplan lands (including the Proposed Phase 2 Subject Site).

The updated 2024 Site Investigation report tests undertaken are included below:

The fieldworks comprised a programme of the following:

- 118 no. trial pits to a maximum depth of 3.6m BGL;
- 5 No. Soakaways to determine a soil infiltration value to BRE digest 365
- 6 No. Slit trenches to determine existing services.
- 5 No. Window Sample Boreholes to recover soil samples
- 33 No. Cable Percussion boreholes to a maximum depth of 4.0m BGL
- 14 No. Rotary Core Boreholes to a maximum depth of 10.1m BGL
- Geotechnical & Environmental Laboratory testing
- Report with recommendations

The locations of the above tests are indicated in Figure 11.3, an extract of the locations tested from the Site Investigation Report. The procedures undertaken as part of the site investigation were in accordance with Eurocode 7 Part 2: Ground investigation and testing (ISEN 1997-2:2007) & B.S. 5930:2015 and are summarised below.

The trial pits were excavated using a 8T, 13T tracked or JCB 3CX excavator at the locations shown in the exploratory hole location plan in Appendix 1 of the SI Report. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of the SI Report.

The slit trenches were excavated using 3T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1 of the SI Report. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the slit trench records which are provided in Appendix 3 of the SI Report.

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1 of the SI Report. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arisings upon completion. The soakaway test results are provided in Appendix 4 of the SI Report.

The window sampling was carried out at the locations shown in the location plan in Appendix 1 of the SI Report using a Tecopsa SPT Tec 10 percussion drilling rig. The window sample records are provided in Appendix 5 of the SI Report.

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing. The cable percussion borehole logs are provided in Appendix 6 of the SI Report.

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown on the location plan in Appendix 1 of the SI Report. The rotary borehole logs are provided in Appendix 7 of the SI Report.

Figure 11.4: Site Investigation Test Locations (Updated SI Report - July 2024)

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design. Environmental & Chemical testing as required by the specification, including the Rilta Suite, pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria. Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD) were carried out in Professional Soils Laboratory (PSL Ltd) in the UK. Rock strength testing including Point Load (Is50) and Unconfined Compressive Strength (UCS) testing was carried out in CMTL Portlaoise Geotechnical Laboratory.

11.3.5 Geology

Geological Survey Ireland (GSI) produces a wide range of datasets, including bedrock geology mapping, extracted to Figure 11.5.

The map indicates that the sites lie withing the Lucan Formation. The Lucan Formation is described as comprising 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.

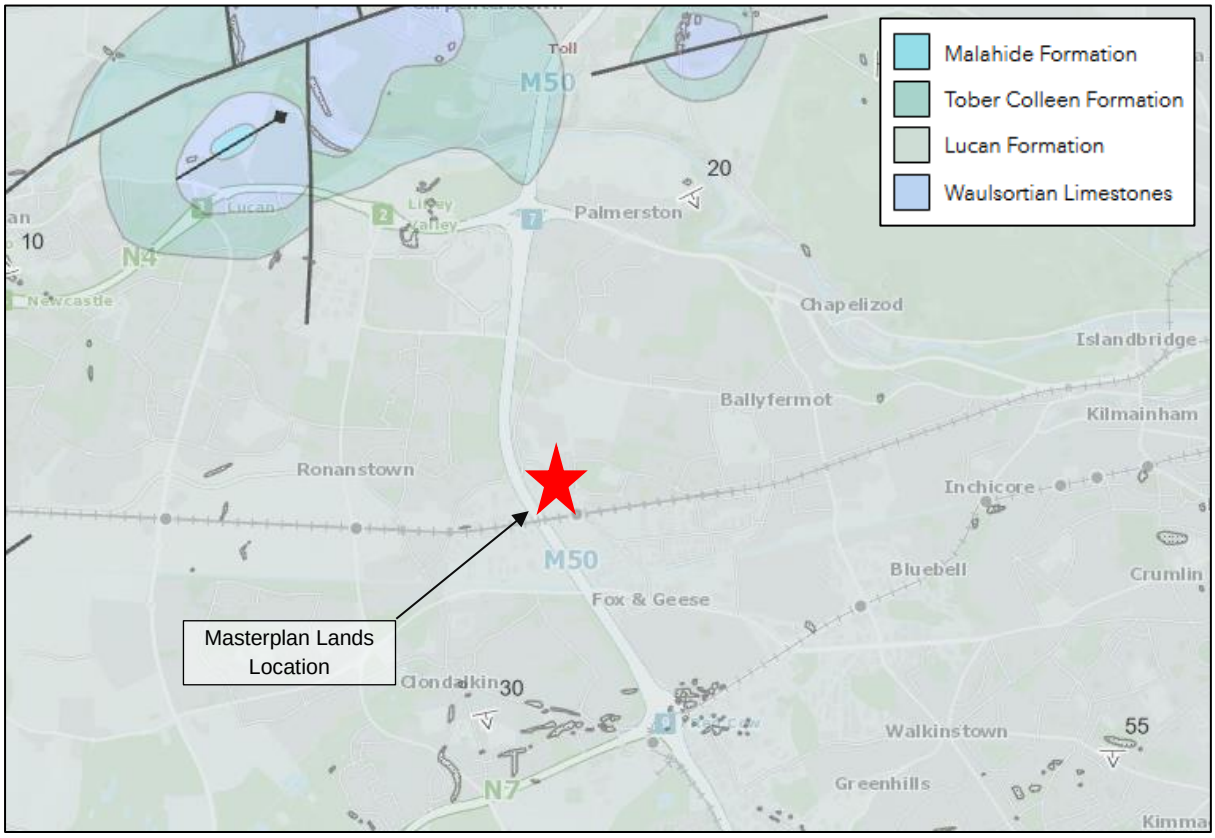


Figure 11.5: Extract from GSI Bedrock Geology Map

The national Aquifer Bedrock Map prepared by the Geological Survey of Ireland was consulted and is extracted to Figure 11.6, overleaf.

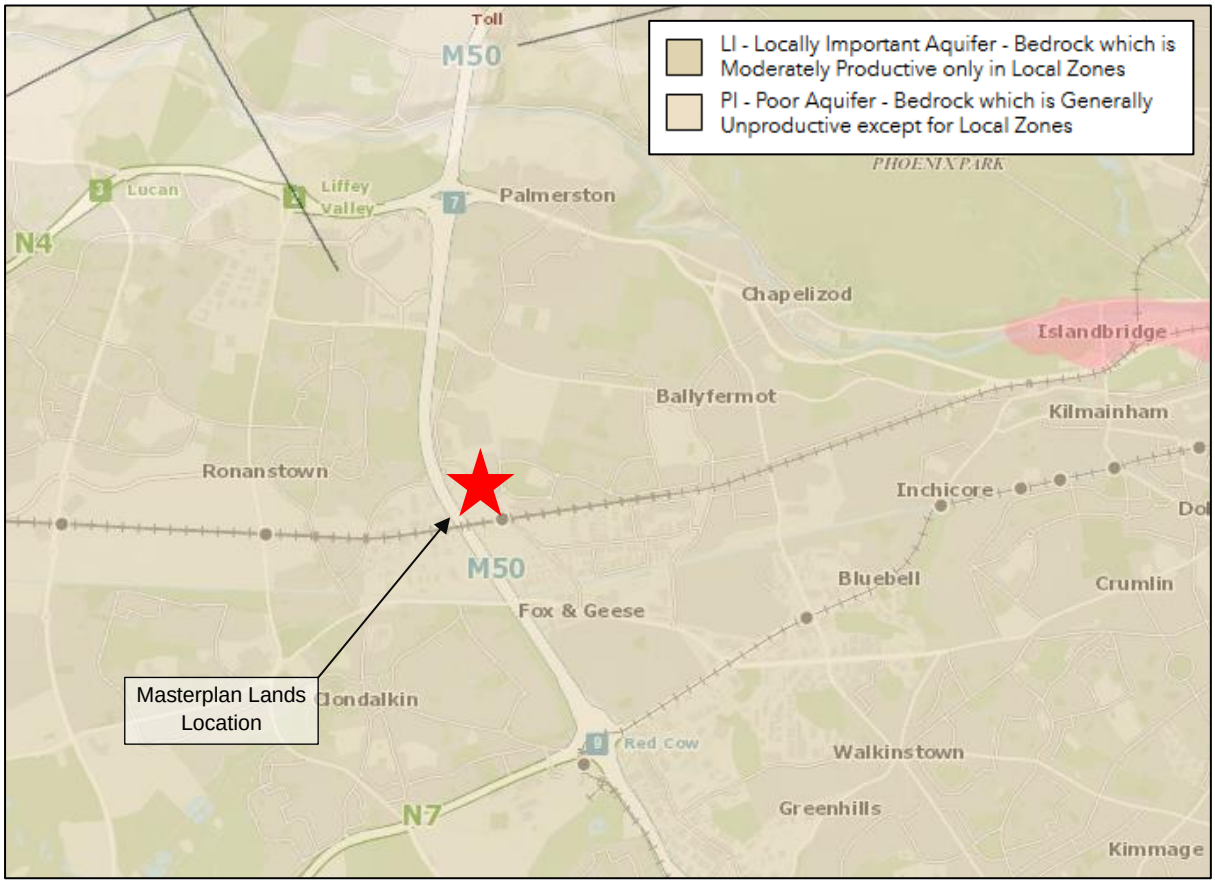


Figure 11.6: Extract from GSI Bedrock Aquifer Map

From the above map extracts, the sites lie in the Lucan Formation which has a designation of LI, which represents Locally Important Aquifer qualities, where the bedrock is moderately productive only in local zones.

The same map viewer series didn't indicate the presence of any groundwater wells or springs in the immediate vicinity of the site.

The groundwater vulnerability in the vicinity of the proposed sites was also examined by referencing the Geological Survey of Ireland. From the GSI groundwater vulnerability map, extracted below, the sites lie within an area of high groundwater vulnerability.

Figure 11.7: Extract from Groundwater Vulnerability Map

11.3.6 Soils

The results of the 2022 Site Investigation Report with additional information obtained from the 2024 Site Investigation Report are summarised as follows:

11.3.6.1 Topsoil

2022 SI: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.3m Below Ground Level (BGL). In some areas of the site Gravel Fill was encountered at the surface.

2024 SI: Topsoil was encountered in the majority of the exploratory holes and was present to a maximum depth of 0.3m BGL. Tarmac and concrete surfacing was present in the slit trenches.

11.3.6.2 Made Ground

2022 SI: On site 4, the Made Ground deposits were encountered beneath the Topsoil/Surfacing and were present to depths of between 0.65m and 1.1m BGL. These deposits were described generally as *brown slightly gravelly CLAY with occasional cobbles and contained occasional fragments of red brick, timber,* glass, and plastic.

On site 5, to the west of Park West Avenue, the Made Ground deposits were deeper and encountered to depths of up to 3.2m BGL. It should be noted that TP13 refused in the Made Ground at 2.9m BGL so the base wasn't proven at this location. These deposits were described generally as *brown slightly*

sandy slightly gravelly CLAY with occasional cobbles and contained occasional fragments of concrete, red brick, glass, rope, timber, ceramic, metals, and plastic.
2024 SI: Made Ground deposits were encountered beneath the Topsoil/Surfacing at some locations and were present to depths of up to 2.1m BGL. These deposits were described generally as either grey sandy Gravel or brown sandy slightly gravelly CLAY with frequent cobbles and boulders and contained occasional fragments of concrete, red brick, glass and plastic.

11.3.6.3 Cohesive Deposits

2022 & 2024 SI: Cohesive deposits were encountered beneath the Made Ground and were described typically as *brown sandy gravelly CLAY with occasional cobbles and boulders overlying a stiff black sandy gravelly CLAY with occasional cobbles and bounders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits typically increased with depth and was firm to stiff or stiff below 1.0m BGL in the majority of the exploratory holes on Site 4, and below 3 to 4m BGL on Site 5. These deposits had some, occasional, or frequent cobble or boulder content, where noted on the exploratory borehole logs.

11.3.6.4 Weathered Bedrock

2022 SI: In some of exploratory holes weathered rock was encountered which was digable with the large excavator to a depth of up to 2.0m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as angular gravel and cobbles of Limestone/Mudstone however there was some variability in the fracture spacing and the ease at which the excavator could progress. Some clay and sand were also present with the rock mass either from weathering or as infilling to fractures which were opened upon excavation. In some locations residual soil was encountered described as slightly sandy very gravelly CLAY.

11.3.6.5 Bedrock

2024 SI: The rotary core boreholes recovered Medium strong to very strong grey/dark grey fine to medium grained laminated LIMESTONE interbedded with weak black fine grained laminated Mudstone. Locally the Mudstone was weathered to black clay. This is typical of the Calp Formation, which is noted on the geological mapping of the proposed site. Rare visible Pyrite veins were noted during logging which are typically present within the Calp Limestone. The depth to rock varies from 2.3m BGL in BH03 to a maximum of 5.3m BGL in BH18. The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however, both indices show an increase with depth in each of the boreholes.

11.3.6.6 Groundwater

2022 SI: Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors.

2024 SI: Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. It is noted that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction, and other factors. For this reason, standpipes were

installed in BH, BH11, and BH18 to allow the equilibrium groundwater to be determined. The groundwater monitoring is included as Appendix 7 of the Site Investigation report.

11.3.6.7 Geotechnical Laboratory testing

2024 SI: The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be clay of low to intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well graded with percentages of sands and gravels ranging between 11% and 56% generally with fines contents of 22 to 56%.

11.3.6.8 Chemical Laboratory Testing

2022 & 2024 SI: The pH and sulphate testing carried out indicate that pH results are neutral and that the water-soluble sulphate results is low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

11.3.6.9 Environmental Laboratory Testing

2022 & 2024 SI: A number of samples were analysed for a suite of parameters which allows for the assessment of the sampled material in terms of total pollutant content for the classification of materials as *hazardous or non-hazardous*. The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable, non-reactive, hazardous etc.) The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (council Decision 2003/33/EC), which for the solid samples are total organic carbons (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

As part of the suite a leachate is generated from the solid sample, which is analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

While the laboratory report provides a comparison with the waste acceptance criteria limits it does not provide a waste classification of the material samples nor does it comment on any potentially hazardous properties of the material tested. The possibility for contamination, not revealed by the testing undertaken should be borne in mind particularly where Made Ground deposits are present, or the previous site use or location indicate a risk of environmental variation. The waste classification report is included as an appendix to this document, while the results of the completed laboratory testing are included as Appendix 6 of the Site Investigation report, which is also included as an appendix to this document.

11.3.6.10 Waste Classification

The 2022 and 2024 SI reports both reported that asbestos fibres were not detected in the samples. The laboratory did not identify asbestos containing material (ACMs) in the samples.

Due to the presence of made ground on site, materials which may be excavated and removed from site would meet the definition of waste under the Waste Framework Directive. Due to the varying levels of anthropogenic materials encountered in the made ground there are potentially two sets of Lists of Waste (LoW) codes with “mirror” entries which may be applied to excavated material to be removed from site.

1. 17-05-03* (soil and stone containing dangerous substances, classified as hazardous) or 04-05-04 (soil and stone other than those mentioned in 17-05-03, not hazardous); or
2. 117-09-03* (other construction and demolition wastes (including mixed wastes) containing hazardous substances) or 17-09-04 (mixed construction and demolition wastes other than those mentioned in 17-09-01, 17-09-02, & 17-09-03).

Where waste is a mirror entry in the List of Waste (LoW), it can be classified via the process of analysis against standard criteria set out in the Waste Framework Directive. The assessment process is described in detail in guidance published by the Irish (EPA Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous, June 2015) and UK Regulatory Authorities (Guidance on the Classification and Assessment of Waste: Technical Guidance WM3, 2015). The assessment involves comparison of the concentration of various parameters against defined threshold values.

The 2022 GII Waste Analysis Classification report listed a total of 14 No. trial pit locations with a specific LoW code applied to the material at each sample location is summarised in Table 11.1, included in the approved Phase 1 Parent EIAR. These codes are only applicable where the material is being removed from site as a waste.

The 2024 GII Waste Analysis Classification included a total of 62 No. waste classification codes for a larger sample of trial pit locations undertaken, 40 No. of which were located within the Proposed Cherry Orchard Point - Phase 2 Subject Site. These 2024 trail pit locations and specific LoW codes applied to the material at each sample location is summarised in Table 11.1 included within this Environmental Report and in Table 11.1, below.

The Waste Classification report utilised HazWasteOnline™, a web based commercial waste classification software tool which assists in the classification of potentially hazardous material. This tool was used to determine whether the material sampled are classified as hazardous or non-hazardous. The use of the online tool is accepted by the EPA (EPA 2014).

The conclusions presented are based on GII's Professional Opinion. It should be noted that the environmental regulator (in this case the EPA) and the waste acceptor (in this case a landfill operator) shall decide whether a waste is hazardous or non-hazardous and suitable for disposal at their facility.

11.3.6.11 Landfill Waste Acceptance Criteria (WAC)

WAC have been agreed by the EU (Council Decision 2003/33/EC) and are only applicable to material if it is to be disposed of as a waste to a landfill facility. Each individual member state and licensed landfill operator may apply more stringent WAC. The data obtained from laboratory testing has been compared to the WAC limits set out in the Council Decision as well as the specific WAC which the EPA had applied to the Walshestown and Integrated Materials Solutions (IMS) landfills. These landfills have a higher limit for a range of parameters while still operating under an inert landfill license. The potentially applicable waste categories are summarised as follows:

The waste category sections are divided in 4, lettered A-D, with numbered subcategories, A being suitable for disposal at an unlined soil recovery facility, B an inert landfill, C a non-hazardous landfill, and D a hazardous waste treatment facility.

Category A waste is briefly described as: Soil and stone only which are free from anthropogenic materials such as concrete, brick, timber etc. Soil must be free from contamination e.g., PAHs & hydrocarbons. Material meeting this classification may be disposed of to an unlined soil recovery facility.

Category B1 waste: Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/ EC (2002). Results also found to be

non-hazardous using the HWOL application. Material meeting this classification may be disposed of to an inert landfill.

Category B2 waste: Reported concentrations greater thank Category B1 criteria, but less than IMS Hollywood Landfill acceptance criteria, as set out in their waste license W0129-02. Results also found to be non-hazardous using the HWOL application. Material meeting this classification may be disposed of to an inert landfill with a waste license suitable to accept the reported concentrations.

Category C waste: Reported concentrations greater than Category B2 criteria but within non-hazardous landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1993/31/EC (2002). Results also found to be non-hazardous using the HWOL application. Material meeting this classification may be disposed of to a Non-Hazardous landfill.

Note:

Category C1 is as Category C but containing <0.001% w/w asbestos fibres.

Category C2 is as Category C but containing >0.001% and <0.01% w/w asbestos fibres.

Category C3 is as Category C but containing >0.01% and <0.1% w/w asbestos fibres.

Category D – Results found to be Hazardous using HWOL Application (Hazardous Treatment required).

Category D1 – Results found to be hazardous due to the presence of asbestos (>0.1%) (Hazardous Treatment required).

All samples were assessed in terms of waste classification using the HazWasteOnline™ tool and also the WAC set out in Council Decision 2003/33/EC and the Walshestown/IMS specific WAC to give a final waste categorisation to determine the most appropriate route for any waste generated. The final and most applicable waste category for each sample taken from the 2024 SI Report is set out in Table 11.1, below:

Table 11.1: Waste Classification as Extracted from the Waste Classification Report

Sample ID	Sample Depth (m)	HazWasteOnLine Classification	List of Waste Code	Soil Recovery Facility Trigger Level Compliant (Category A Criteria)							Landfill WAC Classification
				Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Domain 7	
TP-01	0.50	Non Hazardous	17 05 04	No	Yes	Yes	No	No	No	No	Category B1
TP-03	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	Yes	No	Category B1
TP-03	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP-06	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP-07	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP-09	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP-10	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP-10	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP-11	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP-11	1.50	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP-12	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	Yes	No	Category B1
TP-13	0.50	Non Hazardous	17 05 04	No	Yes	Yes	No	No	No	No	Category B1
TP-13	1.50	Non Hazardous	17 05 04	No	No	No	No	No	No	No	Category B1
TP-14	0.50	Non Hazardous	17 05 04	No	No	No	No	No	No	No	Category B1
TP-23	0.5	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	Yes	No	Category B1
TP-23	1.5	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP-24	0.5	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP24	1.70	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Category B1
TP29	0.40	Non Hazardous	17 05 04	No	Yes	Yes	Yes	Yes	No	No	Category B1
TP33	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP33	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP39	0.50	Non Hazardous	17 05 04	No	No	No	No	No	No	No	Category B1
TP44	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Category B2
TP45	1.00	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP47	0.50	Non Hazardous	17 05 04	Yes	No	No	No	Yes	No	No	Category B1
TP48	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP50	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP50	1.50	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP54	0.50	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP71	0.5	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP75	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP78	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP85	0.60	Non Hazardous	17 05 04	Yes	Yes	No	Yes	Yes	Yes	No	Category B1
TP89	1.6	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP95	2.00	Non Hazardous	17 05 04	No	Yes	Yes	No	No	Yes	No	Category B1
TP99	0.5	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP100	2.50	Non Hazardous	17 05 04	No	Yes	Yes	No	No	No	No	Category B1
TP102	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP104	1.50	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP108	2.50	Non Hazardous	17 05 04	Yes	Yes	Yes	Yes	Yes	No	Yes	Category B1
TP110	2.00	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP114	1.50	Non Hazardous	17 05 04	No	Yes	Yes	No	Yes	Yes	No	Category B1
TP116	0.5	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP116	1.5	Non Hazardous	17 05 04	No	Yes	No	No	No	Yes	No	Category B1
TP118	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP118	1.50	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP120	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP121	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP121	2.80	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	No	No	Category B1
TP123	0.50	Non Hazardous	17 05 04	No	No	No	No	No	No	No	Category B2
TP123	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP124	1.50	Non Hazardous	17 05 04	No	Yes	Yes	Yes	Yes	Yes	No	Category B1
TP125	0.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP125	1.50	Non Hazardous	17 05 04	No	Yes	Yes	No	Yes	Yes	No	Category B1
TP127	0.50	Non Hazardous	17 05 04	No	Yes	No	No	No	Yes	No	Category B1
TP131	0.50	Non Hazardous	17 05 04	No	No	No	No	No	No	No	Category B1
TP131	1.50	Non Hazardous	17 05 04	Yes	Yes	Yes	No	Yes	Yes	No	Category B1
TP135	0.80	Non Hazardous	17 05 04	No	Yes	No	No	No	No	No	Category B1
TP135	2.00	Non Hazardous	17 05 04	No	Yes	No	No	No	Yes	No	Category B1

2 No. samples location within the Approved Phase 1 development were classified as Category B2 – considered to be non-hazardous; materials meeting this classification may be disposed of to an inert landfill with a waste license suitable to accept the reported concentrations. No Category B2 samples were found in the Proposed Cherry Orchard Point - Phase 2 Subject Site. The remainder of the samples were classified as Category B1 – considered to be non-hazardous; materials meeting this classification may be disposed of to an inert landfill.

11.3.6.12 Waste Classification Recommendations

In the event that material is excavated for removal from site, any firm engaged to transport waste material from site and the operator of any waste facility that will accept subsoils excavated from this site

will be furnished with, at a minimum, copies of the full unabridged laboratory reports and HazWasteOnLineTM report for all samples presented in this report.

The non-hazardous material across the site if excavated will be removed from site to an appropriate facility under either the LoW codes 17 05 04 or 17 09 04.

11.3.7 Characteristics of the Proposed Development

11.3.7.1 Approved Phase 1 development

A planning application for Phase 1 of the overall Cherry Orchard Development on Site 4 at Cherry Orchard was lodged by The Land Development Agency (LDA) with An Bord Pleanála on 1st December 2023 (Ref: ABP-318607-23). A decision regarding the Phase 1 development from ABP was received on 09 July 2024, with approval granted for the proposed development.

The application, which is illustrated in Figure 11.8, comprises a residential led mixed use scheme comprising:

- A total of 708 residential apartments in a number of blocks.
- A total of 4,790 sqm non-residential development comprising
    - Supermarket (2,523 sqm).
    - Retail Units (373 sqm)
    - Creche with accommodation for 25 staff and 104 children (672 sqm)
    - Community Facilities (1,222 sqm)

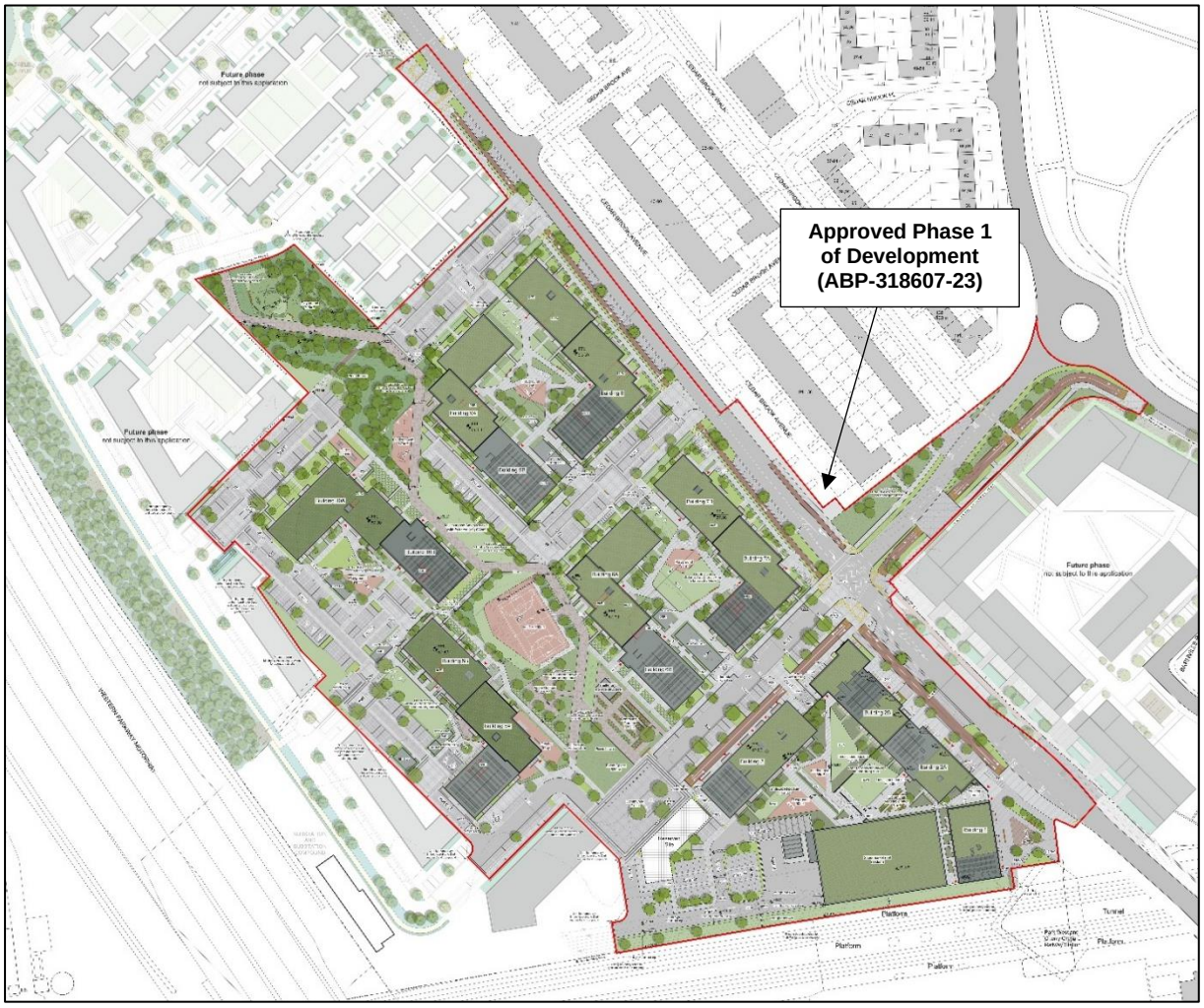


Figure 11.8: Approved Phase 1 Developments Site Layout

11.3.7.2 Proposed Development Cherry Orchard Point - Phase 2

The Proposed Cherry Orchard Point - Phase 2 development site is located on the northern portion of Site 4 directly north of the Approved Phase 1 development. The Proposed Cherry Orchard Point - Phase 2 is bound to the northwest by Cloverhill Road, the northeast and east by Park West Avenue, to the south by the Approved Phase 1 of the development, and the west by the future proposed Phase 4 of the development.

The area of the subject application indicated by the redline boundary is 3.185ha (31,850m²).

The subject application is for Phase 2 of the 4-Phase masterplan development as per Figure 11.9. The Proposed Cherry Orchard Point - Phase 2 is located north of the Approved Phase 1 site (ABP-318607-23) and east of the future Phase 4 development. The proposed access to the subject development is from the east of the development via Park West Avenue.

The proposed development of Cherry Orchard Point - Phase 2 on Site 4 at Cherry Orchard will comprise:

- 137 residential units comprising
  - 101 x 2 / 3 bed houses
  - 18 x 2-bed apartments
  - 18 x 3-bed duplex

A breakdown of the schedule of accommodation for the subject application is provided below.

Table 11.2: Proposed Cherry Orchard Point - Phase 2 Schedule of Accommodation

Unit Type		Area sqm	No. of Units	Total Floor Area
2 Bed/ 4 Person House	HT A	81	13	1053
3 Bed/ 5 Person House - 2 storey	HT B	96	56	5376
3 Bed/ 5 Person House - 2 storey (end terrace)	HT B1	96	19	1824
3 Bed/ 5 Person House - 2 storey	HT C	106	13	1378
2 Bed/ 4P Own-Door Apt - mid terrace	Duplex A	73	6	438
2 Bed/ 3P Own-Door Apt (UD) - mid terrace	Duplex A (UD)	73	4	292
2 Bed/ 4P Own-Door Apt - end terrace/ corner	Duplex A1	73	3	219
2 Bed/ 3P Own-Door Apt (UD) - end terrace/ corner	Duplex A1 (UD)	73	5	365
3 Bed/5P Own-Door Duplex - end terrace/ corner	Duplex A2	115	8	920
3 Bed/5P Own-Door Duplex - mid terrace	Duplex A3	115	10	1150
Total			**137**	**13015**

The proposed development includes all associated site works, undergrounding of overhead lines, boundary treatments, drainage, and service connections.

Figure 11.9: Proposed Subject Site - Cherry Orchard Point - Phase 2 Layout

11.3.7.3 Future Development – Phase 3

The future development of Phase 3 on Site 5 at Cherry Orchard Point is expected to comprise: -

- A total of 254 residential apartments in 6 blocks.
- A total of 1,200 sqm non-residential development comprising
  - Retail (800 sqm).
  - Community (400 sqm)

11.3.7.4 Future Development – Phase 4

The future development of Phase 4 on Site 4 at Cherry Orchard Point is expected to comprise: -

- Commercial units in 4 blocks (16,310 sqm).

11.3.7.5 Overall Development

The overall development of Phases 1, 2, 3 and 4 on Sites 4 and 5 at Cherry Orchard Point is expected to comprise: -

- 1,099 residential units comprising: -
  - 101 number Houses.
  - 18 Duplex
  - 980 number Apartments (708 + 18 + 254).
- Total non-residential development of 22,300 sqm comprising:
  - 1 number Supermarket (2,523 sqm).
  - 3 number Retail (222 sqm + 151 sqm + 800 sqm + 0).
  - 1 number Creche (672 sqm).
  - 4 number Commercial (16,310 sqm).
  - 2 number Community (1,222 sqm + 400 sqm).

11.3.7.6 Design Population

The Approved Phase 1 development will comprise a total of 708 apartments with 1,174 bedrooms and a design population of 2,247 persons.

The Proposed Cherry Orchard Point - Phase 2 development will comprise a total of 137 residential units (101 x houses, 18 x apartments and 18 x duplex) with a total of 360 bedrooms and a design population of 645 persons.

11.3.8 Soil Stability

Significant investigations and testing has been carried out on the site to determine the underlying Geotechnical and Environmental aspects of the wider Cherry Orchard site soils and geology.

The details of these Investigations and Interpretive reports can be found in the Site Investigation Report and Waste Classification Report, included as an appendix to this document. The procedures used in the investigations were in accordance with IS EN 1997 2:2007 and BS 5930:2015

11.3.8.1 Geotechnical Summary - Foundations

The foundations to the proposed buildings will be supported on the underlying shallow very stiff clays and Limestone bedrock which was found to be present in varying depths of approximately 3 metres below existing ground level throughout the site, as per the Site Investigation Report.

Based on the findings of the site investigations carried out and preliminary foundation load assessments – the foundations used will be traditional shallow pad and strip foundations. Where the structures become very tall (over 10 storeys, as in the case of Block 2B) these structures will be supported on piled foundations bearing directly onto the underlying Limestone bedrock.

It's noted that the foundations in the Proposed Cherry Orchard Point - Phase 2 area, where a maximum of 3 storeys are proposed, that traditional shallow pad and strip foundations will be used.

11.3.8.2 Environmental Summary

Based on the information presented in the 2024 GII Waste Classification Report, included as an appendix to the Preliminary Construction Environmental Plan submitted as part of this application, the material that is likely to be excavated and removed from the site has been classified as follows;

- Non-hazardous for transportation.
- Predominantly suitable for disposal at an inert Landfill.

It is noted that all historic maps consulted as part of the investigations indicates that no historic development has taken place on the site.

11.3.8.3 Soil Stability and Retaining Walls

Based on the results of the site investigation works (refer to the previous sections) the proposed foundations will be supported on the stiff clays and Limestone bedrock which exists at relatively shallow depths across the site (approximately 3m below existing ground levels). As a result of the relatively shallow foundation depths – excavations will also generally be shallow and as such excavations will be generally stable in the temporary condition. Lean mix concrete backfill will be used where necessary to ensure practical working depths are provided when installing the foundations. Trench boxes and shoring techniques will also be used to guarantee the temporary stability of all excavations required as part of the works.

It is noted that the proposed finished floor levels of the proposed buildings will be, generally, above the existing ground levels on site – this will help to minimise excavation depths and the requirement for any retaining walls.

Where retaining elements are required – all will be designed in accordance with IS EN 1997: Geotechnical Design (which includes limits to acceptable movements), while also taking into account the General Principles of Prevention to ensure the chosen designs mitigate and reduce the construction risks on site (whether the risks identified as part of the site specific risk assessment are temporary and / or permanent).

11.3.8.4 Irish Rail Interface

The Irish Rail interface is located at the south of the masterplan lands and interfaces with the Approved Phase 1 development and a portion of the future Phase 4 development. The zone of influence is measured from: 2.0m from the track and then at a gradient of 1:2 (30 degrees).

In respect to the Proposed Cherry Orchard Point - Phase 2 development, no rail interface is applicable with the Subject Site.

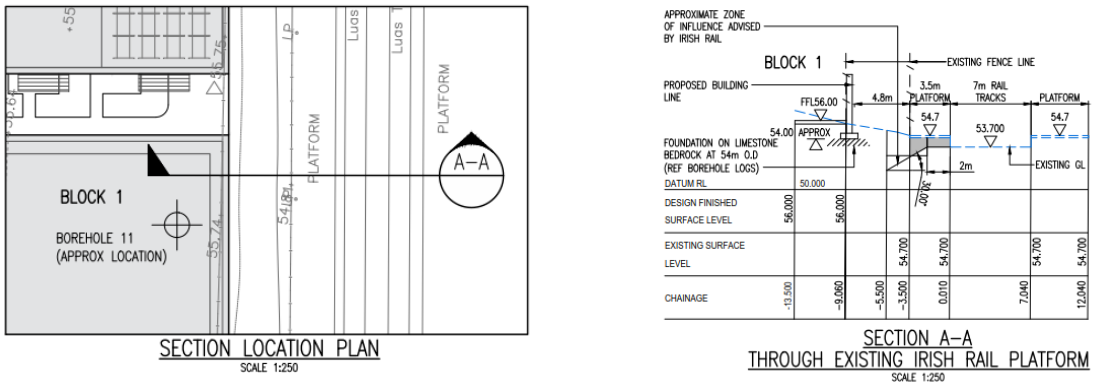


Figure 11.10: Cross section at Railway

11.4 Predicted Impacts

11.4.1 Construction Stage

The removal of topsoil during earthworks and the construction of roads, services, and buildings, in particular roads and building foundations, will expose subsoil to weathering and may result in the erosion of soils during adverse weather conditions, which if unmitigated may have a temporary, negative, slight (non-significant) to moderate (significant) effect.

Construction traffic movements involved in the construction of the proposed development and access roads, may result in localised compaction of the subsoil along haulage routes, having a permanent, slight (non-significant), negative impact on subsoil materials.

Surface water runoff from the surface of the excavated areas, or rainfall on stockpiled material, may result in silt discharges to the local surface water network via overland flow, with the potential to have a permanent, slight, negative impact.

Where feasible, excavated subsoil will be used as part of the construction works with suitable surplus subsoil being used in areas requiring fill where appropriate. Any unsuitable and / or surplus subsoil is required to be disposed of appropriately.

The updated estimated bulk excavation volumes for the overall development taking the Approved Phase 1 and Proposed Cherry Orchard Point - Phase 2 development details into consideration is shown in the below breakdown:

Table 11.3: Estimated Excavation Volumes

	Approved Phase 1	Proposed Phase 2	Balance of Masterplan Lands	Total
Topsoil Strip	16,800 m^3	8,000 m^3	10,000 m^3	34,800 m^3 (cut)
Subsoil Cut	14,500 m^3	5,400 m^3	10,600 m^3	30,500 m^3 (cut)
Subsoil Fill	0 m^3	4,400 m^3	5,600 m^3	10,000 m^3 (fill)
Removal off-site	20,000 m^3	Up to 1,200 m^3 & balance to be used on overall site (masterplan lands)	8,800 m^3	21,200 m^3 (removed off-site)

These updated estimated breakdown of cut and fill volumes for the masterplan lands corresponds with the original estimated bulk excavation volume (as per the approved Phase 1 Parent EIAR) of 65,300 m^3 (34,800 m^3 + 30,500 m^3) and the original estimated volume of material to be removed off-site, of 30,000 m^3.

Dust from the site and from soil spillages on the existing road network around the site may be problematic, especially during dry conditions, which will have a short-term, slight negative impact on the geological environment on the site.

Accidental oil or diesel spillages from the construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures, potentially having a negative, moderate (significant), permanent impact on the geological environment.

Accidental discharges from welfare facilities during the construction stage has the potential to contaminate surface and groundwater courses. with the potential to have a permanent, slight (not significant) to moderate (significant), negative impact.

No predicted impacts during the construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site beyond those outlined in the approved Phase 1 Parent EIAR.

11.4.2 Operational Stage

During the operational phase of the proposed 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.

Surface water runoff is directed via SuDS and filtration devices proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff, ensuring the impact by run-off on the quality of the site soils and groundwater during the operational phase will be considered positive, slight, likely & permanent.

The increase in hardstanding area will result in a reduction in the infiltration potential across the site, which will be negative, slight (not significant) likely, and permanent.

No predicted impacts during the operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site beyond those outlined in the approved Phase 1 Parent EIAR.

11.5 Mitigation Measures

11.5.1 Construction Stage

The Site Investigation Reports have shown that the sites are composed of stratified layers of topsoil, cohesive deposits (brown sandy gravelly clays), and bedrock. Made ground has also been identified on the sites and these deposits are typically composed of brown slightly sandy slightly gravelly clay with occasional cobbles and contained occasional fragments of concrete, red brick, glass, rope, timber, ceramic, metal, and plastic.

Excavated soils to be disposed of will be referenced against the Waste Classification Report also included as part of the Site Investigation reports. Environmental Laboratory chemical analysis has indicated that the in-fill constituents are non-hazardous. Excavated material from this location will be continuously monitored/inspected for signs of hazardous material contamination during excavation. Should there be any indication of hazardous material contamination, it may be required to be further sampled and analysed to confirm its chemical properties and waste category classification as per the waste landfill facility requirements.

Practical measures have been implemented during the design process to ensure that cut and fill volumes generated have been kept to a minimum by ensure proposed road and building levels match existing ground levels. Furthermore, surplus subsoil and rock may be relocated to other approved areas of the site that may require in-fill, or if required to be removed from site, will be deposited in approved fill areas off-site (Article 27 notification to the EPA required), or to an approved waste disposal facility.

In the case of topsoil careful planning and on-site storage will ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- Topsoil will be kept completely separate from all other construction waste as any cross-contamination of the topsoil can render it useless for reuse.
- Topsoil will be protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas, and site plant and vehicle storage areas.
- Careful separation of builder's rubble packaging and contaminated waste from re-usable material will result in the minimisation of the disposal of material to landfill.
- Spoil heap/stockpiles will not be located within 20m of the existing surface water networks.
- Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons.
- Topsoil will be stored in stockpiles less than two metres in height as otherwise the soil matrix (internal structure) can be damaged beyond repair. It will also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

In the unlikely case of a topsoil surplus the Contractor will carry out appropriate environmental chemistry testing in order to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator, if not suitable for an Article 27 transfer, and the testing will be carried out by an accredited laboratory.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager. It is projected that all the topsoil will be reused on-site for landscaping purposes in both private residential gardens and public green areas.

A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Silt traps, silt fences and tailing ponds will be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction phase. All surface water will be treated for silts and sediment prior to disposal to the surface water network. Any and all other conditions, restrictions, or limits associated with the discharge license shall be adhered to.

The provision of wheel wash areas at the exit to the development as necessary will minimise the amount of soil deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis. All trucks carrying soils on the public road will be covered and carry a maximum of 10 cubic metres of material to prevent spillage and damage to the surrounding road network.

Appropriate storage and bunding measures will be implemented throughout the construction stage to prevent contamination of the soil and groundwater from oil and petrol leakage from site plant. Refuelling will be restricted to allocated re-fuelling areas. This storage is to be an impermeable, roofed, bunded area, designed to contain 110% of the volume of fuel stored. Emergency fuel spill kits are to be stored on-site with designated staff familiar with their usage. Spill kit facilities will be provided for across the site.

If groundwater is encountered during excavations, mechanical pumps will be required to remove that groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

Nuisance dust emissions from construction activities are a common and well recognised problem. Fine particles from these sources are recognised as a potential significant cause of pollution.

The main contractor will be required to demonstrate that both nuisance dust and fine particle emissions from the site are adequately controlled and are within acceptable limits.

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through carefully selected mitigation techniques and effective management. Once particles are airborne it is very difficult to prevent them from dispersing into the surrounding area. The most effective technique is to control dust at source and prevent it from becoming airborne, since suppression is virtually impossible once it has become airborne.

The following are techniques and methods which are widely used currently throughout the construction industry, and which will be used in the development.

1. The roads around the site are all surfaced, and no dust is anticipated arising from unsealed surfaces.
2. A regime of ‘wet’ road sweeping will be set up to ensure the roads around the immediate site are as clean and free from dirt / dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
3. Footpaths immediately around the site will be cleaned by hand regularly, with damping, as necessary.
4. High level walkways and surfaces such as scaffolding will be cleaned regularly using safe ‘wet’ methods, as opposed to dry methods.
5. Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
6. Vehicle and wheel washing facilities will be provided at the site exit(s). If necessary, vehicles will be washed down before exiting the site.
7. Netting will be provided to enclose scaffolding in order to mitigate escape of airborne dust from the new buildings.
8. Vehicles and equipment will not emit black smoke from exhaust system, except during ignition at start up.
9. Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
10. Servicing of vehicles and plant will be carried out regularly, rather than just following breakdowns.
11. Internal combustion plant will not be left running unnecessarily.
12. Exhaust direction and heights will be such as not to disturb dust on the ground and to ensure adequate local dispersal of emissions.
13. Fixed plant such as generators will be located away from residential areas.

14. The number of handling operations for materials will be kept to a minimum in order to ensure that dusty material is not moved or handled unnecessarily.
15. The transport of dusty materials and aggregates will be carried out using covered / sheeted lorries.
16. Material handling areas will be clean, tidy, and free from dust.
17. Vehicle loading will be dampened down and drop heights for material to be kept to a minimum.
18. Drop heights for chutes / skips will be kept to a minimum.
19. Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods, as necessary.
20. Stockpiles of materials will be kept to a minimum and if necessary, they will be kept away from sensitive receptors such as residential areas etc.
21. Stockpiles where necessary, will be sheeted or watered down.
22. Methods and equipment will be in place for immediate clean-up of spillages of dusty material.
23. No burning of materials will be permitted on site.
24. Earthworks excavations will be kept damp where necessary and where reasonably practicable.
25. Cutting on site will be avoided where possible by using pre-fabrication methods.
26. Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed.
27. Where scabbling is to be employed, tools will be fitted with dust bags, residual dust will be vacuumed up rather than swept away, and areas to be scabbled will be screened off.
28. Wet processes will be used to clean building facades if possible. If dry grit blasting is unavoidable, then areas of work will be sealed off and dust extraction systems used.
29. Where possible pre-mixed plasters and masonry compounds will be used to minimise dust arising from on-site mixing.
30. Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes, which are envisaged.
31. The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
32. Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced road, the limit shall be 20 kph, and on surfaced roads as site management dictates.

The construction of the proposed development has potential to cause a slight, adverse, temporary, residual impact on soils in the immediate vicinity of the site.

No additional mitigation measures at construction stage are anticipated to be required for the Proposed Cherry Orchard Point - Phase 2 Subject Site beyond those outlined in the approved Phase 1 Parent EIAR.

11.5.2 Operational Stage

On completion of the construction phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion.

SuDS and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. They will require periodic inspection and maintenance as per their installation manuals. These have been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works Volume 6.0 (GDRCPDW) and the SuDS Manual CIRIA C753.

Foul drainage and watermains have been designed in accordance with their respective Codes of Practice by Uisce Eireann. A Statement of Design Acceptance has been issued by Uisce Eireann and is included as an appendix to the Engineering Assessment Report, submitted under a separate cover.

Therefore, the risk of accidental discharge has been adequately addressed and mitigated through design.

The operation of the proposed development is not considered to have an impact on soils in the immediate vicinity of the site.

No additional mitigation measures at operational stage are anticipated to be required for the Proposed Cherry Orchard Point - Phase 2 Subject Site beyond those outlined in the approved Phase 1 Parent EIAR.

11.6 Residual Impacts

11.6.1 Construction Stage

With the protective measures noted above in place during the excavation works and construction stage, any potential impacts on soils and geology in the area will not have significant adverse impacts, and no significant adverse impacts on the soils and geology of the subject lands are envisaged.

The residual risk associated with site clearance, excavation and construction are considered to be negative, slight (not significant) local, likely and permanent.

No additional residual impacts at construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site.

11.6.2 Operational Stage

There will be minor permanent regrading of the sites in line with the ground levels proposed for the buildings and roads. Open spaces will be regraded to meet these buildings and roads.

Reinstatement measures in relation to soils consist primarily of the re-soiling of open areas / landscaping and the replanting of these areas. No post development reinstatement works will be required.

On completion of the construction phase and following replacement of topsoil and implementation of a planting programme, no further impacts on the soil are envisaged.

SuDS measures, including permeable paving, swales, and rain gardens, will assist with cleaning surface water runoff while replenishing the natural ground water table and their impact will be positive, slight (not significant) likely, and permanent.

No additional residual impacts at operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site.

11.7 Cumulative Effects

On completion of the construction phase of the Proposed Cherry Orchard Point - Phase 2 Subject Site and following replacement of topsoil and a planting programme, no further impacts on the soil

environment are envisaged except for the possibility of contamination of soil from foul water effluent or oil/chemical spills from the site occupier (residents and commercial interests) operations.

This is based on the current assessment of the masterplan lands as a whole rather than just the subject application site. Mitigation measures noted throughout this report apply to the full masterplan lands and are cognisant of the Approved Phase 1 development, the Proposed Cherry Orchard Point - Phase 2 Subject Site, and the subsequent planning applications for further developments within the masterplan lands and not just the subject application.

Since the time of writing the approved Phase 1 Parent EIAR, no further development in the vicinity of the masterplan lands has been undertaken.

11.7.1 Other Impacts Anticipated

A potential risk to human health due to the associated works during construction is the direct contact, ingestion, or inhalation of receptors (i.e., construction workers) with any soils which may potentially contain low level hydrocarbon concentrations from site activities (potential minor leaks, oils, and paint).

No human health risks associated with long term exposure to contaminants (via direct contact, ingestion, or inhalation) resulting from the proposed development are anticipated, as the construction stage will be temporary (short-term).

11.8 Monitoring

11.8.1 Construction Stage

Monitoring during the construction phase is recommended, in particular to the following items:

- Excavation of the historic in-fill material.
- Adequate protection of topsoil/subsoil stockpiled for reuse.
- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to the existing surface water drainage system.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures, when required due to dry weather conditions.

11.8.2 Operational Stage

During the operation phase, the surface water network (drains, gullies, manholes. AJs, SuDS Devices, attenuation systems etc.) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning will be incorporated into the safety file/maintenance manual for the development.

Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections. Figure 11.11, is an extract from Section 12.3 of Dublin City Council's SuDS Design & Evaluation Guide, and generally describes the regular maintenance aspect for the SuDS.

Type	Activity	Normal site care (Site) or SuDS-specific maintenance (SuDS)	Suggested frequency
Regular Maintenance			
Litter	Pick up all litter in SUDS Landscape areas along with remainder of the site – remove from site	Site	1 visit monthly
Grass	Mow all grass verges, paths and amenity grass at 35-50mm with 75mm max. Leaving cuttings in situ	Site	As required or 1 visit monthly
Grass	Mow all dry swales, dry SUDS basins and margins to low flow channels and other SUDS features at 100mm with 150mm max. Cut wet swales or basins annually as wildflower areas – 1st and last cuts to be collected	Site	4-8 visits per year or as required
Grass	Wildflower areas strimmed to 100mm in Sept or at end of school holidays – all cuttings removed Or Wildflower areas strimmed to 100mm on 3 year rotation – 30% each year – all cuttings removed	Site	1 visit annually 1 visit annually
Inlets & outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	SuDS	1 visit monthly
Permeable paving	Sweep all paving regularly to keep surface tidy	Site	1 visit annually or as required

Figure 11.11: Regular Maintenance Requirements for SuDS for the Proposed Cherry Orchard – Phase 2 Development

There will still be a remaining requirement for more intensive maintenance tasks to be undertaken however, the severity of these tasks can be reduced by regular inspections and proactive responses being incorporated as a part of the regular maintenance regime discussed above. A table showing the typical requirements for the occasional maintenance tasks and remedial works is extracted from the Council's SuDS Design & Evaluation Guide to Figure 11.12 overleaf.

Occasional Tasks			
Permeable paving	Sweep and suction brush permeable paving when ponding occurs	SuDS	As required - estimate 10-15 year intervals
Flow controls	Annual inspection of control chambers - remove silt and check free flow	SuDS	1 visit annually
Wetland & pond	Wetland vegetation to be cut at 100mm on 3 – 5 year rotation or 30% each year. All cuttings to be removed to wildlife piles or from site.	Site	As required
Silt	Inspect swales, ponds, wetlands annually for silt accumulation	Site & SuDS	1 visit annually
Silt	Excavate silt, stack and dry within 10m of the SUDS feature, but outside the design profile where water flows. Spread, rake and overseed.	Site & SuDS	As required
Native planting	Remove lower branches where necessary to ensure good ground cover to protect soil profile from erosion.	SuDS	1 visit annually
Remedial Work			
General SuDS	Inspect SuDS system to check for damage or failure when carrying out other tasks. Undertake remedial work as required.	SuDS	Monthly As required

Figure 11.12: Regular Maintenance Requirements for SuDS for the Proposed Cherry Orchard – Phase 2 Development

11.9 Difficulties Encountered

There were no difficulties encountered compiling the Land, Soils, and Geology Chapter of this Environmental Report.

11.10 Interactions

There will be an interaction between this chapter and the following chapters:

Material Assets - Traffic. There will likely be a requirement for surplus excavated soil volumes to be transported by road for disposal or re-use. Haulage details are discussed in the Traffic and Transport Chapter of this Environmental Report Addendum.

Water: Site preparation works can potentially lead to elevated silt/sediment or other contaminant loading due to construction site runoff. Dewatering of excavations during the construction phase can result in water with elevated silt and possible chemical contaminants requiring discharge to the local drainage system. Construction stage works can potentially impact water due to the risk of accidental spills, cross-contamination due to incorrect waste soils management, use of contaminated material as fill, etc.

Air Quality and Climate: Dust generated during site clearance, reprofiling, excavation, and soil reinstatement works can lead to temporarily diminished air quality.

11.11 References

- Approved Cherry Orchard Point Phase 1 Parent EIAR
- Geological Survey of Ireland, Bedrock Maps
- Google Maps
- Ordinance Survey of Ireland Historical Maps
- GII Site Investigation Report 2022
- GII Waste Analysis Classification Report 2022
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Ground Investigation Report, July 2024 (Document ref: 13687-03-24)
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Waste Classification Report, August 2024 (Document ref: 13687-03-24)
- Drainage network maps
- Dublin City Council's SuDS Design & Evaluation Guide
- Uisce Éireann's Code of Practice for Wastewater Infrastructure
- Uisce Éireann's Code of Practice for Water Infrastructure
- Conroy Crowe Kelly Architects – Schedule of Accommodation (05.11.2024)
- Greater Dublin Strategic Drainage Study (GDSDS), (2015), Dublin Drainage

12 Water

12.1 Introduction

This chapter of the Environmental Report - Addendum to Approved Phase 1 Parent EIAR has been prepared by Waterman Moylan on behalf of Dublin City Council, In Partnership with The Land Development Agency and examines the impact that the Proposed Cherry Orchard Point - Phase 2 Subject Site will have on the surrounding hydrological (surface water), hydrogeological (ground water), foul water, water supply, and flood risk both during the construction and operation phases. The interaction between the surface water drainage proposal as part of the masterplan development will also be assessed in this chapter.

This chapter sets out the existing receiving environment in terms of surface water, ground water, foul water, and water supply. It also describes the proposed development in terms of construction and operational impact on the receiving environment and any appropriate mitigation measures.

12.2 Methodology

An initial assessment was carried out which defined the Proposed Cherry Orchard Point - Phase 2 Subject Site in terms of location, type & scale, established the baseline condition, established the type of hydrological environments, established the activities associated with the project and initial assessment and impact determination. These objectives were achieved by way of a desktop study and baseline data collection.

The following information sources were used in the assessment of the proposed development site:

- Geological Survey of Ireland (GSI) Website.
- Environmental Protection Agency.
- Office of Public Works (OPW) National Flood Hazard Mapping.
- OPW Catchment Flood Risk and Management Studies.
- Drainage and watermain Records Maps.
- Ordinance Survey Mapping.
- Topographical and GPR Surveys.
- Site Investigation Reports and Soakaway Testing.
- Water Framework Directive (WFD) Status.

Additional information has been compiled through consultation and feedback from stakeholders and the design team.

Under the Water Framework Directive (WFD) the water quality of Ireland's surface and groundwater is assessed biologically, physically, and chemically. Assessments are conducted by the EPA and Local Authorities and have been compiled and presented in a standardised manner for River Basin Districts. Baseline information on the local and regional surface water bodies, their status, and threats were obtained from a range of documents and online sources including the EPA's Water Quality databased, Ireland's Water Framework Directive "Water Matters" online resource and the Eastern River Basin District (ERBD) website and reports.

A site-specific Flood Risk Assessment report for the Proposed Cherry Orchard Point - Phase 2 Subject Site has been undertaken and is included in this planning application under a separate cover. This assessment considered flood risk to the proposed development from all potential sources and the possible impact of the proposed development on flood risk elsewhere. Relevant sources/mechanisms of flooding include tidal/coastal, fluvial, pluvial, existing drainage and water infrastructure and proposed drainage and water infrastructure and groundwater. This assessment was undertaken in accordance with: The planning system and Flood Risk Management Guidelines for Planning Authorities (Department of Environment, Heritage and Local Governments and the office of Public Works, C624

Development and Flood Risk (Construction Industry Research and Information Association, CIRIA) & the Dublin City Development Plan (2022-2028).

Record information on the existing infrastructure were obtained from Uisce Eireann. Information on all services is supplemented with information obtained from the site topographical survey, Ground Penetrating Radar (GPR Survey), and site inspections.

12.3 Baseline Environment

12.3.1 Masterplan development

The overall Cherry Orchard Development, referred here within as the masterplan lands, is comprised of 2 No. Sites identified in the Park West – Cherry Orchard LAP. Site 4 & Site 5 are bisected by Park West Avenue and lie to the west and east of this roadway respectively, as per Figure 12.1. The Proposed Cherry Orchard Point - Phase 2 of the masterplan development is located on the northern portion of Site 4.

The 2022 and 2024 Site Investigation Reports undertaken by Ground Investigations Ireland (GII) for the masterplan lands, which is included as an appendix to the Preliminary Construction Environmental Management Plan submitted as part of this Proposed Cherry Orchard Point - Phase 2 application, determined that Site 4 is a combination of Greenfield and Brownfield, with evidence of fill material in the area of the site previously used as a construction compound. Site 5 is predominantly a brownfield site, with fill material found for the same reason.

Site 4 is bound to the west by the M50, to the south by the Dublin-Kildare rail line and the Park West & Cherry Orchard station, and to the east and north by Park West Avenue. Site 5 is bound to the west by Park West Avenue, the northwest by Cedar Brook Way, the northeast and east by Barnville Park, and to the south by the Dublin-Kildare rail line and the residential unit of 62 Barnville Park.

Site 4 is currently access via a secured gate from Park West Avenue. Site 5 is accessed via a similar arrangement from Cedar Brook Way.

The area of the subject application, Proposed Cherry Orchard Point - Phase 2 of the development, is indicated by the red boundary line, also shown on Figure 12.1.

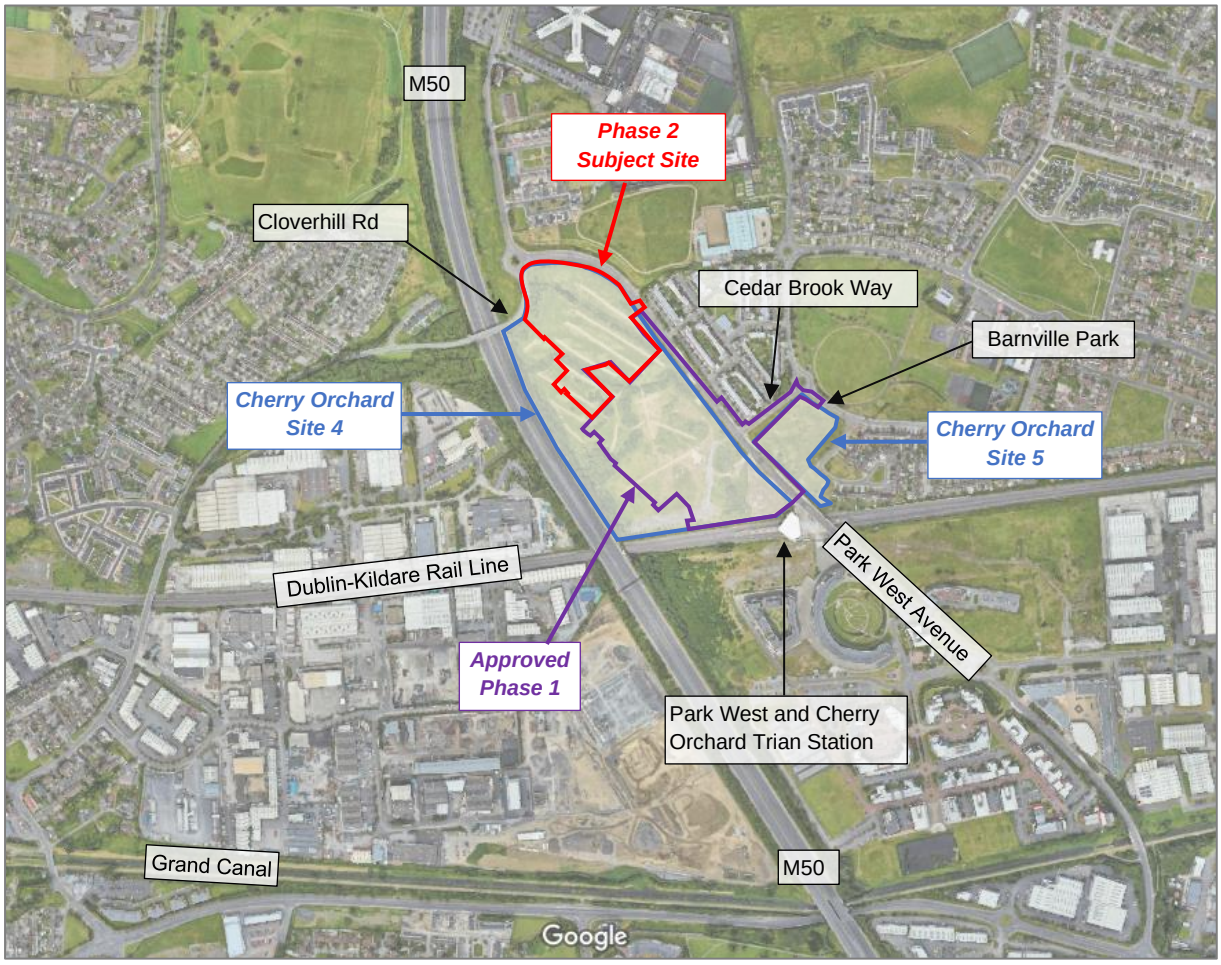


Figure 12.1: Site Location Map (Source: Google Maps)

The overall Cherry Orchard Development area as per the blue line boundaries is c. 13.02ha, with Site 4 being c. 11.41 ha and Site 5 being c. 1.61ha. The area of the Proposed Cherry Orchard Point - Phase 2 proposed development as indicated by the redline boundary, including for works in the public domain, is 3.185ha (31,850m²).

For Site 4, the topographic survey of the area indicates that the low point of the site has a level of 55.72m OD. This is located on the eastern site boundary approximately 140m north of the junction of Park West Avenue and Cedar Brook Way. The remainder of the site generally slopes to this location owing to the embankments and subsequent site grading from the Dublin-Kildare Rail line to the south, M50 to the west, and approach road to the overpass on the M50 to the north.

Site 5 has a central high point with a level of 58.05m OD, and slopes outwards to all boundaries. The boundaries of Site 5 typically have levels between 54.80m and 56.00m, with the higher of these levels being located to the south of the site, adjacent to the retaining wall of the Park West Avenue Bridge over the rail lines.

Ordnance survey and topographic survey mapping indicates that Site 4 contains static ditches with no outfall. These ditches previously had hydrological connectivity and flow, which has been cut-off by the construction of the M50 to the west and the Cedar Brook housing development to the east, as discussed later in this Chapter. These ditches normally remain dry except in heavy rainfall events where water that is not percolated via the site's naturally grassed landscaping, would collect locally in these static ditches for infiltration to the groundwater table. Site 5 does not have any form of surface drainage network and conveys rainfall directly to the soils via its grassed landscape. There is potential during heavy rainfall events, that the ground may become saturated and unable to further infiltrate rainfall, which would then run from the surface, over the boundary and to the adjacent road networks to outfall

to the storm drainage networks serving these roads. The sites are located in the catchment of the Blackditch stream, a tributary of the Camac River which has an ultimate outfall to the River Liffey at Heuston Station.

EPA mapping advises that the River Waterbody WFD status 2016-2021 for the Camac_040 (River Camac), European Code: IE-EA_09C020500 has a status of “poor”, and a risk status of “at-risk”. The status of the Camac River is based on monitoring stations, with the nearest of these stations, downstream of the Blackditch Stream discharging to the River Camac, being National Water Monitoring Station Ref: RS09G080100.

12.3.2 Phasing

Sites 4 and 5 are being developed in four phases as shown on Figure 12.2.

Figure 12.2: Masterplan Development – Indicative Project Phasing

12.3.3 Site Development

Currently, the sites are primarily greenfield in nature (scrubland) however, it is known that more recently the sites have both been used as construction compounds and are a mix of greenfield and infill material. The Site Investigation Report confirms this.

12.3.4 Hydrology (Surface Water)

Historic maps for the locality have been reviewed. As noted above in respect to the static ditch system, a detailed review of historic maps for the locality, from the national historic maps dashboard produced by Ordnance Survey Ireland (OSI), indicates that the ditch system noted as present in Site 4 previously

had hydrological connectivity from the east, merging on the site and flowing to the west. It is clear that this hydrological connectivity has been cut-off the west by development of the M50, and to the east by residential development. Refer to Figure 12.3 below for an extract of this historic map.

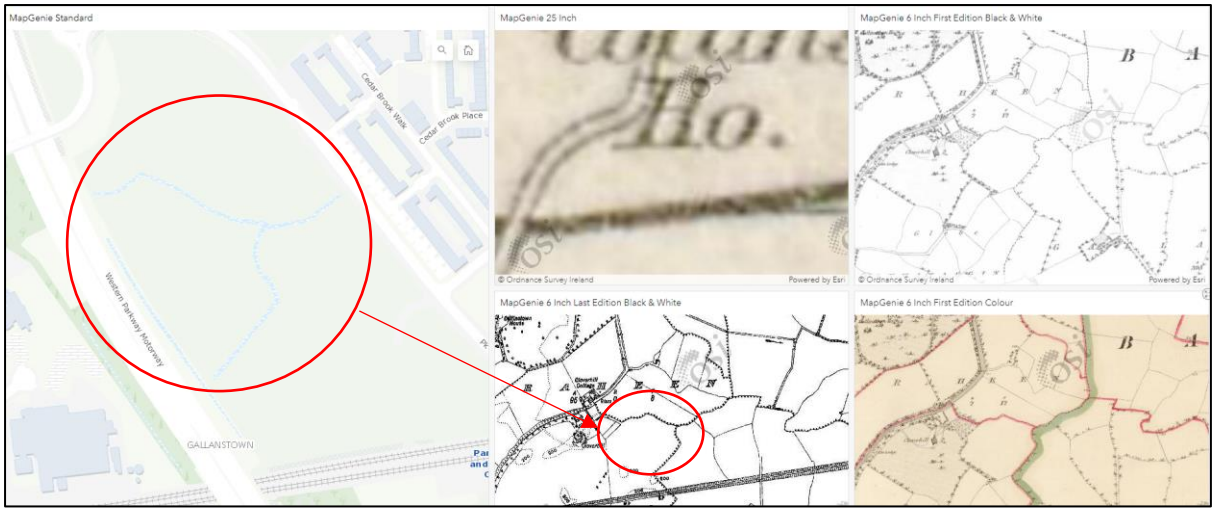


Figure 12.3: Site Location (Source: OSI Viewer Historic Maps)

Due to the topography, as discussed previously, and geological conditions discussed in the following sections, it is likely that rainfall from lesser events are percolated on-site, while heavy storm events likely flow off the surface to the adjacent road networks and ultimately the surface water drainage network associated with these roads.

12.3.5 Hydrogeology & Groundwater

A review of the EPA's (Environmental Protection Agency) website database classifies the ground waterbody (2016-2021) status as good, as per the extract shown in Figure 12.4 below.

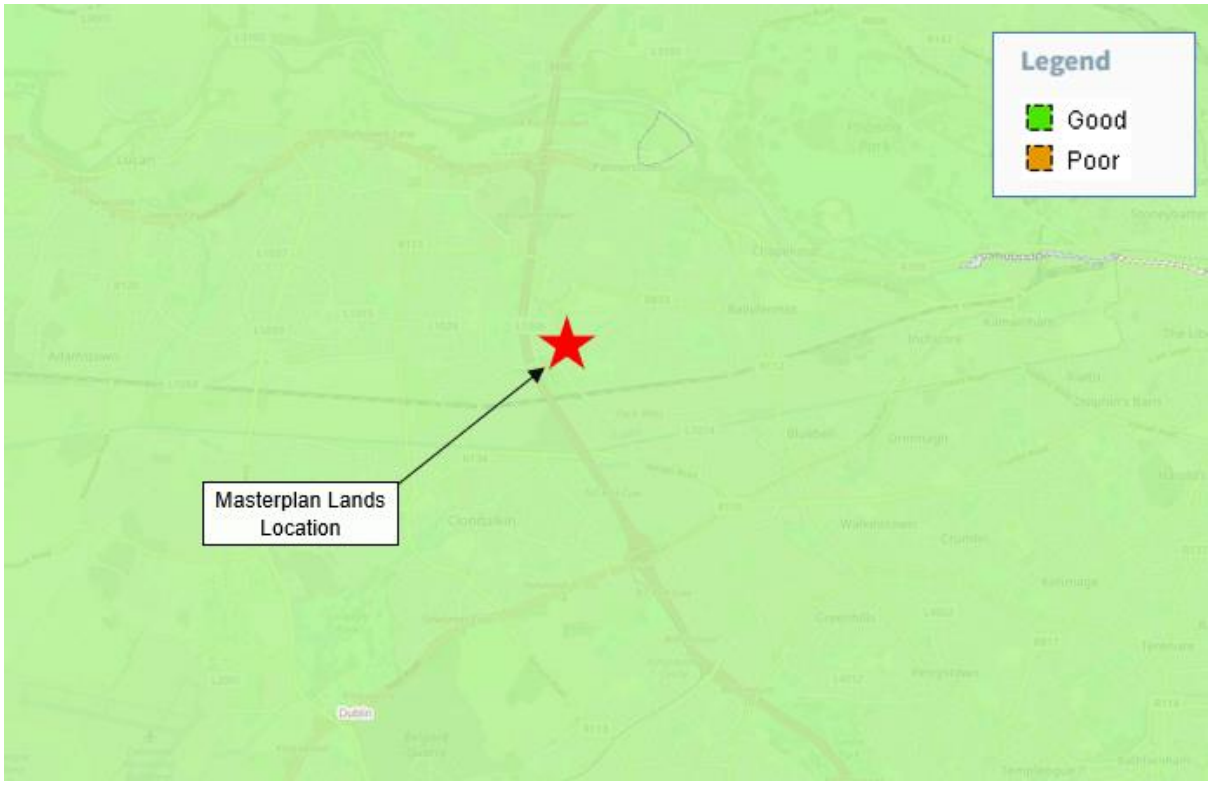


Figure 12.4: EPA's Ground Waterbody Status Map

The national Aquifer Bedrock Map prepared by the Geological Survey of Ireland was consulted and is extracted in Figure 12.5.

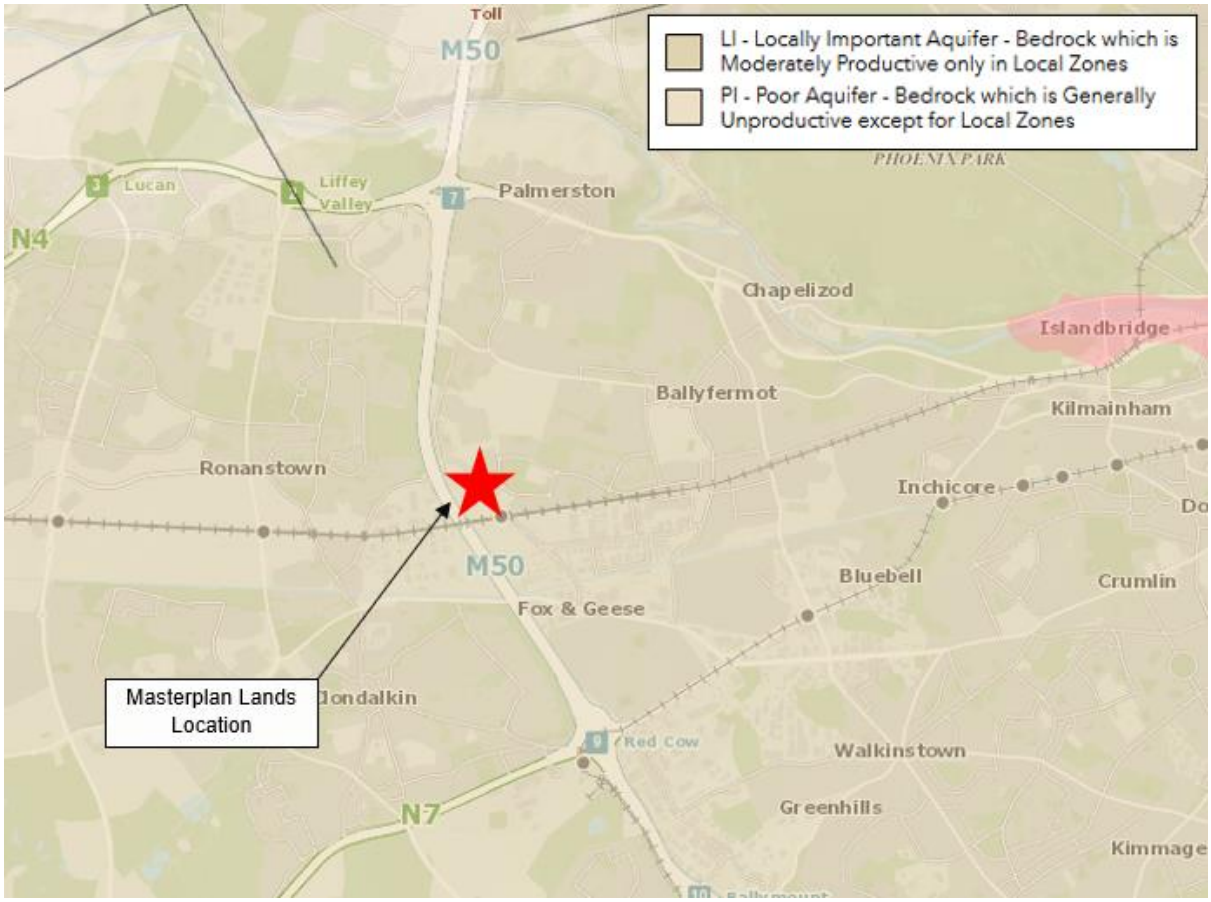


Figure 12.5: Extract from GSI's Bedrock Aquifer Map

From the above map extracts, the sites lie in an area which has a designation of LI, which represents Locally Important Aquifer qualities, where the bedrock is moderately productive only in local zones. The same map viewer series didn't indicate the presence of any groundwater wells or springs in the immediate vicinity of the site. The groundwater vulnerability in the vicinity of the proposed sites was also examined by referencing the Geological Survey of Ireland. From the GSI groundwater vulnerability map, extracted overleaf, the sites lie within an area of high groundwater vulnerability.

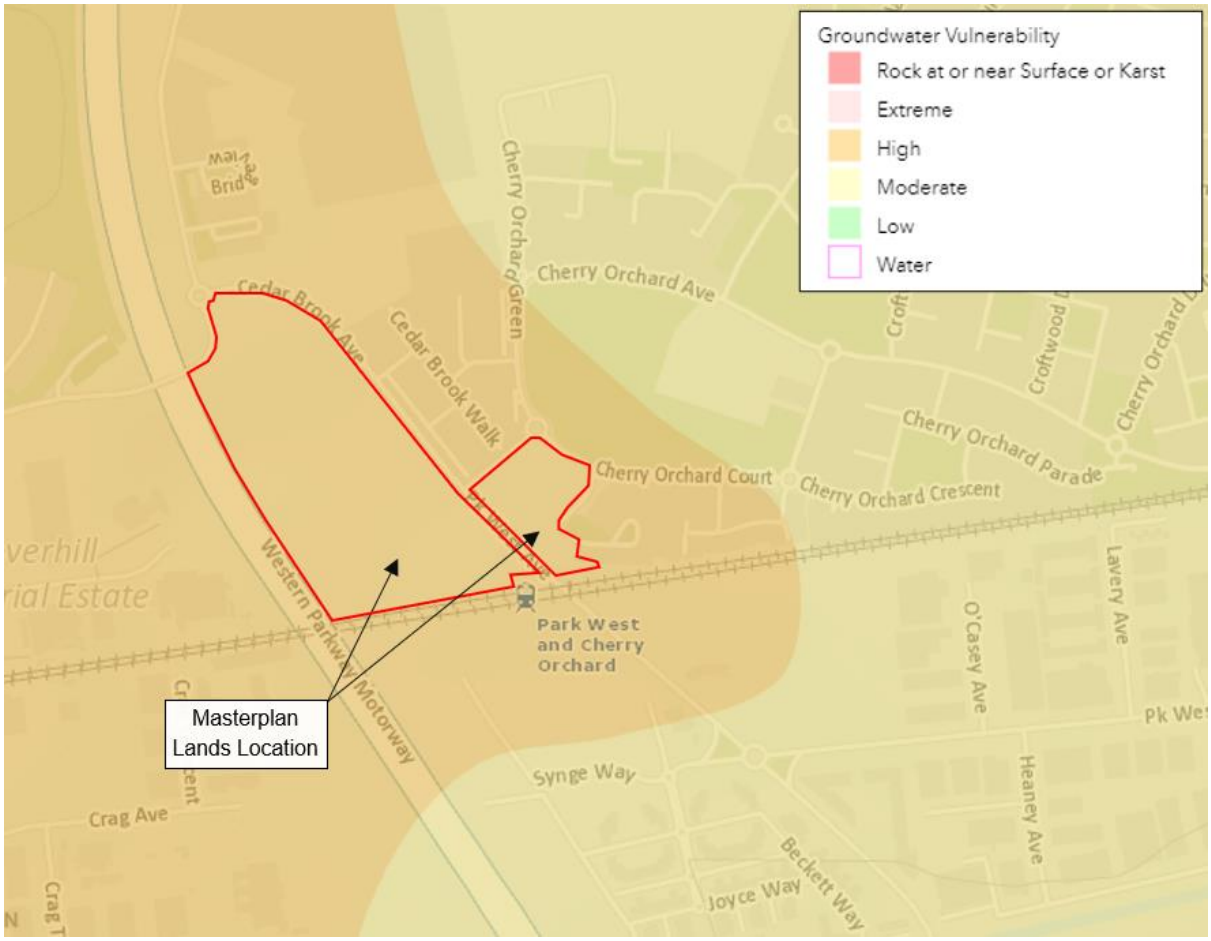


Figure 12.6: Extract from Groundwater Vulnerability Mapping

12.3.6 Flood Risk Assessment

A Flood Risk Assessment has been prepared by Waterman Moylan Engineers and is submitted with this application. This Flood Risk Assessment has been carried out in accordance with the DEHLG/OPW Guidelines on the Planning Process and Flood Risk Management published in November 2009. The assessment identifies and sets out possible mitigation measures against potential risks of flooding from various sources. Sources of possible flooding include coastal, fluvial (river), pluvial (direct heavy rain) and groundwater.

The Office of Public Works (OPW) provides flood mapping on their website floodinfo.ie. An extract of the tidal flood mapping is shown overleaf in Figure 12.7. The map extract indicates that the nearest extent of potential tidal flooding is located at Islandbridge on the River Liffey, c. 4.7km from the subject site.

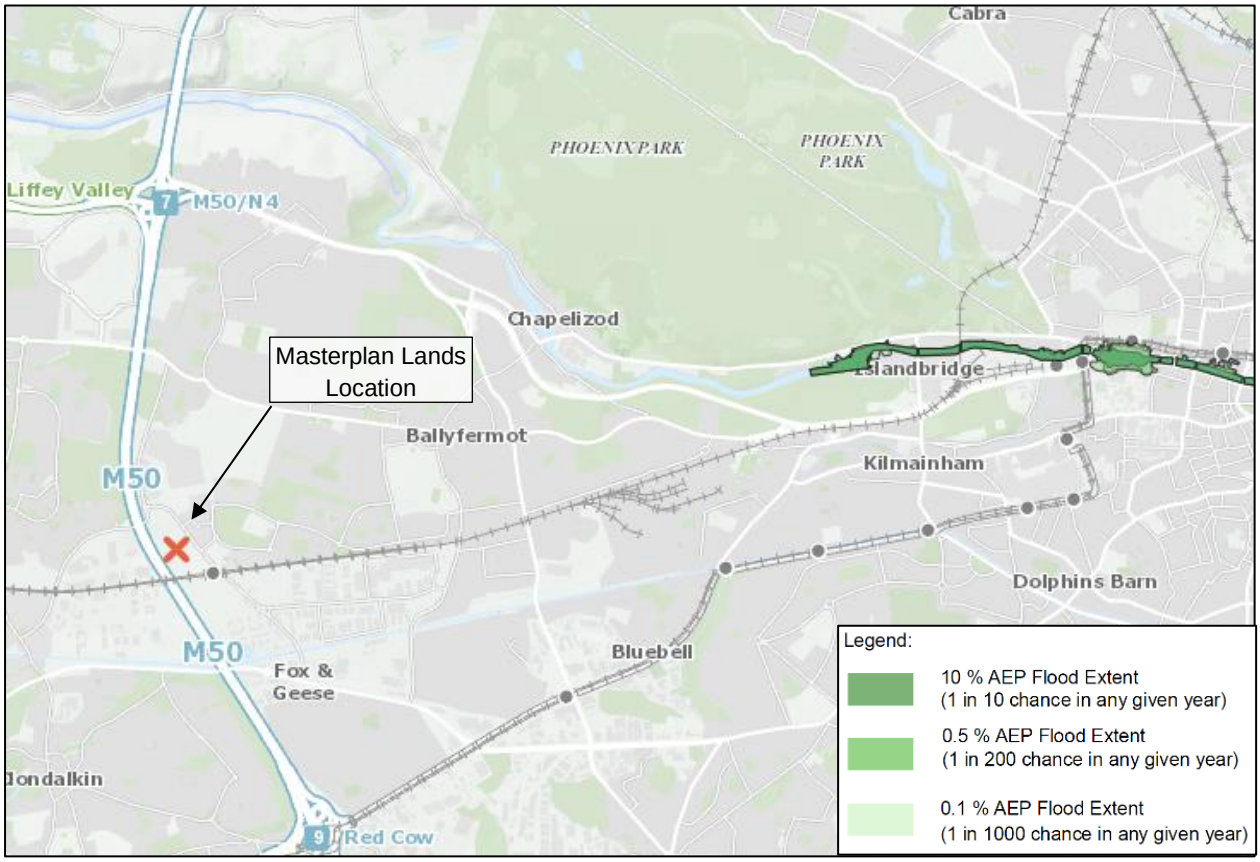


Figure 12.7: Extract from Tidal Flood Extent Mapping (Source: www.floodinfo.ie)

High probability flood events, as shown in the above map, are defined as having approximately a 1-in-10 chance of occurring or being exceeded in any given year (10% Annual Exceedance Probability), medium probability flood events are defined as having an AEP of 0.5% (1-in-200 year storm), while low probability events are defined as having an AEP of 0.1% (1-in-1,000 year storm). The map indicates that the masterplan lands, including the Proposed Cherry Orchard Point - Phase 2 Subject Site, is not at risk of flooding for the 1 in 1,000-year event.

Given that the site is located 13.1 kilometres inland from the Irish Sea, 4.7 kilometres from the nearest location at risk of tidal flooding, and that there is at least a 52.77m level difference between the lowest existing ground level (55.72m) and the record high tide event (2.95m), and given that the site is outside of the 1-in-1,000 year flood plain, it is evident that a pathway does not exist between the source and the receptor. The risk from tidal flooding is therefore extremely low and no flood mitigation measures need to be implemented.

The masterplan lands, including the Proposed Cherry Orchard Point - Phase 2 subject site, is located within the Blackditch stream catchment. The Blackditch stream is a tributary of the Camac River which outfalls to the River Liffey at Heuston Station. There are no direct hydrological links (surface water drainage systems or natural watercourses) between the subject sites and the Blackditch stream. The site has an indirect hydrological link to the Blackditch Stream, whereby as discussed previously, overland flows from the site may enter the surface water drainage network serving the adjacent roads.

Figure 12.8 below, shows an extract of the extent of potential fluvial flooding in the vicinity of the site. This extract indicates that the site is not at risk of flooding for even the 1 in 1,000 year flood event. However, it is noted that a flood risk has been identified further downstream from the sites on the Camac River.

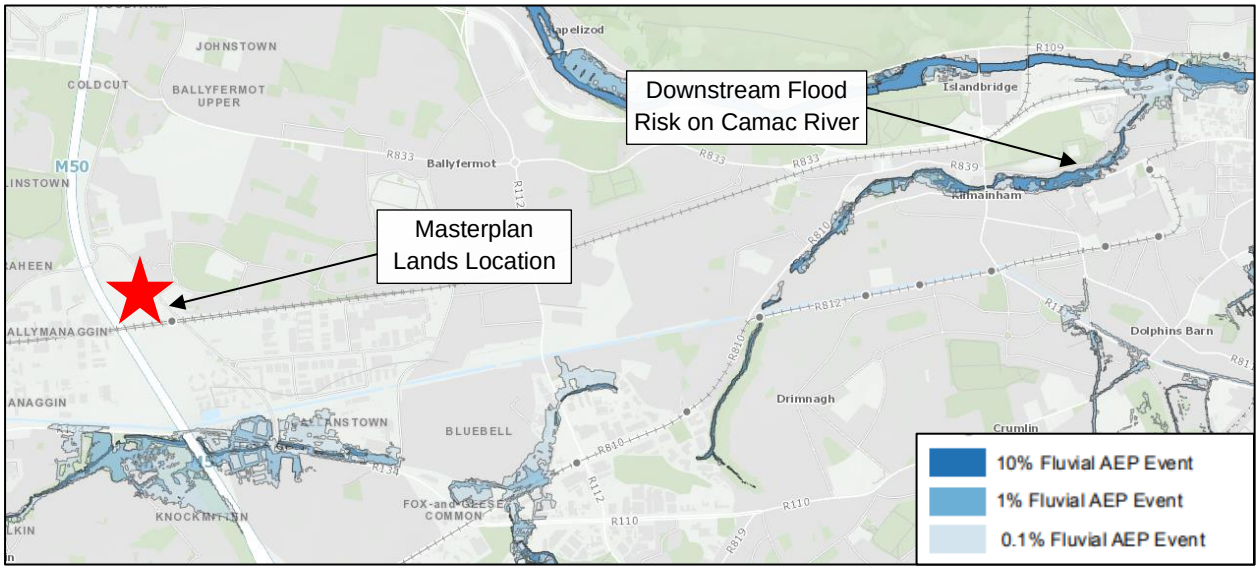


Figure 12.8: Extract from Fluvial Flood Extent Mapping (Source: www.floodinfo.ie)

Figure 12.9, as downloaded from the OPW website, shows the relevant node points along the flood route of the Camac River. The nearest node point to the site is 09CAMM007501. The tabulated data for this node point informs that the water level of the 0.1% AEP (1 in 1,000 year storm), will be 51.08m OD. This is 4.64m below the lowest existing ground level of 55.72m OD on site.

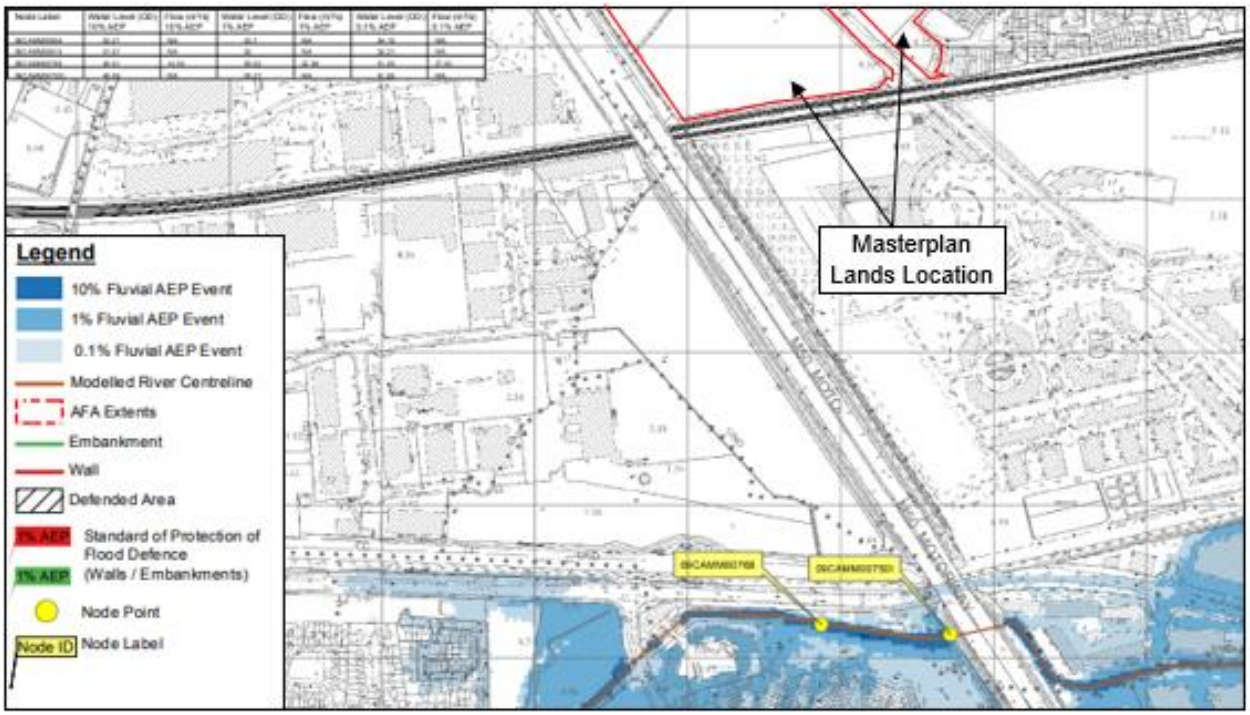


Figure 12.9: Extract from Flood Map e09cam_exfcd_f1_17

The OPW website further provide details of historic flood events. Figure 12.10 below, shows an extract of the historic flood events map for the vicinity of the site, with the closest flooding occurring c. 975m south of the Proposed Cherry Orchard Point - Phase 2 Subject Site. Recorded flood events in the vicinity of the site are in the location of the identified flood plains on the Camac River, south of the Grand Canal as noted earlier.

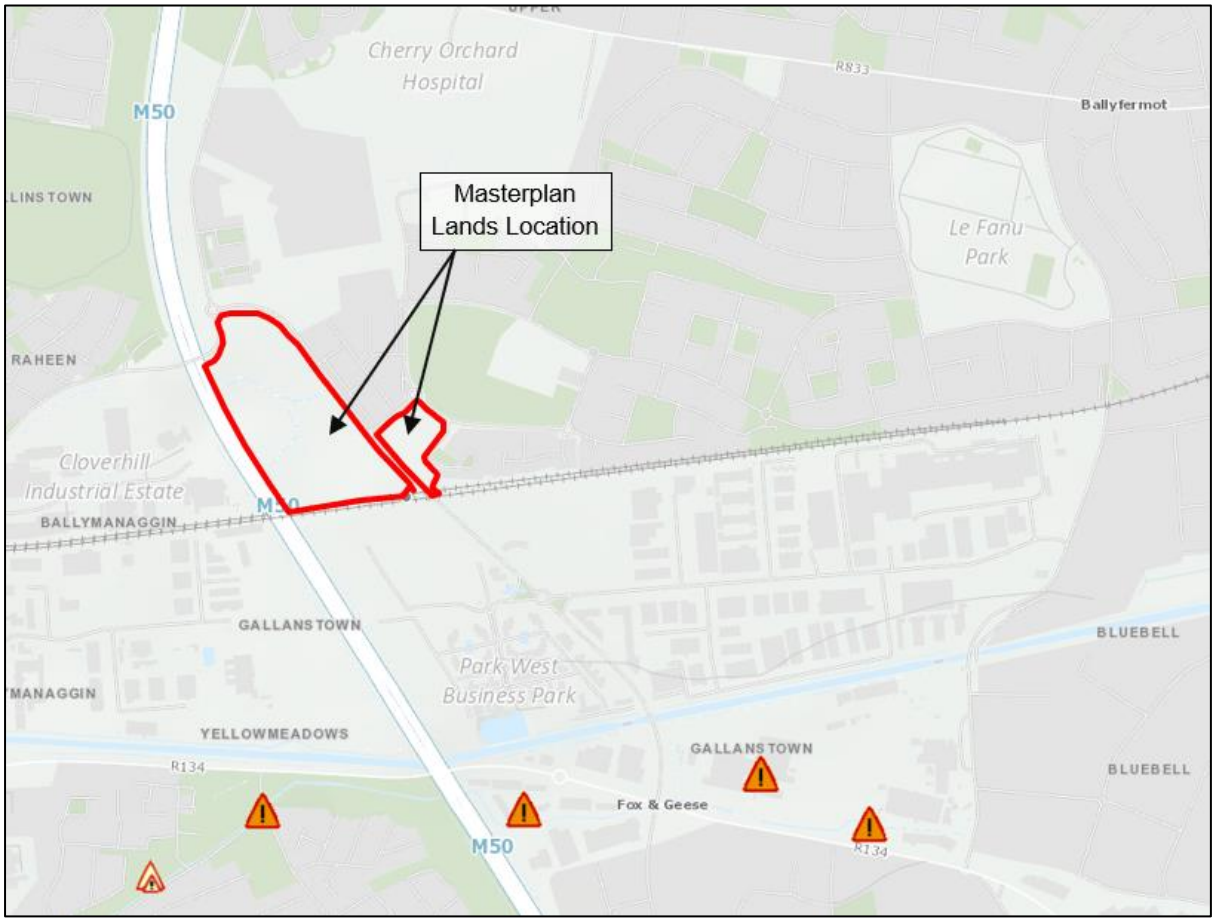


Figure 12.10: Extract from Historic Flood Event Map (Source: www.floodinfo.ie)

A summary of flood risks can be seen in Table 12.1 below.

Table 12.1: Summary of Flood Risks from Various Components

Source	Pathway	Receptor	Likelihood	Consequence	Risk	Mitigation Measure	Residual Risk
Coastal	*Irish Sea (River Liffey)*	*Proposed development*	*Extremely low*	*None*	*Negligible*	*None*	Negligible
Fluvial	*Blackditch Stream & River Camac*	*Proposed development*	*Low*	*Low*	*Extremely Low*	*Setting of floor levels, overland flood routing*	Extremely Low
Pluvial	*Private & Public Drainage Network*	*Proposed development, downstream properties, and roads*	*Ranges from high to low*	*Moderate*	*Ranges from high to low*	*Appropriate drainage, SuDS, and attenuation design, setting of floor levels, overland flood routing*	Low
Ground Water	*Ground*	*Underground services, basement and ground level of*	*High*	*Moderate*	*High*	*Appropriate setting of floor levels, flood*	Low

Source	Pathway	Receptor	Likelihood	Consequence	Risk	Mitigation Measure	Residual Risk
		buildings, roads				*routing, damp proof membranes*	
Human/ Mechanical Error	*Drainage network*	*Proposed development*	*High*	*Moderate*	*High*	*Setting of floor levels, overland flood routing, regular inspection of SW network*	Low

The site and surrounding lands have been assessed for the risk of flooding from tidal, pluvial, fluvial, groundwater, and mechanical sources. As detailed in the following chapters, the site and surrounding areas have been determined as being located in Flood Zone C, as per the OPW'S Vulnerability Classifications. Zone C is an area at "low probability of flooding". Thus, the justification test (as required in the 2009 guidelines and SFRA DCC Development Plan) does not need to be applied.

Zone C is defined as: "low probability of flooding where the probability of flooding from rivers and sea is moderate (risk is less than 0.1% annually or 1 in 1,000 years for both river and coastal flooding).

The nearest location at risk of flooding as identified in the below flood maps as extracted is approx. 975m away from the site to the south. The site is c. 5m higher topographically than these areas at risk of flooding. Thus, the site is considered separated sufficiently, both in distance and elevation, from these identified flood zones.

The potential flood risks from the various sources, incorporated mitigation measures to the design, and assessment of the residual risk as low to negligible in all cases, is discussed in further detail within this Environmental Report Chapter 12.

12.3.7 Characteristics of the Proposed Development

12.3.7.1 Approved Phase 1 Development

A planning application for Phase 1 of the overall Cherry Orchard Development on Site 4 at Cherry Orchard was lodged by The Land Development Agency (LDA) with An Bord Pleanála on 1st December 2023 (Ref: ABP-318607-23). A decision regarding the Phase 1 development from ABP was received on 09 July 2024, with approval granted for the proposed development.

The application, which is illustrated in Figure 12.11, was for a residential led mixed use scheme comprising:

- A total of 708 residential apartments in a number of blocks.
- A total of 4,790 sqm non-residential development comprising
  - Supermarket (2,523 sqm).
  - Retail Units (373 sqm)
  - Creche with accommodation for 25 staff and 104 children (672 sqm)
  - Community Facilities (1,222 sqm)

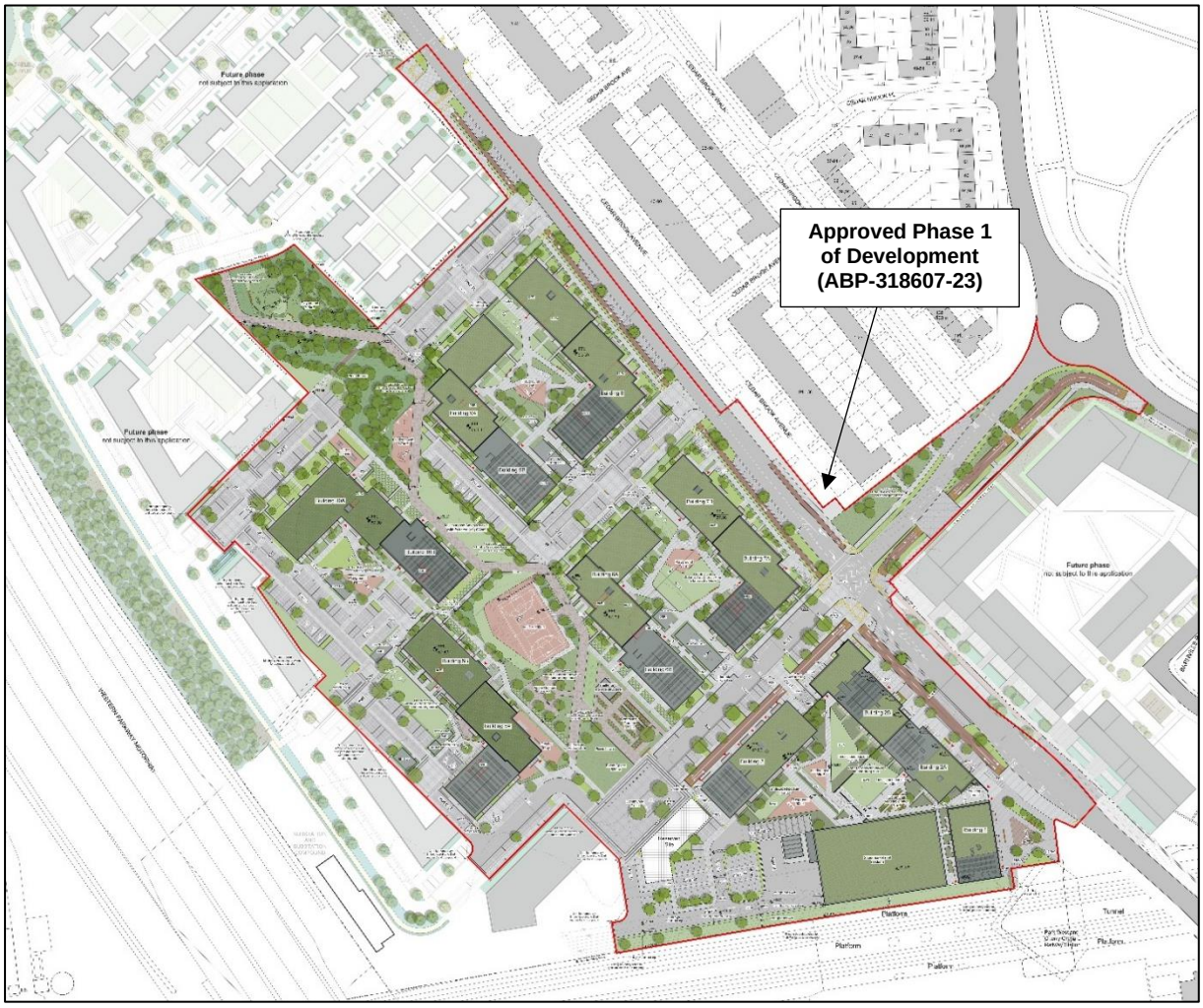


Figure 12.11: Approved Phase 1 Site Layout

12.3.7.2 Proposed Development – Proposed Cherry Orchard Point

The subject site, proposed Proposed Cherry Orchard Point - Phase 2, is located on the northern portion of Site 4 directly north of the Approved Phase 1 development. The Proposed Cherry Orchard Point - Phase 2 is bound to the northwest by Cloverhill Road, the northeast and east by Park West Avenue, to the south by the Approved Phase 1 of the development, and the west by the future proposed Phase 4 of the development.

The area of the subject application indicated by the redline boundary is 3.185 ha (31,850m²).

The subject application is for Proposed Cherry Orchard Point - Phase 2 of the 4-Phase masterplan development as per Figure 12.12. The Proposed Cherry Orchard Point - Phase 2 is located north of the Approved Phase 1 site (ABP-318607-23) and east of the future Phase 4 development. The proposed access to the proposed development is from the east of the development via Park West Avenue.

The proposed development of Proposed Cherry Orchard Point - Phase 2 on Site 4 at Cherry Orchard will comprise:

- 137 residential units comprising
  - 101 x 2 / 3 bed houses
  - 18 x 2-bed apartments
  - 18 x 3-bed duplex

A breakdown of the schedule of accommodation for the subject application is provided below.

Table 12.2: Proposed Cherry Orchard Point – Phase 2 Schedule of Accommodation

Unit Type		Area sqm	No. of Units	Total Floor Area
2 Bed/ 4 Person House	HT A	81	13	1053
3 Bed/ 5 Person House - 2 storey	HT B	96	56	5376
3 Bed/ 5 Person House - 2 storey (end terrace)	HT B1	96	19	1824
3 Bed/ 5 Person House - 2 storey	HT C	106	13	1378
2 Bed/ 4P Own-Door Apt - mid terrace	Duplex A	73	6	438
2 Bed/ 3P Own-Door Apt (UD) - mid terrace	Duplex A (UD)	73	4	292
2 Bed/ 4P Own-Door Apt - end terrace/ corner	Duplex A1	73	3	219
2 Bed/ 3P Own-Door Apt (UD) - end terrace/ corner	Duplex A1 (UD)	73	5	365
3 Bed/5P Own-Door Duplex - end terrace/ corner	Duplex A2	115	8	920
3 Bed/5P Own-Door Duplex - mid terrace	Duplex A3	115	10	1150
Total			**137**	**13015**

The proposed development includes all associated site works, undergrounding of overhead lines, boundary treatments, drainage, and service connections.

Figure 12.12: Proposed Cherry Orchard Point - Phase 2 Layout

12.3.7.3 Future Development – Phase 3

The future development of Phase 3 on Site 5 at Cherry Orchard Point is expected to comprise: -

- A total of 254 residential apartments in 6 blocks.
- A total of 1,200 sqm non-residential development comprising
  - Retail (800 sqm).
  - Community (400 sqm)

12.3.7.4 Future Development – Phase 4

The future development of Phase 4 on Site 4 at Cherry Orchard Point is expected to comprise: -

- Commercial units in 4 blocks (16,310 sqm).

12.3.7.5 Overall Development

The overall development of Phases 1, 2, 3 and 4 on Sites 4 and 5 at Cherry Orchard Point is expected to comprise: -

- 1,099 residential units comprising:
  - 101 Houses.
  - 18 Duplex
  - 980 number Apartments (708 + 18 + 254).
- Total non-residential development of 22,300 sqm comprising:
  - 1 Supermarket (2,523 sqm).
  - 3 Retail (222 sqm + 151 sqm + 800 sqm).
  - 1 Creche (672 sqm).
  - 4 Commercial (16,310 sqm).
  - 2 Community (1,222 sqm + 400 sqm).

12.3.7.6 Design Population

The Approved Phase 1 development comprises a total of 708 apartments with 1,174 bedrooms and a design population of 2,247 persons.

The Proposed Cherry Orchard Point - Phase 2 development will comprise a total of 137 residential units (101 houses, 18 apartments and 18 duplexes) with a total of 360 bedrooms and a design population of 645 persons.

12.3.7.7 Water Supply

The site is greenfield in nature and has no internal watermain networks. The road networks and footpaths immediately adjacent to the sites contain public watermain networks as per the Uisce Éireann network Map records extracted to Figure 12.13.

Figure 12.13: Existing Water Supply Infrastructure Map - Uisce Éireann

As per the approved Phase 1 Parent EIAR, a pre-connection enquiry was submitted to Uisce Eireann, and the subsequent Confirmation of Feasibility letter received from Uisce Éireann on 21 October 2022, with ref. no. CDS22004824, advised that no upgrade works are required to facilitate the water supply required by the masterplan development (including the subject site's water supply demands).

An updated pre-connection enquiry related to the Proposed Cherry Orchard Point - Phase 2, subject site, was sent to Uisce Éireann in February 2024. The enquiry included an over-provision for 160 no. units to act as a factor of safety in the case the unit numbers where to increase during the design phase. A Confirmation of Feasibility for this enquiry was received from Uisce Éireann on 26 March 2024, with ref. CDS24001410, and stated that the water supply for the Proposed Cherry Orchard Point - Phase 2 development would be feasible without upgrades.

12.3.7.8 Foul Water Network

The site is greenfield in nature and has no internal foul water networks. There are foul networks in the immediate vicinity of the sites as per the Uisce Eireann network Map records extracted to Figure 12.14.

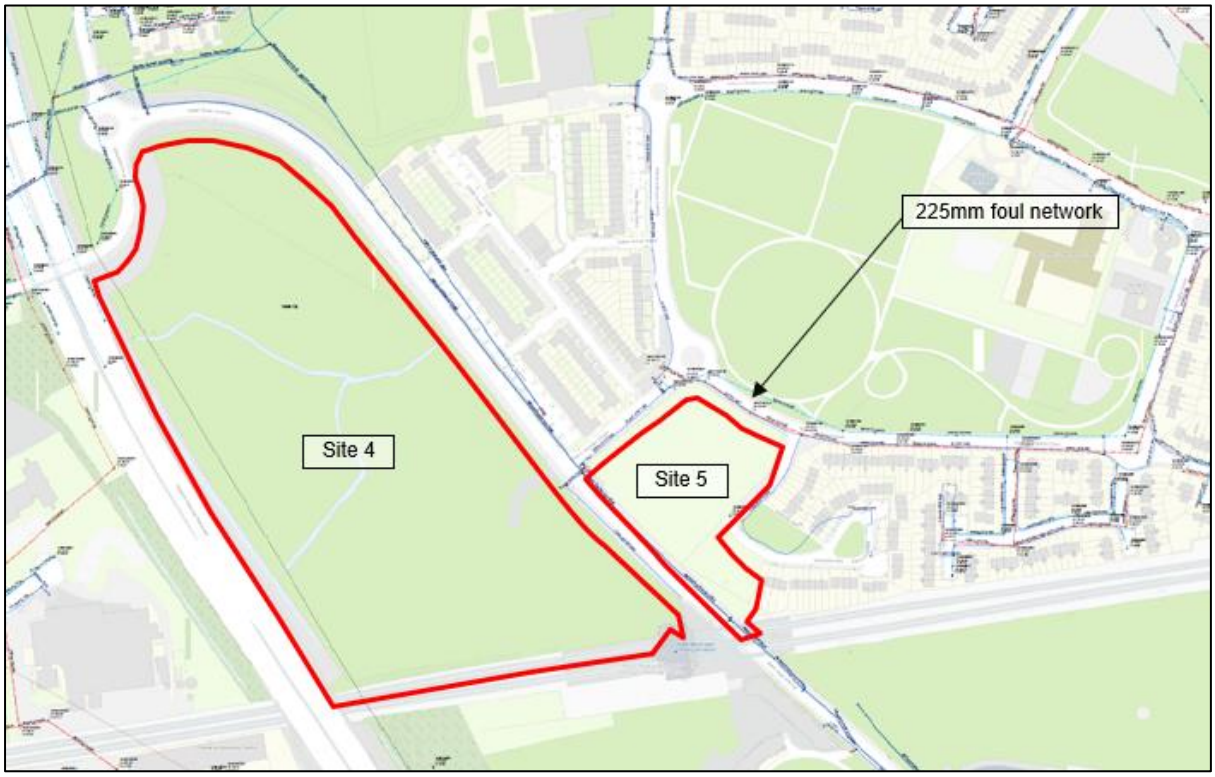


Figure 12.14: Existing Foul Water Infrastructure - Uisce Éireann

The approved Phase 1 Parent EIAR stated that the Confirmation of Feasibility letter received from Uisce Éireann on 21 October 2022 advised it has a project underway which will provide the necessary upgrades and capacity. A part of this is to upsize the existing 225mm Ø on Barnville Park to a 1050mm Ø tank sewer, in order to act as a storage tank during peak flow periods. At the time of writing the approved Phase 1 Parent EIAR it was expected that the upgrade project would be completed by Q1 2026.

As previously stated, an updated pre-connection enquiry related to Proposed Cherry Orchard Point - Phase 2, the subject site, was sent to Uisce Éireann in February 2024. The enquiry included an over-provision for 160 no. units to act as a factor of safety in the case the unit numbers where to increase during the design phase. A Confirmation of Feasibility for this enquiry was received from Uisce Éireann on 26 March 2024, with ref. CDS24001410, and stated that the foul water demand for the Proposed Cherry Orchard Point - Phase 2 development would be feasible subject to upgrades (the same upgrades mentioned in the masterplan COF discussed above). However, the upgrade project date of completion was updated to Q3 of 2028. This timeline for delivery of upgrades should not impact connection for the proposed development to the Uisce Éireann network. This timeline for delivery of upgrades should not impact connection for the Proposed Cherry Orchard Point - Phase 2 development to the Uisce Éireann network.

12.3.7.9 Surface Water Network

Sustainable Urban Drainage Systems (SUDS) proposed for the Proposed Cherry Orchard Point - Phase 2 development include public and private rain gardens, roadside swales, bio-retention tree pits, and permeable paving below parking spaces. The surface water runoff from the Proposed Cherry Orchard Point - Phase 2 subject site will be limited to the appropriate greenfield runoff rate calculated in accordance with the Institute of Hydrology report No 154 “Flood Estimation for Small Catchments”.

Site investigations for both sites were undertaken in 2022 by Ground Investigations Ireland (GII), the technical Ground Investigation report was completed in November 2022, and the Waste Analysis Classification report was completed in October 2022. An updated site investigation report was

undertaken by GII in July 2024 with an updated Waste Analysis Classification Report completed in August 2024. The details of the 2022 and 2024 site investigation reports are included under Chapter 11: Lands, Soils, and Geology of this Environmental Report. The current 2024 reports will be referenced here within and are appended to the Proposed Cherry Orchard Point - Phase 2 Preliminary Construction Environmental Management Plan, submitted as part of this planning application.

Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1 of the Site Investigation Report. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arisings upon completion. The soakaway test results are provided in Appendix 4 of the Site Investigation Report.

Soakaway Design

The 2024 GII Site Investigation Report stated the following:

"*At the locations of SA A, SA B, SA C, SA D, and SA E the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction."*

It is noted that the above referenced soakaway test locations refer to all 5 no. tests undertaken within the Masterplan Lands, 2 no. of which are located within the Proposed Cherry Orchard Point - Phase 2 subject site, SA A and SA B.

Furthermore, the GII Site Investigation Report undertaken in 2022 contained similar findings regarding the infiltration rates of the Cherry Orchard Point Masterplan Lands, and for which were included in the approved Phase 1 parent EIAR, stating the following:

"Infiltration rates of f = 7.303 x 10^{-6} *m/s, 6.95 x* 10^{-6} *m/s and 7.262 x* 10^{-6} *m/s respectively were calculated for the soakaway locations ST06, ST10, and ST11. At the locations of ST01, ST02, ST03, ST04, ST05, ST07, ST08, & ST09, the water level dropped too slowly to allow calculation of "f", the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction."*

12.3.7.10 Proposed Water Supply

Site 4 is proposed to be served by 2-no. 200mm connections to the existing 300mm Ductile Iron watermain as instructed by Uisce Éireann. The proposed 200mm watermain will follow the main vehicular circulation route of the site and will be further supplemented by 150mm and 100mm loops and branches.

Site 5 is proposed to be connected via a 100mm watermain to the existing 200mm uPVC network as instructed by Uisce Éireann.

The Proposed Cherry Orchard Point - Phase 2 subject site is proposed to connect into the Approved Phase 1 development at 3 no. locations as indicated in Figure 12.15. Meters will be installed at connection points in line with Uisce Éireann requirements. The proposed water supply network within the subject site will comprise of 100mm diameter loops connected to a 150mm and 200mm diameter bulk water supply main to the south of the development. The proposed 150mm and 200mm diameter mains are proposed to connect into the Approved Phase 1 development.

The preliminary water supply network design for the Proposed Cherry Orchard Point - Phase 2 subject site can be seen in Waterman Moylan Drawing No. COP-WMC-PH2-00-DR-P-0300 – Proposed Water Supply Layout.

The calculation of the water supply demand as per Section 3.7.2 of the Uisce Éireann Code of Practice for Water Infrastructure (July 2020 Revision 2), for the masterplan development (including the proposed Phase 2 Subject Site), as per the approved Phase 1 Parent EIAR, is shown below:

Table 12.3: Calculation of Total Water Demand (Masterplan Development)

	Description	Total Population	Water demand	Average Demand	Average Peak Demand	Peak Demand
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
Approved Phase 1	708 Apartments	1,912	315,480	3.651	4.564	22.820
	Supermarket (2,523m²)	101	9,999	0.116	0.145	0.725
	Retail (373m²)	8	792	0.009	0.011	0.055
	Community space (1,222m²)	300	3,960	0.046	0.058	0.290
	Creche (672m²)	129	12,771	0.148	0.185	0.925
Phase 2	153 units	413	68,145	0.789	0.986	4.930
Phase 3	254 units	686	113,190	1.310	1.638	8.190
	Retail (1,200m²)	24	2,376	0.028	0.035	0.175
Phase 4	Office/Commercial (c. 16,310m²)	1,087	119,570	1.384	1.730	8.650
	Total	**4,660**	**638,283**	**7.481**	**9.352**	**46.760**

As per the approved Phase 1 Parent EIAR, the average demand for the development is 7.481 l/s, with a peak demand of 46.760 l/s.

The total quantum of units within the Proposed Cherry Orchard Point - Phase 2 subject site has since been updated to 137 no. units, as noted in this application. The below table shows the updated water supply demand required for the Proposed Cherry Orchard Point - Phase 2 development.

Table 12.4: Calculation of Proposed Cherry Orchard Point - Water Demand

	Description	Total Population	Water demand	Average Demand	Average Peak Demand	Peak Demand
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
Phase 2	137 units	370	55,485	0.642	0.803	4.014

The average demand for water supply from the Proposed Cherry Orchard Point - Phase 2 development is 0.64 l/s, with a peak demand of 4.01 l/s.

The average demand for the masterplan development is thus decreased to 7.33 l/s (from 7.48 l/s), with a peak demand of 45.84 l/s (from 46.76 l/s).

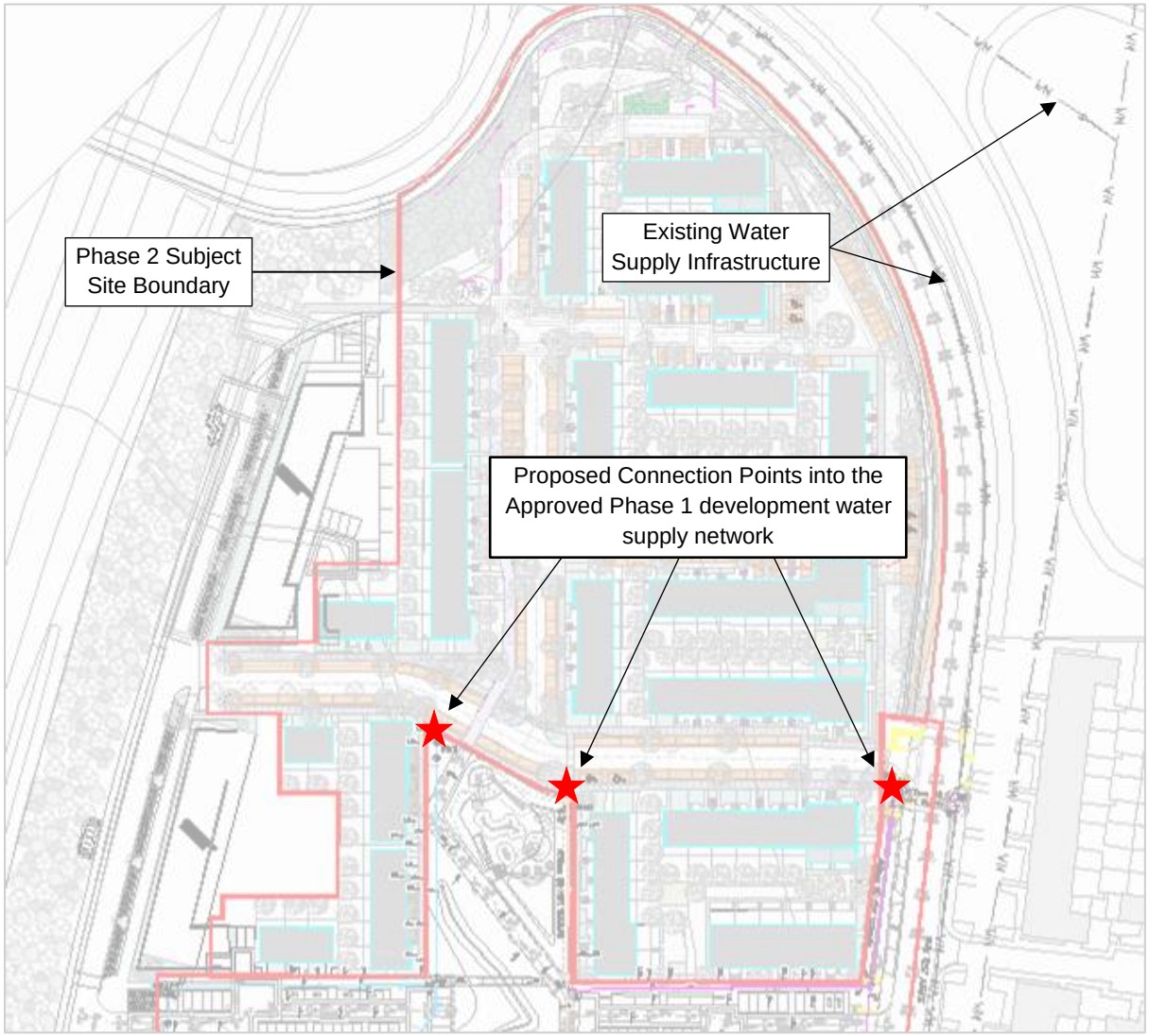


Figure 12.15: Proposed Cherry Orchard Point - Water Supply Connections

12.3.7.11 Proposed Foul Network

As previously noted under the existing foul water section, Uisce Éireann have advise it has a project underway which will provide the necessary upgrades and capacity and is scheduled for completion in Q3 2028. This is the upsizing of the existing 225mm Ø on Barnville Park to a 1050mm Ø pipe. The Phase 1A development (first construction phase of the Approved Phase 1 development) has been approved by Uisce Éireann to proceed in advance of these upgrades works and will connect into the existing foul water network.

At the time of writing this document in January 2025, the construction programme for the Proposed Cherry Orchard Point - Phase 2 Subject Site is envisioned to start after 2028. This timeline for delivery of upgrades (Q3 2028) should not impact connection for the proposed development to the Uisce Éireann network. However, further discussions are underway between DCC, The LDA, and Uisce Éireann to discuss and agree alternative measures to accommodate future phases via the use of a balancing tank to be constructed on Site 5, in advance of the proposed Uisce Éireann upgrades, if necessary.

In order to meet the above strategy, Uisce Éireann have confirmed that it is acceptable for Site 4 (for which includes the Proposed Cherry Orchard Point - Phase 2 Subject Site) to be served by a 300mm Ø trunk sewer at a gradient of 1/300. Uisce Éireann have confirmed that it is acceptable for Site 4 to be served by a 300mm Ø trunk sewer at a gradient of 1/300. This trunk sewer will reduce the depth that

the existing site levels will have to be raised at the north of Site 4, to provide depth of cover to the foul network.

It is proposed, as per the approved Phase 1 Parent EIAR, that Site 4 be drained via a series of 150mm and 225mm Ø sewers which will connect to the aforementioned 300mm Ø trunk sewer. This trunk sewer will leave Site 4 at the junction of Park West Avenue and Barnville Walk. It will proceed along Barnville Walk to connect to the existing foul network. The south of site 4 (high-density), will be served by a network of 225mm and 300mm Ø pipes. This network will exit Site 4 at the proposed southern access road and proceed north to connect to the 300mmØ trunk sewer. Site 5 will be drained via a network of 150mm and 225mm Ø pipes and will connect to the existing foul network at the connection point as specified by Uisce Eireann. All networks are proposed to drain by gravity and there is no requirement for pumping on the proposed foul networks.

It is proposed that the Proposed Cherry Orchard Point - Phase 2 subject site be drained via. gravity by 150mm Ø and 225mm Ø foul water pipes before connecting into the Approved Phase 1 development's foul water network. The preliminary foul water network design for the Proposed Cherry Orchard Point - Phase 2 subject site can be seen in Waterman Moylan Drawing No. COP-WMC-PH2-00-DR-P-0200 – Proposed Drainage General Layout Arrangement.

The Proposed Cherry Orchard Point - Phase 2 subject site is proposed to connect into the Approved Phase 1 development at 1 no. location as indicated in Figure 12.16.

The proposed internal foul drainage network has been designed and sized in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure and Standard Details.

The calculation of the foul water demand as per Section 3.6 of the Uisce Éireann Code of Practice for Wastewater Infrastructure (July 2020 Revision 2) for the masterplan development (including the proposed Phase 2 Subject Site) as per the approved Phase 1 Parent EIAR is shown below:

Table 12.5: Calculation of Foul Water Flow (Masterplan Development)

	Description	Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
		No. People	*l/day*	*l/day*	*l/s*	*l/s*
Subject Application	708 Apartments	1,912	150	315,480	3.651	10.953
	Supermarket (2,523m²)	101	90	9,999	0.116	0.348
	Retail (373m²)	8	90	792	0.009	0.027
	Community space (1,222m²)	300	12	3,960	0.046	0.138
	Creche (672m²)	129	90	12,771	0.148	0.444
Phase 2	153 units	413	150	68,145	0.789	2.367
Phase 3	254 units	686	150	113,190	1.310	3.930
	Retail (1,200m²)	24	90	2,376	0.028	0.084
Phase 4	Office/Commercial (c. 16,310m²)	1,087	100	119,570	1.384	4.152

	Total	**4,660**		**646,283**	**7.481**	**22.443**

As per the Approved Phase 1 Parent EIAR, the total Dry Weather Flow for the masterplan lands is 7.48 l/s with a peak flow of 22.44 l/s.

The total quantum of units within the subject site, Proposed Cherry Orchard Point - Phase 2, has since been updated to 137 no. units. The below table shows the updated foul water flow for the Proposed Cherry Orchard Point - Phase 2 development.

Table 12.6: Calculation of Proposed Cherry Orchard Point - Phase 2 Foul Water Flow

	Description	**Total Population**	**Load per Capita**	**Daily Load**	**Total DWF**	**Peak Flow**
		No. People	*l/day*	*l/day*	*l/s*	*l/s*
Phase 2	137 units	370	150	55,485	0,706	2,119

The total dry weather flow from the Proposed Cherry Orchard Point - Phase 2 subject site has been calculated as 0,706 l/s, with a peak flow of 2,119 l/s.

The total dry weather flow for the masterplan development is thus decreased to 7.39 l/s (from 7.48 l/s), with a peak demand of 22.19 l/s (from 22.44 l/s).

For the purpose of construction stage foul water discharge, the contractor will need to apply to Uisce Éireann for a temporary connection agreement at the appropriate time.

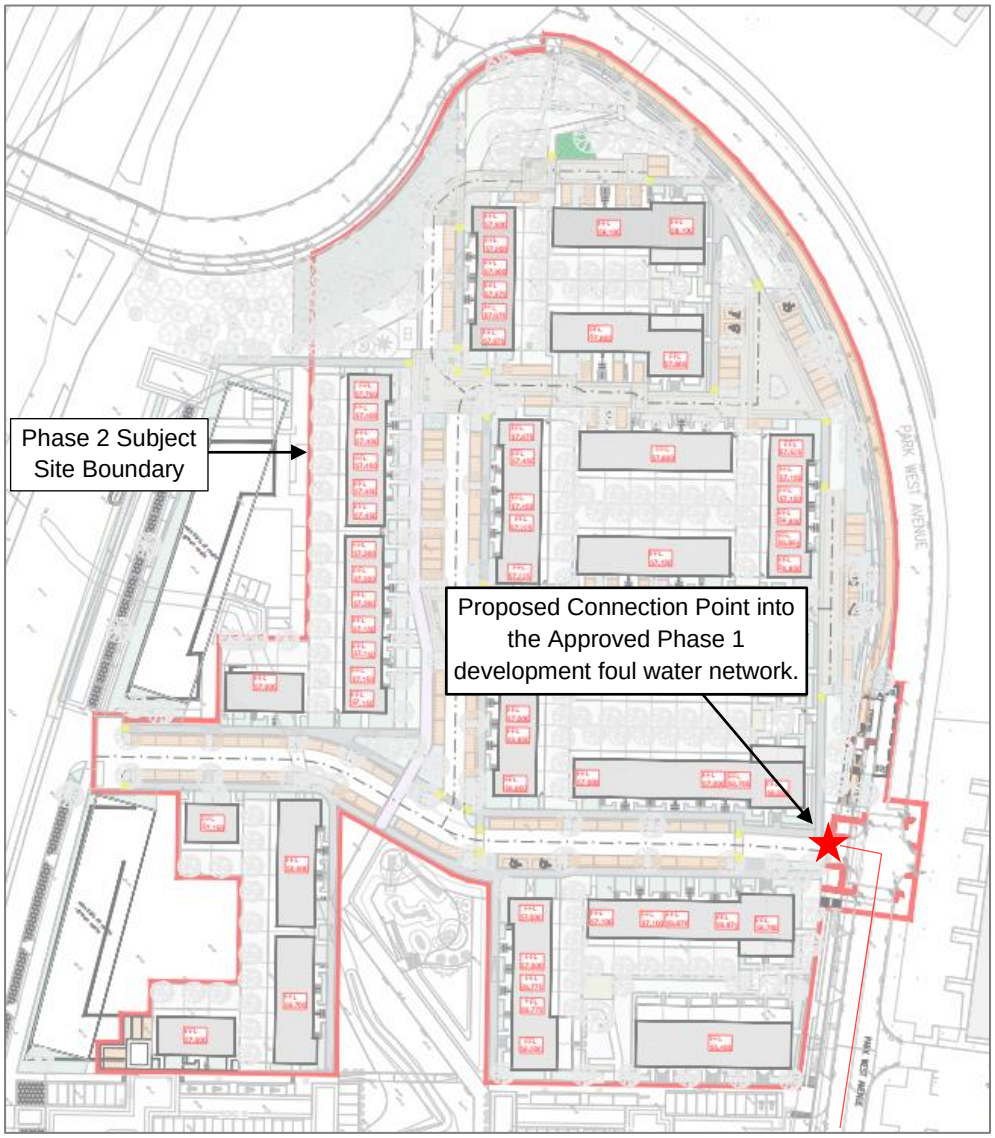


Figure 12.16: Proposed Cherry Orchard Point - Phase 2 Foul Water Network Connection Point

12.3.7.12 Proposed Surface Water Network

It is proposed to construct a surface water drainage network that will service and attenuate the development internally before discharging at the current greenfield (or allowable) rates to the local Surface Water network. It is proposed that Site 4 (which includes the Proposed Phase 2 development) will connect to the existing 1,050mm Ø network in Cedar Brook Way, as per the Approved Phase 1 development. Site 5 will outfall to the 900mm Ø Network in Barnville Park.

Meetings were held with the Surface Water Department of Dublin City Council in 2022 & 2023 in order to agree the principles of the surface water and SuDS strategy of the masterplan lands. These meetings outlined the preliminary surface water strategy, SuDS strategy, and connection points. The overall preliminary proposal was deemed acceptable and suitable for further detailed design progression. It was agreed that the outflow rate be set at a maximum of 2 l/s/ha as per Dublin City Council requirements. This is in accordance with Dublin City Council's "SuDS Design and Evaluation Guide", which instructs in their Flow Control Discharge Limits Table (page 43), that the 1-in-100-year maximum outflow rate shall be limited to 2 l/s/ha.

Discussions were held with the Surface Water Department of Dublin City Council on the preliminary design strategy of the Proposed Cherry Orchard Point - Phase 2 development on 4 November 2024.

DCC confirmed that the surface drainage strategy presented, which includes the connection of the Proposed Cherry Orchard Point - Phase 2 site to the Approved Phase 1 developments surface water network that ultimately discharges into the existing network in Cedar Brook Way, was acceptable. They further confirmed that the internal drainage strategy was acceptable in principle and expressed a desire for maximum SuDS features within the subject site. It was also noted that the outflow rate is limited to 2 l/s/ha as per Dublin City Council policy, which is lower than the current greenfield runoff rate for the site, thus when the Proposed Cherry Orchard Point - Phase 2 development becomes developed, the runoff rate for the site will actually be reduced from its current rate.

For storm water management purposes, it is proposed to divide Sites 4 and 5 into four separate sub-catchments. Storm water from each catchment will be attenuated and discharge at a controlled rate, limited to a maximum of 2.0 l/s/ha, to ultimately outfall to the existing surface water networks at Cedar Brook Way and Barnville Walk.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS), Dublin City Council's SuDS Design and Evaluation Guide, and in the SuDS Manual. Based on four key elements – Water Quantity, Water Quality, Amenity and Biodiversity – the targets of the SuDS train concept have been implemented in the design, providing SuDS devices for each of the following:

- Source Control
- Site Control
- Regional Control

The proposed development incorporates a Storm Water Management Plan 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.

Sustainable Urban Drainage Systems (SUDS) proposed for the Proposed Cherry Orchard Point - Phase 2 development include public and private rain gardens, roadside swales, bio-retention tree pits, and permeable paving below parking spaces. The surface water runoff from the proposed Phase 2 subject site will be limited to the appropriate greenfield runoff rate calculated in accordance with the Institute of Hydrology report No 154 "Flood Estimation for Small Catchments".

As per the masterplan lands surface water management strategy, attenuation storage for the Proposed Cherry Orchard Point - Phase 2 Subject Site is provided for with the Approved Phase 1 development within the permitted above ground detention basin and below ground pluvial cube system located in the permitted park area. 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 below the greenfield equivalent runoff rate for each catchment within the masterplan lands.

The sustainable urban drainage systems proposed for the Proposed Cherry Orchard Point - Phase 2 subject site are as follows:

- Private rain gardens located in rear gardens of units;
- Public rain gardens located adjacent to the internal roads network;
- Bio-retention tree pits located adjacent to the internal roads network;
- Permeable paving below all parking spaces;
- Strategically located swales.

The proposed drainage and SUDS strategies can be seen on drawing the following Waterman Moylan Drawing No.'s submitted as part of this application:

- COP-WMC-PH2-00-DR-P-0200 – Proposed Drainage General Arrangement.
- COP-WMC-PH2-00-DR-P-0205 – Proposed SUDS Layout
- COP-WMC-PH2-00-DR-P-0210 – Proposed SUDS Details

12.4 Predicted Impacts

12.4.1 Construction Stage

Significant amounts of site stripping and excavation will be required in order to construct the development. When the site has been stripped layers of sub-soil will be exposed to weathering and there will be potential for erosion due to rainfall and subsequent runoff. The erosion of soil can lead to sediments being washed into the receiving watercourses/sewers at higher rates of runoff. This has potential to cause a negative, slight (not significant) to moderate (significant) and short to medium-term impact on receiving watercourses/groundwater should no mitigation measures be implemented.

There is also potential during the development's construction stage that contaminants from cement/concrete be washed into the receiving sewers. This has potential to cause a negative, slight (not significant) to moderate (significant) and short to medium-term impact on receiving watercourses/groundwater should no mitigation measures be implemented.

There is a risk of pollution of groundwater/watercourses/soils by accidental spillage of oils/diesel from temporary storage areas or where maintaining construction equipment. This has potential to cause a negative, slight (not significant) to moderate (significant) and short to medium-term impact on receiving watercourses/groundwater should no mitigation measures be implemented.

Foul water could be connected to the surface water drainage network resulting in the contamination of the receiving watercourses. Furthermore, if there is damage to any foul pipes, there is potential for contaminants to seep into the groundwater. This has potential to cause a negative, moderate (significant) and permanent impact on receiving watercourses/groundwater should no mitigation measures be implemented.

The construction of the proposed development in has potential to cause a significant negative and medium-term to permanent impact on receiving watercourses/groundwater should no mitigation measures be implemented.

No additional predicted impacts at construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 development beyond those outlined in this Environmental Report.

12.4.2 Operational Stage

The proposed development will result in increased impermeable areas and there is potential for an increase in risk of higher rates of surface water runoff leading to increased downstream flooding. This has potential to cause a negative, slight (not significant) to moderate (significant) and short-term impact on receiving watercourses/groundwater should no mitigation measures be implemented.

There is a potential impact for the discharge of contaminants from the proposed development and road surfaces to the surrounding drainage sewers. These would include particulates, oil, soluble extracts from the bitumen binder etc. The quality of runoff from the site would be dependent on the time of year, weather, particulate deposition from the atmosphere and any gritting or salting carried out by the Local Authority. The time of year has a major bearing on the quality of storm water run-off - in particular the first rains after a prolonged dry period where accumulated deposits of rubber, particulates, oils, etc. are, washed away. This has potential to cause a ***negative***, ***slight (not significant) to moderate (significant)*** and ***short*** to ***medium-term*** impact on receiving watercourses/groundwater should no mitigation measures be implemented.

There is potential for leaks in the foul network to result in contamination of the groundwater. This has potential to cause a ne***gative, slight (not significant) to moderate (significant) and short-term to permanent*** impact on receiving watercourses/groundwater should no mitigation measures be implemented.

Accidental spills of fuels/hydrocarbons and washing down into the drainage pipe network has the potential to impact on the receiving hydrogeology. This has potential to cause a ***negative, slight (not significant) to moderate (significant) and short to medium-term impact*** on receiving watercourses/groundwater should no mitigation measures be implemented.

There is a potential for watermain leaks which would increase the volume of water permeating through the underground soil strata. This has potential to cause a ***negative, slight (not significant) and short-term to permanent*** impact on receiving watercourses/groundwater should no mitigation measures be implemented.

The operation of the Proposed Cherry Orchard Point - Phase 2 development has potential to cause a ***negative, slight (not significant) to moderate (significant), short-term to permanent impact*** on receiving watercourses/groundwater should no mitigation measure be implemented.

No additional predicted impacts at operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 development beyond those outlined in this Environmental Report.

12.5 Mitigation Measures

12.5.1 Construction Stage

The Proposed Cherry Orchard Point - Phase 2 Subject Site no direct hydrological connectivity to natural watercourses or surface water networks. There may be an indirect link from surface water runoff which may have the potential to run off the site boundary to the surface water gullies on the adjacent road networks. These networks outfall to the Blackditch Stream.

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Blackditch Stream, and the Camac River which has an ultimate outfall to the River Liffey at Heuston. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001);
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines;
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- CIRIA 697, The SUDS Manual, 2007; and
- UK pollution Prevention Guidelines (PPG) UK Environment Agency, 2004

The schedule of mitigation presented within the following table summarises measures that will be undertaken for the Proposed Cherry Orchard Point - Phase 2 Subject Site in order to reduce impacts on ecological receptors within the zone of influence which would include surrounding soils, the public water supply network, groundwater aquifers, and the public surface water network.

Table 12.7: Schedule of Surface Water Mitigation Measures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from carparking area entering the drainage network.	Water quality impacts.	Petrol interceptor to be installed on drainage network prior to outfall to public surface water network.	Prevents hydrocarbons from entering the public surface water network.
2	Pollutants from site compound areas entering the drainage network or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Materials to be stored appropriately in designated areas (discussed below). Temporary foul water connection to be obtained from Uisce Éireann to serve site compound welfare facilities.	Prevents contamination of public surface water network, soil, and groundwater.
3	Pollutants from material storage areas entering the watercourse or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Fuels, oils, greases, and other potentially polluting chemicals will be stored in roofed and bunded compounds at the Contractor's compound. Storage area to be located over 50m away to ensure no direct pathway to the surface water network. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided to the Contractor for review by the Employer's Representative.	Prevents contamination of public surface water network, soil, and groundwater.
4	Concrete/ cementitious materials entering the drainage network.	Water quality impacts	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of public surface water network. Ensures invasive species material is not transported off site as muck.
5	Leaching of contaminated soil into groundwater.	Groundwater quality impacts	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water.	Prevents contamination of groundwater.
6	Pollutants from equipment storage/ refuelling area entering the drainage network.	Water quality impacts	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas. Discharge licence (where required) pollutant limits to be monitored and adhered to. The site is located at least 50m from any direct pathway to the surface water drainage network.	Prevents contamination of public surface water network.
7	Runoff from exposed work areas and excavated material storage areas entering the drainage network.	Water quality impacts due to silt entering the network.	Provision of silt entrapment facilities such as; straw bales, silt fencing, silt barriers, diversion drains, settlement tank(s), & settlement pond(s), as appropriate and as outlined below.	Prevents contamination of public surface water network.

As mentioned previously, there is no direct hydrological connectivity from the Proposed Cherry Orchard Point - Phase 2 Subject Site (nor the masterplan lands) to natural watercourses or surface water networks. There is potential for an indirect hydrological connectivity to the local surface water drainage network, whereby during heavy rainfall events, surface water from Sites 4 and 5 flows over the site boundary to the road gullies on the adjacent streets.

The most likely potential sources of contamination to the local surface water network are from silt and suspended particles, and from chemical compounds entering these networks as surface water runoff.

Silt and suspended particles may arise from surface runoff from stockpiled materials or from the pumping of water volumes in excavations.

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream.

Site stripping will be minimised as far as practicable. The proposed sediment entrapment facilities are as follows:

Straw Bales:

Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

Silt Fencing

A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing can be placed as a temporary barrier along the contour at the base of a disturbed area but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter should be considered.

Silt Barriers

Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff should be collected in diversion drains and routed through temporary sediment basins.

Diversion Drains

Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded, they can be lined with geotextile fabric or large stones or boulders.

Settlement tank

Commercially available settlement tanks, also known as sediment tanks, have compartments that allow suspended solid contents such as sand and silts to precipitate and sink to the bottom, falling out of suspension. The settlement tank has an inlet for the runoff which enters a chamber where it is held before flowing to the next compartment or tank for further treatment, prior to outfall.

Spoil heap/stockpiles

Spoil heap/stockpiles will not be located within 20m of the existing surface water networks. Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons. Drainage diversion ditches will be constructed between the stockpile area and local surface water

networks. This drainage ditch will flow to a sedimentation/settlement pond prior to outfalling to the surface water network. A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Further mitigation measures include:

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application. The main contractor will be required to schedule delivery of materials daily. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Chemical contamination during construction stage can result due to fuel/chemical leaks and spills. Spills and leaks may contaminate soil, groundwater, and surface water networks via surface run-off. Method statements and mitigation measures reduce the potential for leaks and spills and limit their impact should they occur.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and surrounding watercourses from oil and petrol leakages and significant siltation. Suitable bunded and roofed 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. Spill kits will be provided by the Contractor to cater for any other spills.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.

On-site treatment measures will be installed to treat surface water run-off from the site prior to discharge to the receiving surface water sewer as noted above. This treatment will be achieved by the construction of settlement tanks/ponds, in conjunction with the installation of proprietary surface water treatment systems including class 1 full retention petrol interceptors, and spill protection control measures. Settlement tanks/ponds will be sized to deal with surface run-off and any groundwater encountered.

A sampling chamber with shut down valve will be installed downstream of the settlement pond/tank and water quality monitoring will be carried out here prior to discharge to the surface water sewer.

Regular testing of surface water discharges will be undertaken at the outfall from the subject lands in accordance with the requirements of the discharge licence to be obtained. The location(s) for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman or appointed, suitably qualified site staff member at the commencement of works.

Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.

It is likely that the surface water run-off from the site will be discharged to the existing public surface water network, post treatment. This will need to be confirmed between the Contractor and Local Authority, as well as any further conditions such as the permitted levels of contamination as well as frequency for testing, as part of the Contractor's application for a discharge licence.

All water pumped from the excavations will require to be treated for silt and deleterious matter. During any discharge of surface water from the excavations, the quality of the water will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water

samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in the table below must be followed during construction in order to ensure maintenance of water quality protection. This is in line with Transport Infrastructure Ireland (TII)'s 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'. It is considered that the parameter limit values (Guide/Mandatory) defined in the Fresh Water Quality Regulations (EU Directive 2006/44/EEC) should act as a trigger value for the monitoring of Surface Water.

Table 12.8: Monitoring Guidelines (Fresh Water Quality Regulations)

Parameter	Limit		Frequency and Manner of Samplings
	Limit Value	Guide/Mandatory	
Temperature	1.5°C	Mandatory Limit	Weekly, and at appropriate intervals where the works activities associated with the scheme have the potential to alter the temperature of the waters.
Dissolved oxygen	50% of Samples ≥ 9 (mg/l O2) 100% of Samples ≥ 7 (mg/l O2)	Guide Limit	Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH	6 to 9	Mandatory Limit	Weekly
Nitrites	≤0.01 (mg/l N02)	Guide Limit	Monthly
Suspended Solids	≤25 (mg/l)	Guide Limit	Monthly
BOD5	≤3 (mg/l)	Guide Limit	Monthly
Phenolic Compounds	-	-	Monthly where the presence of phenolic compounds is presumed (An examination by test)
Petroleum Hydrocarbons	5 (mg/l)	Guide Limit	Monthly (visual)
Non-Ionized Ammonia	≤ 0.005 (mg/l NH3)	Guide Limit	Monthly
Total Ammonium	≤ 0.004 (mg/l NH4)	Guide Limit	Monthly
Total Residual Chlorine	≤ 0.005 (mg/l HOCl)	Mandatory Limit	At appropriate intervals where works activities associated with the scheme have the potential to alter the Total residual Chlorine of the waters
Electrical Conductivity	-	-	Weekly

The Main Contractor will have overall responsibility for the implementation of the project Construction Surface Water Management Plan (CSWMP) during the construction phase. The appointed person from the Main Contractors team will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CSWMP. At the operational level, a designated person from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CSWMP are performed on an on-going basis.

Copies of the Construction Surface Water Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the CSWMP and informed of the responsibilities which fall upon them because of its provisions.

The responsibilities of the appointed person will be as follows;

- Updating the CSWMP as necessary to reflect activities on site.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensure pre-construction checks for protected species, are undertaken.
- Review method statement of the sub-contractors to ensure that it incorporates all aspects of CSWMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required.
- Ensure adherence to the specific measures listed in the Planning Conditions.
- Advise upon the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential, or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental related documentation.
- Ensure plant suggested is environmentally suited to the task in hand.
- Co-ordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists.
- To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site.

Where possible, precast concrete units are to be used to avoid on-site "wet" mix concrete usage. In-situ concrete pours are to be managed in accordance with best practice to avoid overspills.

Wheel wash and wash down facilities shall be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds/silt traps.

A method statement setting out in detail the procedure 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 and or services crossing watermains.

All watermains will be cleaned and tested in accordance with Uisce Éireann guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out and tested by or under the supervision of Uisce Eireann.

In order to reduce the risk of defective or leaking foul and surface sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.
- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.

No additional mitigation measures at construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined in this Environmental Report.

12.5.2 Operational Stage

The implementation of the following operation stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the development lands:

- The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.
- Surface water outflow will be restricted to below the equivalent greenfield runoff rate from the proposed attenuation tanks and basins as per the catchment design, in accordance with Dublin City Council requirements.
- Sustainable urban drainage measures, including green roofs, permeable paving, and filter strips/swales will be provided to improve water quality.
- A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.
- A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections. The table overleaf is an extract from Section 12.3 of the SuDS Design & Evaluation Guide, and generally describes the regular maintenance aspect for the SuDS.

Table 12.9: Regular Maintenance Requirements for SuDS

Type	Activity	Normal site care (Site) or SuDS-specific maintenance (SuDS)	Suggested frequency
Regular Maintenance			
Litter	Pick up all litter in SUDS Landscape areas along with remainder of the site – remove from site	Site	1 visit monthly
Grass	Mow all grass verges, paths and amenity grass at 35-50mm with 75mm max. Leaving cuttings in situ	Site	As required or 1 visit monthly
Grass	Mow all dry swales, dry SUDS basins and margins to low flow channels and other SUDS features at 100mm with 150mm max. Cut wet swales or basins annually as wildflower areas – 1st and last cuts to be collected	Site	4-8 visits per year or as required
Grass	Wildflower areas strimmed to 100mm in Sept or at end of school holidays – all cuttings removed Or Wildflower areas strimmed to 100mm on 3 year rotation – 30% each year – all cuttings removed	Site	1 visit annually 1 visit annually
Inlets & outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	SuDS	1 visit monthly
Permeable paving	Sweep all paving regularly to keep surface tidy	Site	1 visit annually or as required

There will still be a remaining requirement for more intensive maintenance tasks to be undertaken however, the severity of these tasks can be reduced by regular inspections and proactive responses being incorporated as a part of the regular maintenance regime discussed above. A table showing the typical requirements for the occasional maintenance tasks and remedial works is extracted from the SuDS Design & Evaluation Guide to overleaf.

Table 12.10: Further Maintenance Requirements for SuDS

Occasional Tasks			
Permeable paving	Sweep and suction brush permeable paving when ponding occurs	SuDS	As required - estimate 10-15 year intervals
Flow controls	Annual inspection of control chambers - remove silt and check free flow	SuDS	1 visit annually
Wetland & pond	Wetland vegetation to be cut at 100mm on 3 – 5 year rotation or 30% each year. All cuttings to be removed to wildlife piles or from site.	Site	As required
Silt	Inspect swales, ponds, wetlands annually for silt accumulation	Site & SuDS	1 visit annually
Silt	Excavate silt, stack and dry within 10m of the SUDS feature, but outside the design profile where water flows. Spread, rake and overseed.	Site & SuDS	As required
Native planting	Remove lower branches where necessary to ensure good ground cover to protect soil profile from erosion.	SuDS	1 visit annually
Remedial Work			
General SuDS	Inspect SuDS system to check for damage or failure when carrying out other tasks. Undertake remedial work as required.	SuDS	Monthly As required

- Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Dublin City Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to Dublin City Council for taking in charge.
- All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.
- Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.
- All SuDS and surface water drainage networks proposed in the public domain will be constructed to the standards required for Taking in Charge.
- Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

No additional mitigation measures at operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined in this Environmental Report.

12.6 Residual Impacts

12.6.1 Construction Stage

Taking account of the proposed mitigation measures outlined within Environmental Report Chapter 12, no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in water demand and foul water outflow during the period

of construction. This increase in water demand and foul flows generated with be ***negative, slight (not significant), likely and short-term*** in nature.

12.6.2 Operational Stage

Due to the proposed mitigation measures outlined above, adverse impacts are not expected during the operational phase of the proposed development on surface water and groundwater quality.

Surface water discharge from the site will be restricted by means of attenuation to below the current greenfield runoff rate, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development. The impact will be positive, slight (not significant), & permanent.

The installation of a Sustainable Urban Drainage System will ensure surface water runoff will be of high quality before discharge to the local surface water network and will not have an impact on the receiving waters downstream of the development. The impact will be p***ositive, slight (not significant), & permanent.***

There will be an increased water demand, and an increased foul flow volume generated for the proposed development. Uisce Éireann have confirmed in their Confirmation of Feasibility Letter that the existing network has sufficient capacity to cater for the development for the water demand and that upgrade works are planned for increasing the capacity of the foul water network. The impact will be ***negative, slight (not significant) and permanent.***

12.7 Water Framework Directive Status

There is no potential for adverse or minor temporary, or localised effects on the Dublin groundwater body as a result of the proposed development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration on its water body status or prevent attainment or potential to achieve the WFD objectives.

There are appropriately designed mitigation and design measures which will be implemented during the construction and operational phases to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases however, these are temporary, short-term events that will not impact on the water status of the underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessments.

12.8 Cumulative Impacts

12.8.1 Interactions

The main interactions relating to this Chapter are Land & Soils, Biodiversity, and Utilities.

During construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants leaking into the underlying geology.

In respect of Biodiversity, there is interaction between hydrology and the downstream habitats present as the public surface water network outfalls volume and water quality to the natural watercourse. The

mitigation measures ensure that surface water runoff will be treated to the required standards so that downstream habitats are not negatively impacted.

No additional interactions which may cause cumulative impacts on the surrounding environs are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined within this Environmental Report and the Approved Phase 1 Parent EIAR.

12.8.2 Potential Cumulative Impacts

12.8.2.1 Construction Stage

There are no anticipated construction stage cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a neutral, imperceptible, and temporary increase in water supply demand and increase to foul flows generated.

12.8.2.2 Operational Stage

There are no anticipated cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a neutral, imperceptible, and permanent increased water supply demand and increase to foul flows generated. This is based on the assessment of the masterplan lands as a whole rather than just the subject application site. Mitigation measures noted throughout this report apply to the Proposed Cherry Orchard Point - Phase 2 Subject Site (and the masterplan lands) and their subsequent planning application and not just the subject application.

12.9 Risks to Human Health

There is a risk to Human Health should the ground water or the existing water supply become contaminated during the construction or operational stages, and the water is consumed. In order to mitigate these risks, the measures outlined previously will be adopted.

12.10 Monitoring

12.10.1 Construction Stage

Implementation of a Construction Management Plan for the Proposed Cherry Orchard Point - Phase 2 subject site is required to protect the hydrology and groundwater elements of the Proposed Cherry Orchard Point - Phase 2 subject lands during construction stage. Implementation of the mitigation measures and monitoring of the management processed is required to ensure best practice.

The monitoring measures to be implemented for the Proposed Cherry Orchard Point - Phase 2 Subject Site include:

- Monitoring of the management and storage of dangerous chemicals and fuel.
- Monitoring and maintenance of the wash and wheel wash facilities.
- Regular maintenance and monitoring of the sediment control measures.
- Monitoring and maintenance of the SUDS features, road gullies and, attenuation ponds and or sedimentation facilities during the construction phase of the development.

12.10.2 Operation Stage

Monitoring and maintenance of the water metering telemetry, SUDS features, road gullies, attenuation storage, and flow control devices are imperative during the operation phase of the development.

12.11 Difficulties Encountered

There were no difficulties encountered compiling the Water Chapter of this Environmental Report.

12.12 Reinstatement

No reinstatement is anticipated on site with respect to the Water environment.

12.13 References

- Approved Cherry Orchard Point Phase 1 Parent EIAR
- Environmental Impact Assessment Reports – Guidelines, (2022), Environmental Protection Agency
- Environmental Protection Agency mapping available at http://gis.epa.ie/EPAMaps/
- An Bord Pleanála bord order ABP-318607-23
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Ground Investigation Report, July 2024 (Document ref: 13687-03-24)
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Waste Classification Report, August 2024 (Document ref: 13687-03-24)
- Uisce Éireann's Code of Practice for Wastewater Infrastructure
- Uisce Éireann's Code of Practice for Water Infrastructure
- Conroy Crowe Kelly Architects – Schedule of Accommodation (05.11.2024)
- Geological datasets available at www.gsi.ie
- Greater Dublin Strategic Drainage Study (GDSDS), (2015), Dublin Drainage
- OPW Eastern CFRAM study
- OPW Flood Hazard Mapping
- Environmental Report Chapter 10 for a Proposed Residential Development at Church Fields East, Mulhuddart, Dublin 15, Produced by Brady Shipman Martin.
- www.water.ie/projects/local-projects/ringsend/

13 Population and Human Health

This section of the Environmental Report will assess any potential impacts that the proposed scheme under Phase 2 may have on Population and Human Health in addition to those identified under the Parent EIAR – in line with the EIA legislation and guidance on preparation and content of EIAR. This Chapter has been prepared by Alan Crawford, MRUP MIPI, Associate Director (Planning) at KPMG Future Analytics. Alan has over 11 years' experience in planning of residential schemes including the preparation and project management of EIARs and preparation of Population and Human Health Assessments.

Population and Human Health is a broad ranging topic and addresses the potential likely significant direct and indirect effects of the proposed development on population and human health. The Parent EIAR assessed the existence, activities, and wellbeing of people. These factors comprise an important aspect of the environment, that need to be considered. The Chapter described the demographic and socio-economic profile of the receiving environment and potential impact of the Proposed Development (all Phases) on population, i.e., human beings, and human health. This Addendum to Chapter 13 of the Parent EIAR will include any additional impacts expected to arise, specifically from Phase 2 of the Scheme, that was not already covered under the Parent EIAR. Any likely impacts identified in this Chapter will be subsequently addressed through mitigating factors and actions to be applied to minimise effects. In the interests of clarity and legibility, this Addendum will focus solely on revisions to the population chapter, where relevant arising directly from revisions to the Phase 2 scheme and owing to updated Census 2022 data made available since the lodgement of the Phase 1 application and should be read in conjunction with Chapter 13 of the Parent EIAR.

In assessing the Phase 1 application, the Inspector concluded that:

"the proposed development would be consistent with the zoning objective of the site and the design brief in the LAP, and it is typical of the emerging, permitted, and envisaged character of the area. The increase in housing stock and proximity to high capacity public transport would be a significant benefit in terms of population. I am satisfied that the potential for population and human health impacts can be avoided, managed and/or mitigated by measures that form part of the proposed scheme. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative population and human health impacts and there are significant positive outcomes in certain respects."

Having regard to the above, it is considered that a similar approach to the impacts of the proposed development on population and human health should be adopted given that the scheme represents the logical continuation of the Phase 1 development and will not in isolation or in combination give rise to adverse impacts on the environment that cannot be mitigated against.

13.1 Overview of the Assessment Methodology

Population:

The impact on population has been assessed through consideration of socio-economic and social factors. Specifically, the assessment seeks to capture the social effects of the proposed scheme, vis-à-vis, impact of construction workforce on local services, impacts on quality of life and well-being issues reflected through a range of indicators including (but not limited to): existing health status of population in the area, access to facilities, and services etc., community health, participation etc. Economic impacts include any resulting employment and expenditure opportunities resulting from the scheme (at construction and operational stages of the scheme).

Human Health:

In addressing impacts on Population, it is important to consider the subsequent impacts of the proposed scheme on Human Health. This has been considered both separately and together to ensure the relationship between the two factors is considered in the assessment of impacts arising from the proposed scheme within the defined baseline.

Although there is no definition of Human Health within the EIA Directive, a commonly used (and widely accepted) definition of health is by The World Health Organisation (WHO), which defines health as *"a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity".*

In the assessment of impact on Human Health arising from the proposed development, the Parent EIAR set out the existing health status of the local study area catchment through relevant baseline information available in the local context. Where applicable (and information was inconsistent / inadequate at the local level) comparable data on Health, for a wider scale at Dublin Region level has also been set out. Subsequently the impact of the proposal during the different stages of construction and operation – on the welfare of the people, specifically the vulnerable groups (dependents) and quality of life, the impact on factors affecting human health, e.g., water supply, air, etc. and environment in general has been considered.

Chapter 13, Section 13.2 of the Parent EIAR sets out the detailed assessment methodology followed by the assessment of the impacts on Population and Human Health, including a detailed description of the baseline and indicators considered for both Population and Human Health covered in Section 13.2.3.

This Environmental Report provides an update to the baseline analysis that was not available at the time of drafting the Parent EIAR. The baseline update also covers any relevant updates in the baseline information since the Parent EIAR was drafted.

13.1.1 Baseline Data

The baseline data, as set out in the Parent EIAR, considered a range of Socio-Economic, Environmental and Wellbeing Factors for the defined study area / local environment.

The assessment of impacts on Population and Human Health has been largely based on local population information sourced from the Central Statistics Office (CSO) Census data captured during the Census 2016 and 2022.

Datasets analysed include:

- Population and Household Data
- Economic, Education and Employment Data
- General Human Health Data

Population and Household data capture the change (growth / decline) in the overall size of the area surrounding the subject development, the demographic profile, specifically age and gender distribution and the household composition within the area. This will help identify specific / potentially vulnerable groups, establishing a baseline for assessing possible effects on the receiving environment.

The Institute of Public Health's Guidance on Health Impact Assessment (2021) includes further details on who can be considered within the ambit of 'vulnerable / sensitive groups': young-age vulnerability (children and young people as potentially more vulnerable road users); old-age vulnerability (older people as potentially more vulnerable road users); low-income vulnerability (people living in deprivation, including those on low incomes for whom travel costs or alternatives may be limiting); poor health vulnerability (people with existing poor physical and mental health in relation to health trip journey

times); and access and geographical vulnerability (people who experience existing access barriers or for whom close proximity to project change increases sensitivity)[1].

The economic and employment context draws on principle economic status data of persons in the Study Areas aged 15 years and older. The economic conditions of an area can have immense implications on the health of the population, for e.g., unemployment, income deprivation and social status can often have an impact on both physical and mental well-being of individuals. Negative impacts associated with unemployment include depression, anxiety, and self-esteem – this can in turn affect participation of such groups / individuals within the community and hence, often neglected. In addition, people living in deprivation also have reduced / limited access to financial resources, further restricting their access to healthcare, housing, travel, and other necessities.

Chapter 13 of the Parent EIAR set out the existing economic condition within the local study area to identify potential impacts as a result of the proposal on employment, and other economic activities. The baseline also captures the educational status of the receiving environment, which is a key contributing factor to improved employment, security, and therefore good health.

Census data has also been used to reflect on the (self-evaluated) general health status of residents in the Study Area. Where applicable and available, relevant health data has been presented for the local area and where local level data was limited, data representing the Dublin Region has been detailed to provide an overview of the health status within the administrative area. Some environmental indicators such as air and water quality data available for the local Cherry Orchard area have also been included in the baseline to provide a complete representation of health for the area.

Built Environment is considered another key factor impacting the health of population within an area. This includes (but is not limited to) access to green and blue spaces such as parks, playgrounds, recreational spaces, sports facilities, waterbodies, etc. Access to such facilities including the natural environment, is considered beneficial for mental health as it provides opportunities for community gatherings, recreation, activities that is inclusive of all age groups, and social connection[1]. Therefore, an assessment of the current provision of community and social infrastructure was conducted through spatial analysis.

This Chapter also sets out the details of the proposed mix of uses that has been approved under Phase 1 of the scheme by An Bord Pleanála (under ABP Ref. 318607-23), specifically in terms of non-residential uses. The Phase 1 scheme includes a wide range of uses catering to the diverse needs and age groups, including, community, arts and cultural spaces, a childcare facility with associated external playing space, high-quality landscaped public open space which will include a public plaza, play space, outdoor fitness trail, communal amenity space, internal pedestrian, and cycle routes. The consequent impacts arising from the inclusion of these features as part of the proposal has been further discussed under Chapter 13, Section 13.6 of the Parent EIAR (and briefly discussed under this Chapter).

Chapter 13 of the Parent EIAR identified relevant proposed / upcoming schemes within the Study Area, to assess the effects / impact these may have in combination with the proposed scheme. The potential effects of these schemes in combination with the proposed development has been set out in Section 13.7 ‘Cumulative Impacts’’ of the Parent EIAR. Any relevance in the planning and development pipeline and subsequent impacts arising as a result of the same and in combination with the proposed scheme will be discussed in this Chapter.

Table 2.3 summarises planning applications for Key Development Sites and other lands in the Cherry Orchard LAP Area.

[1] HIA Guidance A Manual_0.pdf

Table 13.1 Planning History – Residential Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces)	Granted 16-06-2022

		Community Space – 48 sqm Café/bar – 91 sqm	
	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018

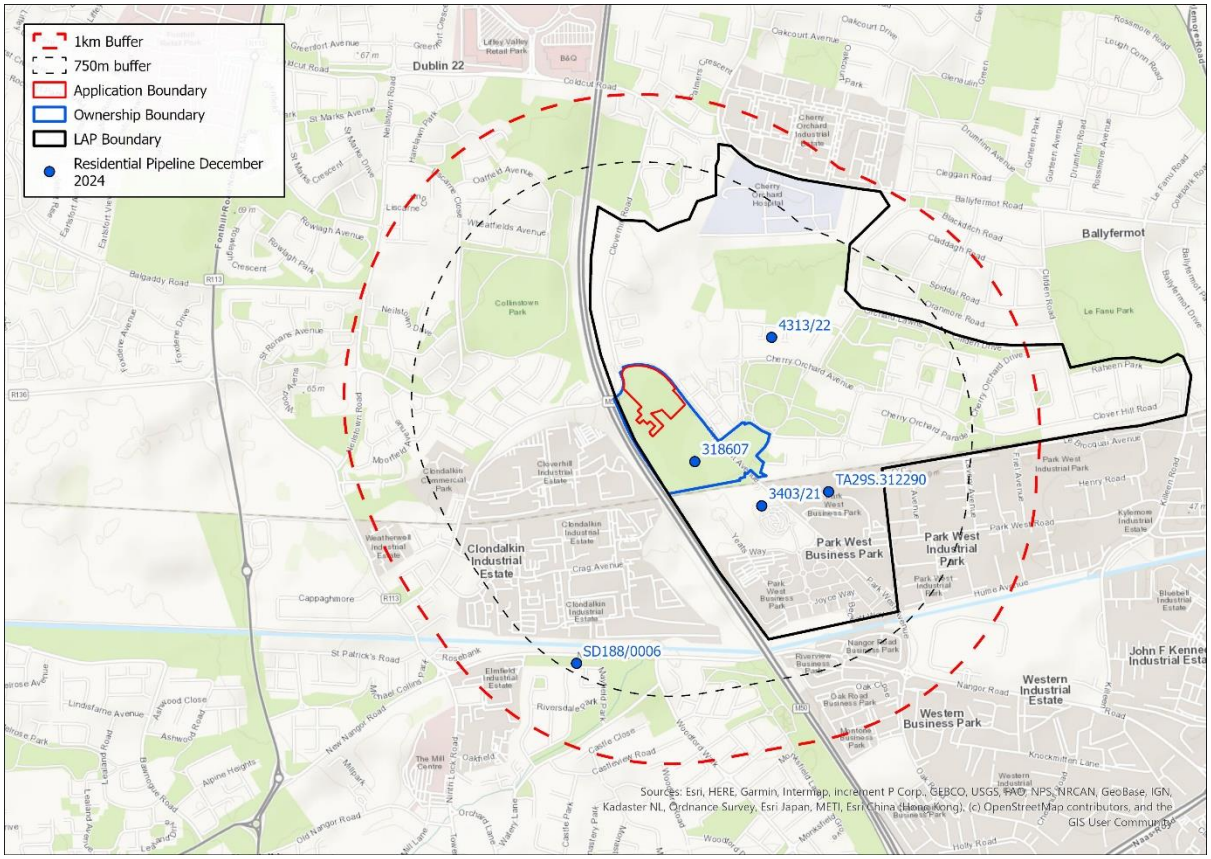


Figure 13.1 Extant Residential Schemes Granted Planning Permission within the LAP (2019) Boundary

Table 13.2 Planning History – Retail / Commercial Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site known as Site 6	Granted 16/06/2022

		within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	Granted 31 Jul 2019
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024

SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024
SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

**These applications are South Dublin County Council*

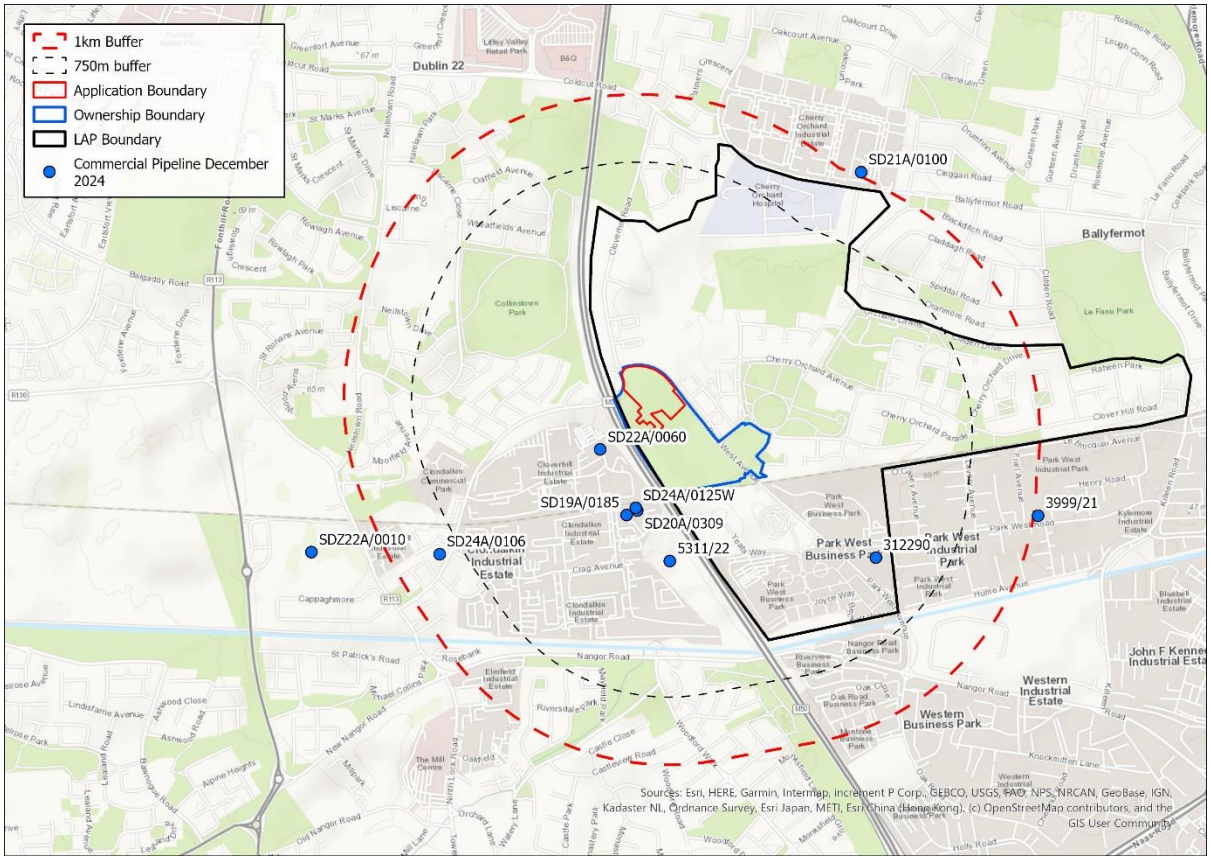


Figure 13.2 Extant Retail / Commercial Schemes Granted Planning Permission within and bordering the LAP (2019) Boundary

The Subject Lands were zoned for strategic development and regeneration under the previous Dublin City Development Plan 2016-2022 and designated a key development site under the Local Area Plan 2019. The current Dublin City Development Plan 2022-2028 reemphasises this need for strategic development and regeneration within the Park West Cherry Orchard Local Area. A key focus of the Park West Cherry Orchard Local Area Plan 2019 is the integration of new development sites with the existing and expanding community in order to create a sustainable and integrated neighbourhood.

DART + South West Project

The DART + South West Project is the second of the infrastructural projects of the DART+ Programme expected to be delivered. The Rail Order Application for the project was submitted for statutory approval by Córas Iompair Éireann (CIÉ) on the 22nd of March 2023 and was approved subject to conditions on 13th November 2024. The recently approved rail improvement project will provide a sustainable, electrified service with increased capacity and frequency for services between Park West Cherry Orchard and Dublin City Centre.

It is expected that once this project is delivered, it will increase the train capacity to double the current (12) trains per hour per direction and increase passenger capacity from the current peak capacity of approximately 5,000 passengers per hour to around 20,000 passengers per hour per direction. The figure below provides the route map for the DART + South West extension which also illustrates the new route passing adjacent to the Subject Site through the Park West and Cherry Orchard train station.

Figure 13.3 Route Map of the Dart + South West with site identified with a red star. (Source: dartplus.ie)

Part of the rail upgrade works will involve the provision of a substation, temporary access and compound on lands within Development Site 4 as shown below. The design and layout of the application has had full regard to the proposed rail works and has incorporated suitable boundary treatment as an interim solution pending the full redevelopment of the wider lands. The Parent EIAR has also considered potential cumulative impacts that may arise from the application scheme in combination with the proposed rail upgrade works and has set out, where necessary, appropriate mitigation measures to minimise impacts on the environment. The electrification of the rail line coupled with increased capacity and frequency of the service will be of substantial benefit to residents enhancing connectivity to the city centre and providing a cleaner more sustainable mode of public transport.

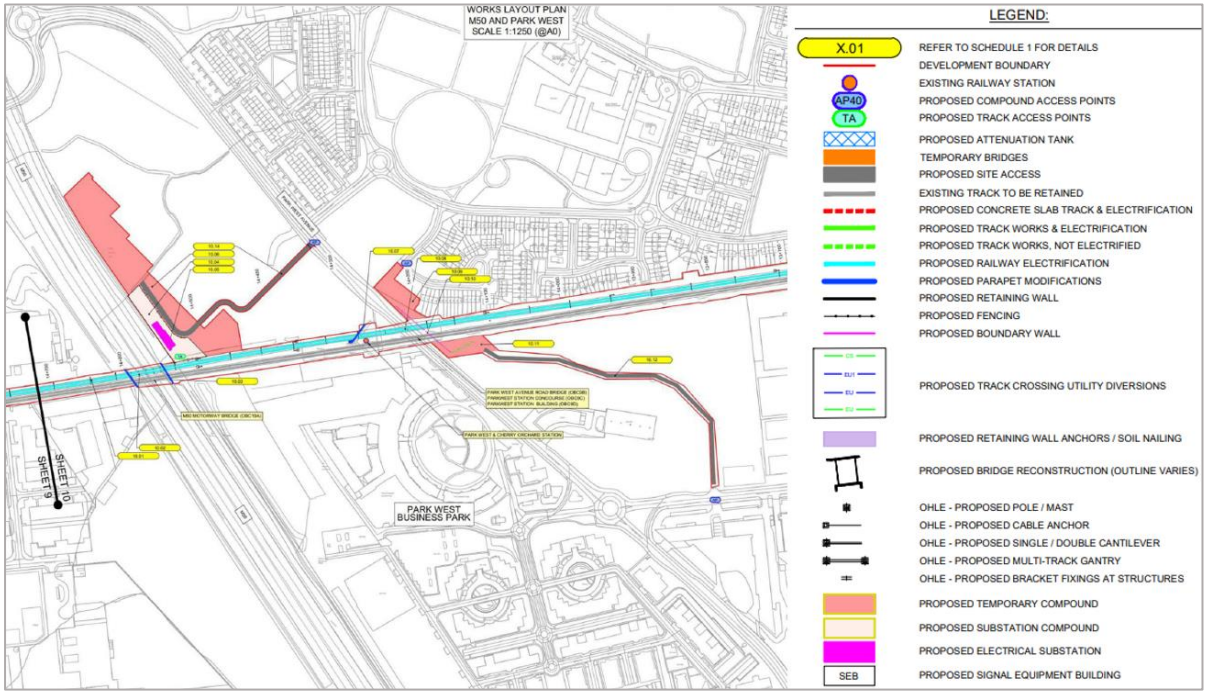


Figure 13.4 Dart + South West Layout Plan

13.2 Proposed Scheme – Phase 2

The proposed development (GFA of c. 13,280sqm) as described in the statutory notices and shown in Figure 13.5 below, involves.

"construction of 137no. dwellings in a mix of houses, duplexes and own-door apartments ranging in height from 2 to 3 storeys comprising 31no. two-bed units (9no. two-bed three-person and 22no. two-bed four-person) and 106no. three-bed units (13,015 sqm total residential floor area), and all ancillary accommodation including bike and bin stores and ESB substation (265sqm total GFA). The proposed development also includes the provision of 2,133sqm landscaped public open space, in addition to 2,050sq.m of public open space as approved under the Phase 1 permission (Bord. Ref: ABP-318607-23). The total public open space provided for Phase 2 totals 4,183 sqm (12.34% of the net site/development area (3,390ha) of Phase 2 lands). Communal open space for the duplex and apartment units is provided across three dedicated communal amenity areas (602sq.m in total area) with private open space to serve the proposed units to be delivered through a mixture of rear gardens and terraces.

The proposed development will also involve the provision of 141no. car parking spaces at curtilage and street level throughout the development, of which 7no. are accessible spaces and 71no. EV charging points (representing 50% of the total parking spaces). A total of 306no. bicycle parking spaces, of which 18no. are visitor spaces accommodated through a mixture of bike stores and external cycle parking stands. A total of 7no. motorbike parking spaces are also provided. Vehicular, pedestrian and cycle access routes to serve the proposed development are provided via the approved Phase 1 entrance to the east of the site along Park West Avenue with further connections provided to the north and to the south to the approved Phase 1 scheme. Provision is also made for the installation of a signalised access junction with associated traffic lights and below ground infrastructure and the relocation of bus stop and shelter along Park West Avenue. The need to provide a signalised junction requires minor alterations to the entrance to the development including adjustment to the paving as previously approved under the Phase 1 scheme (no further amendments to that permission are proposed under this application.)

The proposed development also includes the provision of off-street cycle lanes along Park West Avenue that will provide direct connectivity to the Rail Station to the southeast and Cherry Orchard Park to the east.

The development will also provide for all associated ancillary site development works including site clearance, boundary treatment, associated public lighting, internal roads and pathways, bin and bike stores, ESB substation, hard and soft landscaping, play equipment, and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply".

Figure 13.5 Site Layout Plan (Source: CCK Architects)

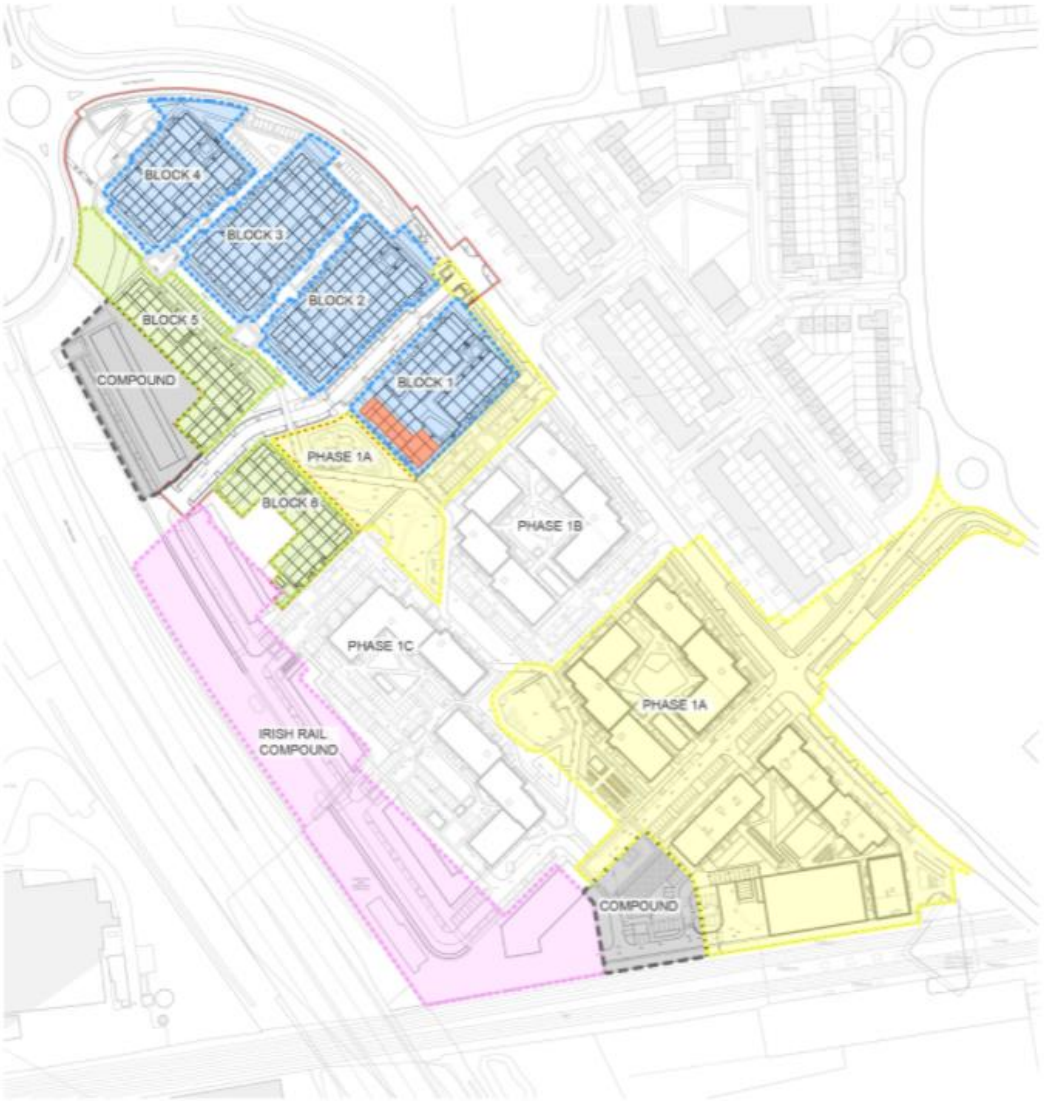


Figure 13.6 Phasing Plan for the delivery of the Proposed Development on Key Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019 (Source: Van Dijk Architects and Conroy Crowe Kelly Architects)

A breakdown of the total residential units under cost rental, social and affordable units proposed for Phases 1-3 is provided in the below Table 13.3.

Table 13.3 Breakdown of typology of residential units proposed in Phases 1 to 3 of the Development

Phase	Cost Rental	Social and Affordable	Total Units
1	547	161	708
2		*137*	*137*
3	203	51	254
Total			**1,099**

It should be noted at this stage that when assessing the cumulative impact of the Phase 1 scheme in combination with the planned future phases of development under the Parent EIAR, it was expected that the Phase 2 scheme would comprise 153no. residential units. The scheme as proposed under this

application represents a reduction on that and will therefore have a reduced impact from an environmental perspective than originally envisaged.

13.3 Study Area

The study area as defined under Section 13.4 of the Parent EIAR is defined by a 1km buffer from the development / ownership boundaries of Sites 4 and 5 (Figure 13.7). This has been considered on the basis that the development falls under a single ownership and hence, will be assessed as a single scheme which will ultimately be delivered in phases to align with the availability of essential infrastructure, services, and amenities.

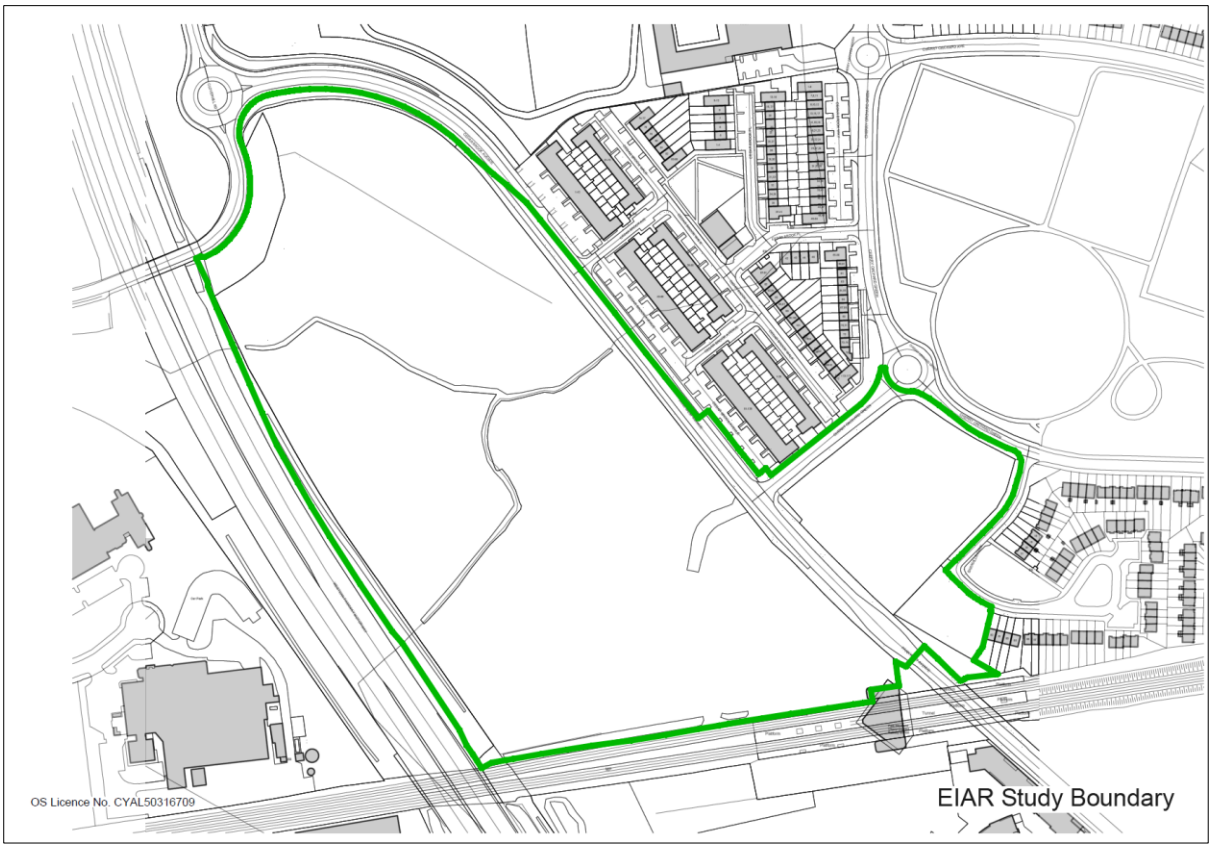


Figure 13.7 EIAR Site Boundary

The 1km study area catchment extending from the EIAR boundary comprises of 51 no. CSO Small Areas which encompass the entirety of the development sites (Figure 13.8). This consideration has been made on the basis that the wider development lands (all of LAP sites 4 and 5) fall under a single ownership and hence, will be delivered as a single scheme, delivered in phases to align with the availability of essential infrastructure, services and amenities. This would further remain consistent with the Study Area defined in other reports for this scheme. The demographic and socio-economic analysis is based on the Census 2022 Small areas data and provides a consistent and accurate picture of the study areas profile. This approach allows for a more granular analysis of the population profile at a localised level and provides a more consistent and accurate picture of the demographic and socio-economic status of the study area.

The subject site located in Cherry Orchard is bounded to the east by Park West Avenue, to the north by the Cloverhill Road/Palmerstown Way fly-over, the M50 to the east and by the Phase 1 development to the south. The Phase 2 development has a uniform and simple 'grid' layout arranged on both sides of the central neighbourhood park that was approved as part of the Phase 1 development. The urban

design strategy for Phase 2 is considered sustainable and distinctive within Cherry Orchard and will promote a strong sense of identity and community.

The population within both the study area and wider Dublin Region have experienced an increase since 2016 Census – with the study area growing by 7.7% and Dublin Region by 8.2%. In terms of age profile, the largest cohort within both the study area and wider Dublin Region are those aged 15-64 years, with the study area representing around 70% and Dublin Region around 68% of the total population respectively.

The population growth noted between the intercensal period 2016 and 2022, and the population projections for the overall Dublin City area provide further justification and validation for the development proposal for new housing. Population and housing are intrinsically linked. An increase in population influences housing by creating demand. The availability of housing influences house and rental prices and can have a significant influence on who can potentially migrate into an area, affecting total population.

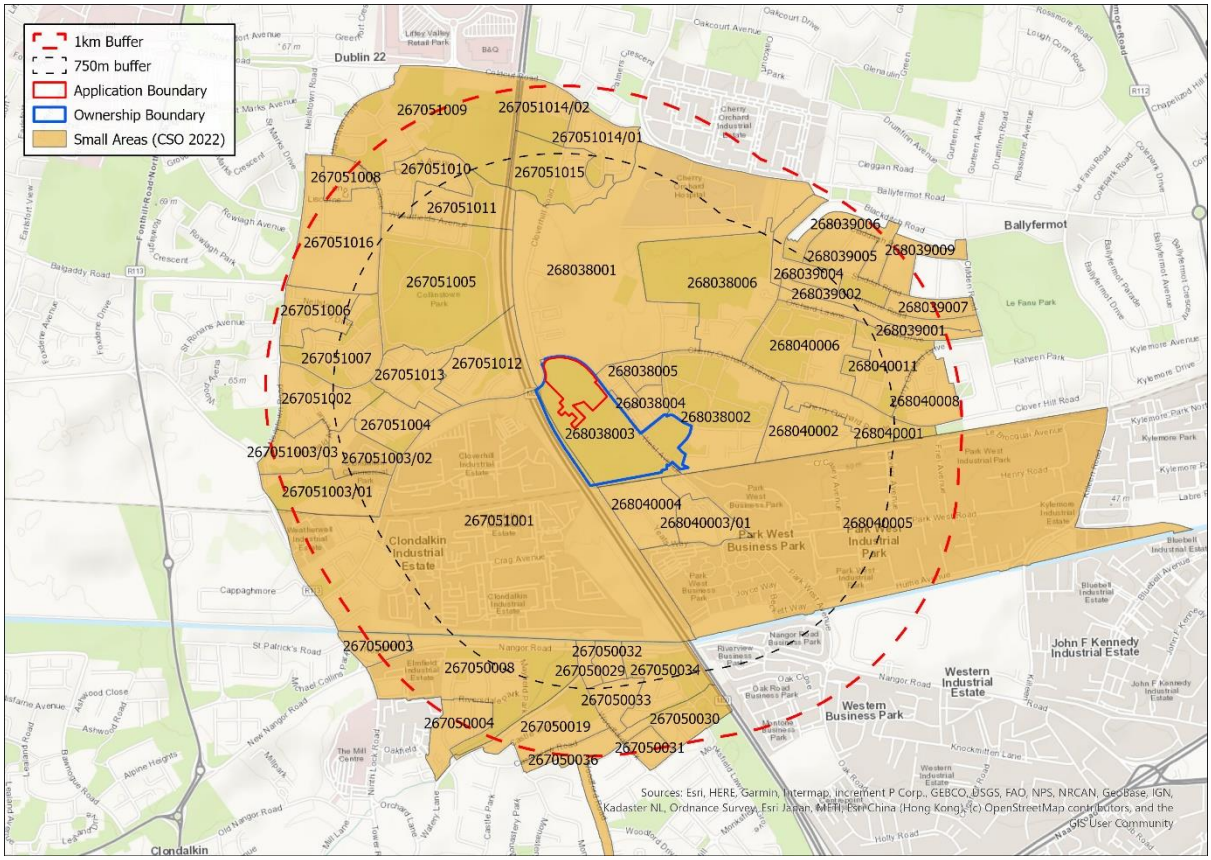


Figure 13.8 Study Area comprised of 51 no. Small Area Boundaries (SAs) covering a 1km radius from the ownership boundary (demarcated in blue). The Application Boundary is demarcated in red.

The study area catchment further aligns with the principle of the 15-minute city principles which has been set out in the Dublin City Development Plan 2022-2028 and seeks to ensure that people's daily requirements can be reached within 15 minutes by foot, bicycle, or public transport.

13.4 Receiving Environment: Overview of Baseline Analysis

This section sets out a brief overview of the baseline analysis carried out under the Parent EIAR and expands on specific baseline information that was either not available at the time of drafting the Parent EIAR, or an update has been observed since. This Chapter needs to be read in conjunction with the baseline analysis carried out under Section 13.5, Chapter 13 of the Parent EIAR.

13.4.1 Population and Household Characteristics

Chapter 13 of the Parent EIAR, set out in detail, the existing conditions within the study area based on some Census 2011, 2016 and some Census 2022 data (as available at the time of drafting the Parent EIAR). The provision of 137no. affordable homes represents a welcome addition to the existing and planned housing stock of the area and will contribute positively to reversing trends of housing unaffordability in the area and wider region. Furthermore, the variety of the proposed housing in terms of typology, mix, size and tenure will add to the continuum of housing options in the area, particularly when considered in context with the approved Phase 1 scheme and the planned future phases of development.

The Table 13.4 below, records the percentage change in population during the Census period 2016 and 2022 to highlight overall residential patterns and population profiles. Between 2016 and 2022, the population of the study area has experienced a drastic increase from the previous Census period, of 7.7%, which is close to the population increase observed at the Dublin Region and the State level, both of which experienced around 8% increase in the 6 years following Census 2016.

Table 13.4 Population Change during the Census Period 2016 and 2022

Area	2016	2022	2016-2022 Change #	2016-2022 Change %
Study Area	17,089	18,398	1,309	+7.7%
Dublin Region	1,347,359	1,458,154	110,795	+8.2%

13.4.2 Economic Activity and Employment

The economic profile of the study area has a similar distribution to the Dublin Region as outlined in Chapter 13 of the Parent EIAR. The majority of the population for both the Study Area and the Dublin Region are 'At Work', with around 54% in the Study Area and 58.5% in the Dublin Region as of 2022. The Parent EIAR further details the Unemployment figures and people that are Retired within the Study Area and Dublin Region. The delivery of the permitted retail / commercial units under the Phase 1 scheme will provide employment opportunities for the locality including future residents of the proposed development which is considered to represent a long term positive impact for the area.

The principle economic status as captured by the CSO, provides a breakdown of the number of people aged 15 years and older in the labour force at work as well as those looking for their first job or are unemployed (short term and long term unemployed). Persons or groups over 15 years of age not participating in the labour force are typically students, home makers, retirees, and persons unable to work due to illness or disability and they are considered not economically active.

Table 13.5 Principle Economic Status (CSO 2022)

Principal Economic Status	Study Area 2022 #	% Total	Dublin 2022 #	% Total
At Work	7,865	53.7%	698,931	58.8%
Looking for First Regular Job	237	1.6%	10,330	0.9%
Short Term Unemployed	382	2.6%	21,889	1.8%
Long Term Unemployed	734	5.0%	30,176	2.5%
Student	1,452	9.9%	134,910	11.3%
Looking After Home/Family	1,044	7.1%	68,227	5.7%
Retired	1,491	10.2%	171,712	14.4%

Principal Economic Status	Study Area 2022 #	% Total	Dublin 2022 #	% Total
Unable to Work due to permanent sickness or disability	1,069	7.3%	45,686	3.8%
Others not in labour force	383	2.6%	7,350	0.6%
Total	**14,657**	**100%**	**1,189,211**	**100%**

13.4.3 Education

Chapter 13 of the Parent EIAR set out in detail that the largest portion of residents within the Study Area constituted those that had completed 'Secondary' Education (46.5%) as of 2022, and around 33% within the wider Dublin Region. A total of 20% of the Study Area population have completed 'Third Level' Education, which is lower compared to the Dublin Region which recorded around 33% of the population to have completed 'Third Level' Education.

There has been a notable increase of c. 64% in the population that were recorded as having 'No Formal Education', from 2.8% in 2016 to 4.3% in 2022 within the study area. There is a visible decline in the population with 'Primary Education' in both the study area and Dublin Region, by around 17% and 24% between 2016 and 2022. On the contrary, both the study area and Dublin Region demonstrated an increase in the number of people with 'Third Level Education' (by c. 23% and 17% respectively) and 'Postgraduate Education or Higher' (by c. 29% and 27% respectively) between 2016 and 2022.

Table 13.6 Population aged 15 years and over with highest level of education completed (Census 2016,2022)

Education Level	Study Area 2022	% Total	% Change 2016-2022	Dublin 2022	% Total	% Change 2016-2022
No Formal Education	493	4.3%	63.8%	18,836	2.0%	62.6%
Primary Education	1,387	12.0%	-17.4%	61,625	6.5%	-24.1%
Secondary Education	5,372	46.5%	4.2%	314,612	33.0%	-0.8%
Third Level Education	2,307	20.0%	22.8%	314,993	33.0%	17.2%
Postgraduate Education or Higher	1,048	4.5%	29.1%	164,586	17.2%	27.4%
Not Stated	1,474	12.8%	2.6%	79,921	8.4%	12.8%
Total	**11,557**	**100.0%**	**6.4%**	**954,573**	**100.0%**	**8.6%**

13.4.4 Pobal Deprivation Index

To better understand the socioeconomic status of the study area, the Pobal Deprivation Index for the ED population defining the study area boundary (2022) was derived. The Pobal HB Deprivation Index is Ireland's most widely used social gradient metric, which scores each ED in terms of affluence or disadvantage. The index uses information from Ireland's census, such as employment, age profile and educational attainment to calculate this score.

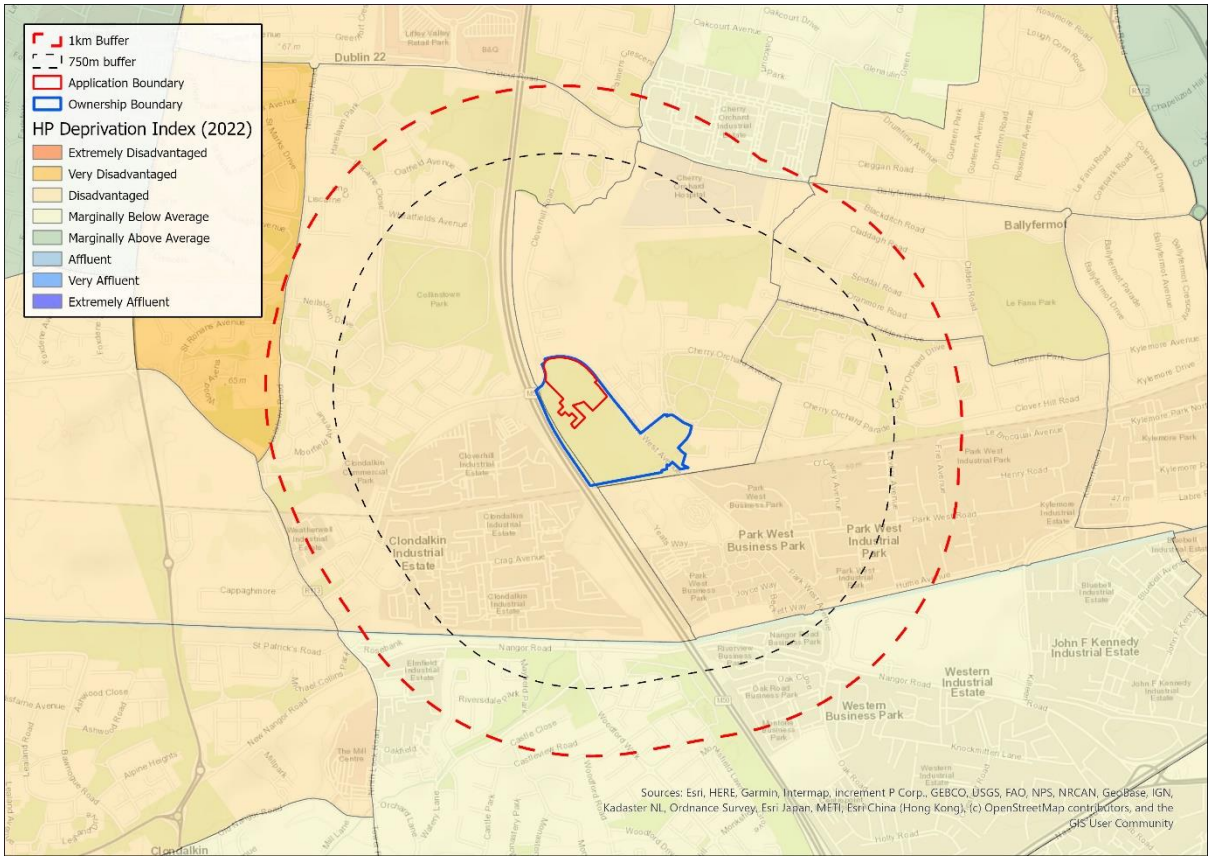


Figure 13.9 Pobal Deprivation Index 2022 for the Study Area

The higher proportion of disadvantaged people is indicative of the fact that most of the area is still experiencing higher levels of unemployment, low educational attainment and overcrowding. The employment opportunities afforded by the retail / commercial elements of the Phase 1 scheme that will benefit residents of the subject application has the potential to positively impact the socioeconomic status of the locality.

13.4.5 Human Health

Health and well-being are determined by various factors including, social, economic, and environmental conditions. Chapter 13 of the Parent EIAR, set out in detail, the existing conditions within the study area based on some Census 2016 and Census 2022 data. This section focuses on setting out the existing health status and environmental conditions that are likely to affect the health of the existing and future population.

Self-Evaluated Health Status:

The Census records the self-evaluated general health status of respondents (as opposed to the health status confirmed by medical practitioners). In terms of general health and wellbeing, the Study Area recorded a total of 73.8% (drop from 81% in 2016) of the population as being in 'Good Health', on the basis of those that responded. Table 13.7, provides further breakdown of the spectrum. Overall, around 2.5% (slight increase from 2.3% in 2016) of the Study Area population stated that they were in 'Bad Health'.

Table 13.7 Study Area Population by General Health and Gender (CSO, 2022)

General Health	2022 Male (%)	2022 Female (%)	2022 Total (%)
Very good	43.4%	44.1%	43.7%
Good	28.6%	31.6%	30.1%
Fair	9.7%	11.1%	10.3%
Bad	2.2%	1.9%	2%
Very Bad	0.5%	0.5%	0.5%
Not Stated	15.7%	10.8%	13.3%
Total	**100%**	**100%**	**100%**

The self-evaluated health status as per Census 2022 has also recorded a comparatively higher portion of females as being in 'Very Good', 'Good' or 'Fair' health conditions than the male population within the Study Area.

Population with Disabilities:

Around 24.7% (up from 16% in 2016) of the Study Area population have some disability, and portion of people with disabilities seem to consist of an equal proportion of male and female at 12% and 12.7% respectively.

Population that Smokes:

As per the Healthy Ireland Outcomes Framework, lifestyle factors such as smoking, drinking, inactivity and obesity have the potential to reverse many healthy gains. In that regard, the Framework notes that as per the 2021 Healthy Ireland Survey, smoking rates increased slightly between 2019 and 2021 despite there being a steady decline for a number of years prior to this.

The Study Area, as per Census 2022, has around 20% of the total population that smoke and about 65% that do not smoke (Table 13.8). Around 18.2% of the total population in the Ballyfermot-Drimnagh LEA consist of people that either smoke daily (13.5%) or occasionally (c. 5%). The Dublin City Council Administrative area has c. 15.5% people that either smoke daily or occasionally. Both the Study Area and Ballyfermot-Drimnagh LEA have a comparatively higher proportion of smokers than the administrative area of Dublin City Council.

Table 13.8 Persons that smoke and do not smoke within the Study Area as of Census 2022

Category	Persons	% of Total
Persons who smoke	3,694	20%
Persons who don't smoke	11,983	65%
Non stated	2,721	15%
Total persons	18,398	100%

A number of smoking related health issues have been noted in the Healthy Ireland Outcomes Framework (2022), which states that while much progress has been made in tackling smoking in Ireland, there is a continuing toll of smoking-related disease, especially for groups with higher past or present smoking rates.

Mortality Rate and Cause:

There is a visible increase in the Mortality Rate in Dublin in 2021, as compared to other years (Figure 13.10). One of the major reasons that can be attributed to this is the Covid19 pandemic. However, there are also a number of other reasons / causes for mortality.

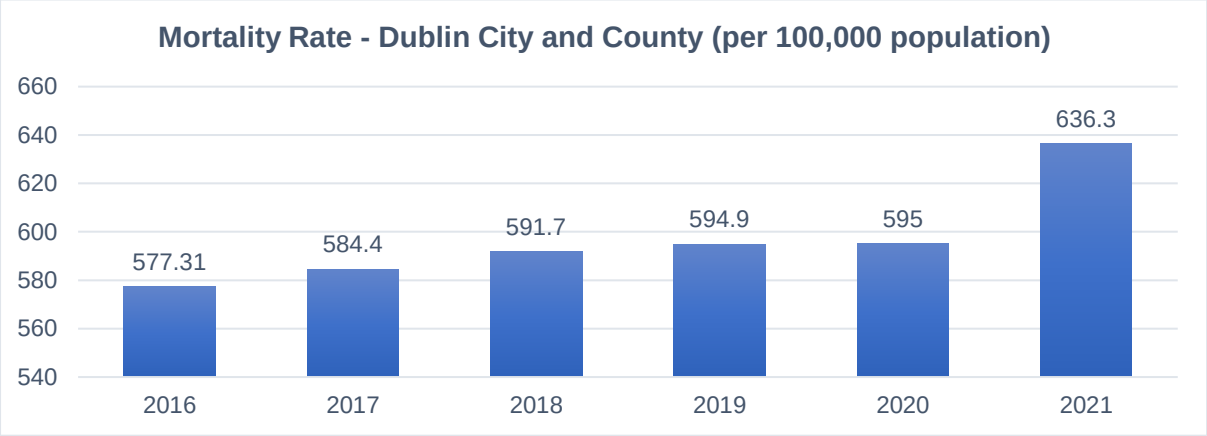


Figure 13.10 Mortality Rate per 100,000 Population in Dublin City and County

One of the key reasons for a higher mortality rate in Dublin is observed to be associated with 'Neoplasms' and 'Selected Smoking related causes' (Figure 13.11). This is closely followed by 'Malignant Neoplasms' and 'Diseases of the Circulatory System'.

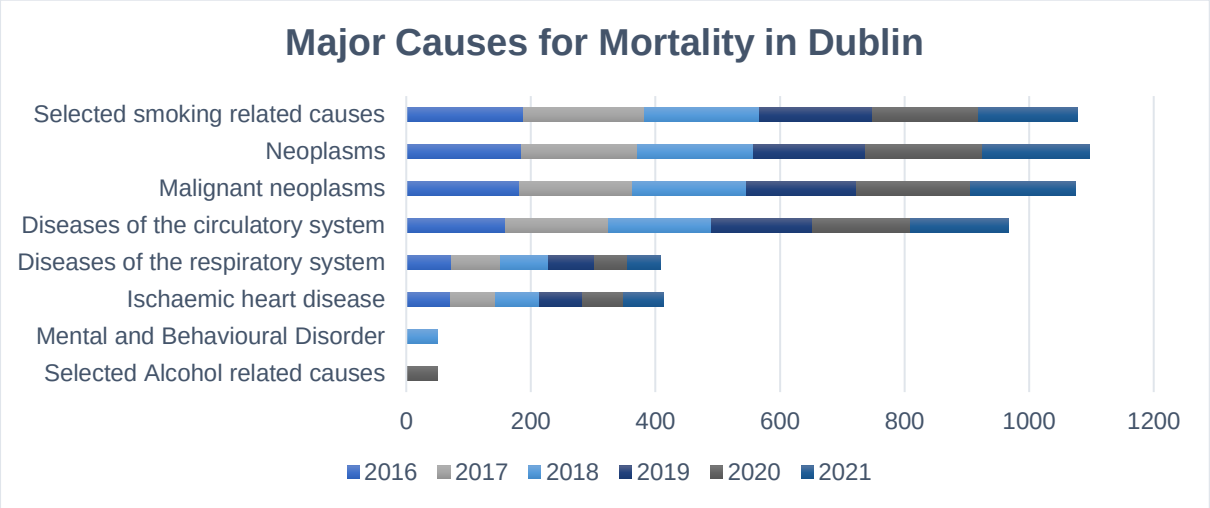


Figure 13.11 Major Causes for Mortality in Dublin City and County between 2016 and 2021(CSO)

Healthy Life Years:

It is noted that the national Healthy Life Years (HLY) at birth observed an overall increase (in both sexes), between 2016 and 2019 from 68.5 to 69.6 years. However, there is a visible decline during 2020, to 66.2 years (Table 13.9). This is a drop of around 3.4 years between 2019 and 2020. There is a generally higher number of healthy life years noticeable for female in the State than male.

Table 13.9 National Healthy Life Years (HYL) at Birth (CSO)

Healthy Life Years (HLY) at birth			
Year	**Both Sexes**	**Male**	**Female**
2016	68.5	67.2	69.8
2017	68.6	67.9	69.3
2018	69.4	68.3	70.4
2019	69.6	68.6	70.5
2020	66.2	65.3	67.1

Healthy Life Year at birth is a measure used across EU and is defined as the average number of years that a new-born child can expect to live in a healthy condition and free from disability (Healthy Ireland Outcomes Framework 2022). A major implication of the reduced healthy life years / falling life

expectancy in Ireland can be associated with the Covid19 Pandemic, which was also observed for most countries throughout 2020.

Air Quality:

The PM2.5 ('Particulate Matter) levels city-wide average for Dublin City is recorded at 6.889µg/m^3, which is comparatively higher than the local area levels for Cherry Orchard, which falls within the 4-6 µg/m^3 range (Figure 13.12).

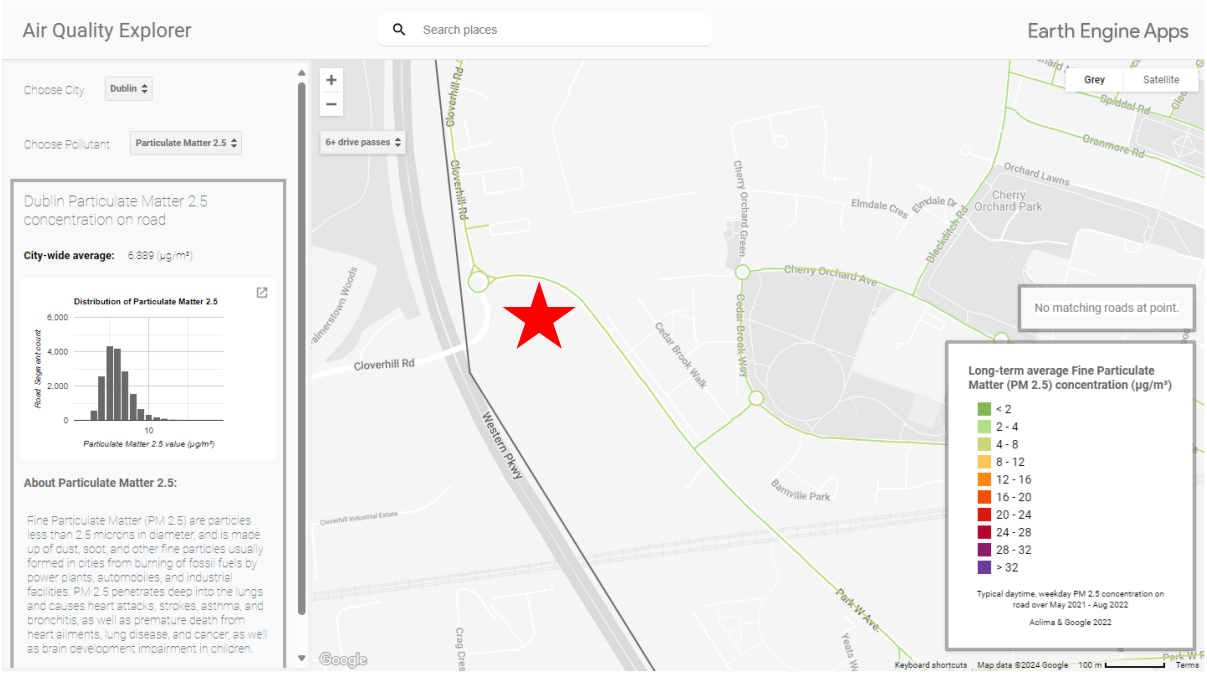


Figure 13.12 Air Quality for Cherry Orchard Local Area (Source: Labs - Google Environmental Insights Explorer - Make Informed Decisions (sustainability.google))

As per the EPA Air Quality Index[2] for the Ballyfermot Local Area, the current index is rated as 'good' and with a 24-hour PM2.5 mean of 4.82 µg/m^3 (Figure 13.12). The air quality monitor for this area is located in the public library in Ballyfermot and is operated by Dublin City Council – monitoring is done using continuous monitors for particulates (PM10 and PM2.5).

[2] Monitoring Stations | AirQuality.ie

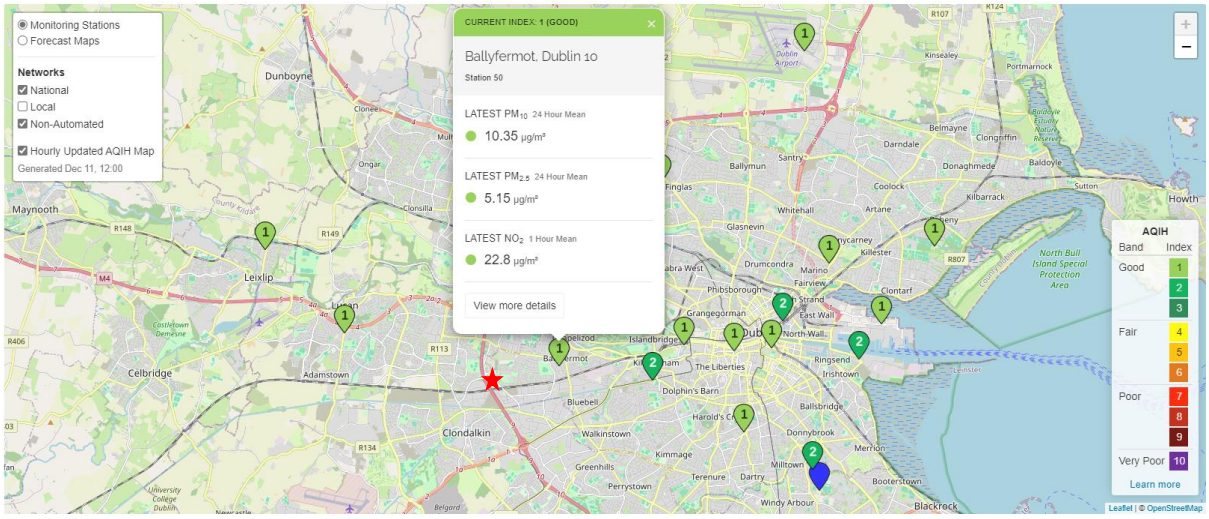


Figure 13.13 Air Quality Index for Health (AQIH) – Development Site demarcate in red. (Source: AirQuality.ie)

According to the WHO Global Air Quality Guidelines ('WHO 2021 Guidelines'), air pollution is now recognised as the single biggest environmental threat to human health and the burden of disease attributable to air pollution is now said to be on par with other major global health risks such as unhealthy diet and tobacco smoking.

The Healthy Ireland Outcomes Framework notes that one of the major causes of air pollution in Ireland are particulate matter from domestic burning of solid fuels and nitrogen dioxide gas from vehicle emissions in urban areas. Subsequently the Framework also provides solutions, which include moving towards cleaner ways of heating homes, improving the energy efficiency of our buildings, and implementing the transport options outlined in the Government's Climate Action Plan.

Water Quality:

The Water Quality Zone for Cherry Orchard, Dublin is DCC Zone 1 Ballymore. When a water sample contains higher levels of a parameter than the regulations allow, it's called an exceedance. When this happens, Uisce Éireann carries out a risk assessment. If there is a risk to public health, the Health Service Executive (HSE) is consulted with, to agree on the next steps, which may include telling the public.

Parameter	Unit	Tests Undertaken	Exceedances	Pending Review	% of Tests within Exceedance Limit
Bacteria and Protozoa		882	1	0	99.89%
Chemicals		521	0	0	100%
Metals		697	2	0	99.71%
Other		1330	2	0	99.85%

Figure 13.14 Summary of the Water Quality for the DCC Zone 1 Ballymore generated for 2024. (Source: Water Quality & Drinking Safety Advice in Ireland | Uisce Éireann (formerly Irish Water))

As per the report generated for the Water Quality Zone within which the subject site is located , the water quality seems to be mostly in 100% compliance with limits. Chapter 12: Water of this Environmental Report discusses the impact of the proposed development on water quality and has set out and assessed the impacts accordingly.

13.4.6 Social Infrastructure and Amenities

Social Infrastructure is defined by the European Association of Long-Term Investors[3] as a sub-category of infrastructure that are physical assets in the social sector that provide personal (individual / household) benefits and community benefits to increase social cohesion. An overview of the social infrastructure available within proximity of the site is presented in the series of tables and maps (figures) set out below.

An update to the existing facilities within the study area catchment has been carried out since the Parent EIAR was submitted under the Phase 1 approved scheme. There are no observed changes to the list of Social Infrastructure within the receiving environment. The Parent EIAR had identified a range of Social Infrastructure and Amenity facilities within the study area. This includes a variety of healthcare services, community and civic facilities, schools, and childcare facilities, all located within the 1km radius of the EIAR Boundary. The follow table and map illustrate out the update list of Social Infrastructure and their location within the study area.

Social Infrastructure Services / Facilities	Total Social Infrastructure Assets within the EIA Study Area
Creche	7
Primary School	4
Secondary School	1
Further Education	2
Community Facilities	12
Youth Services/Centre	1
Arts and Cultural Facilities	3
Pharmacy	4
Health Centres, Doctors, and Speciality Clinics	9
Hospitals	1
Religious Institutions	7
Sports Centres, Grounds and Stadiums	31
Total Facilities	**82**

[3] *Fransen, L., del Bufalo, G., Reviglio, E. (2018). Boosting Investment in Social Infrastructure in Europe, Report of the High-Level Task Force on Investing in Social Infrastructure in Europe 2018. [PDF File]. Retrieved from:* https://economy-finance.ec.europa.eu/system/files/2018-01/dp074en.pdf

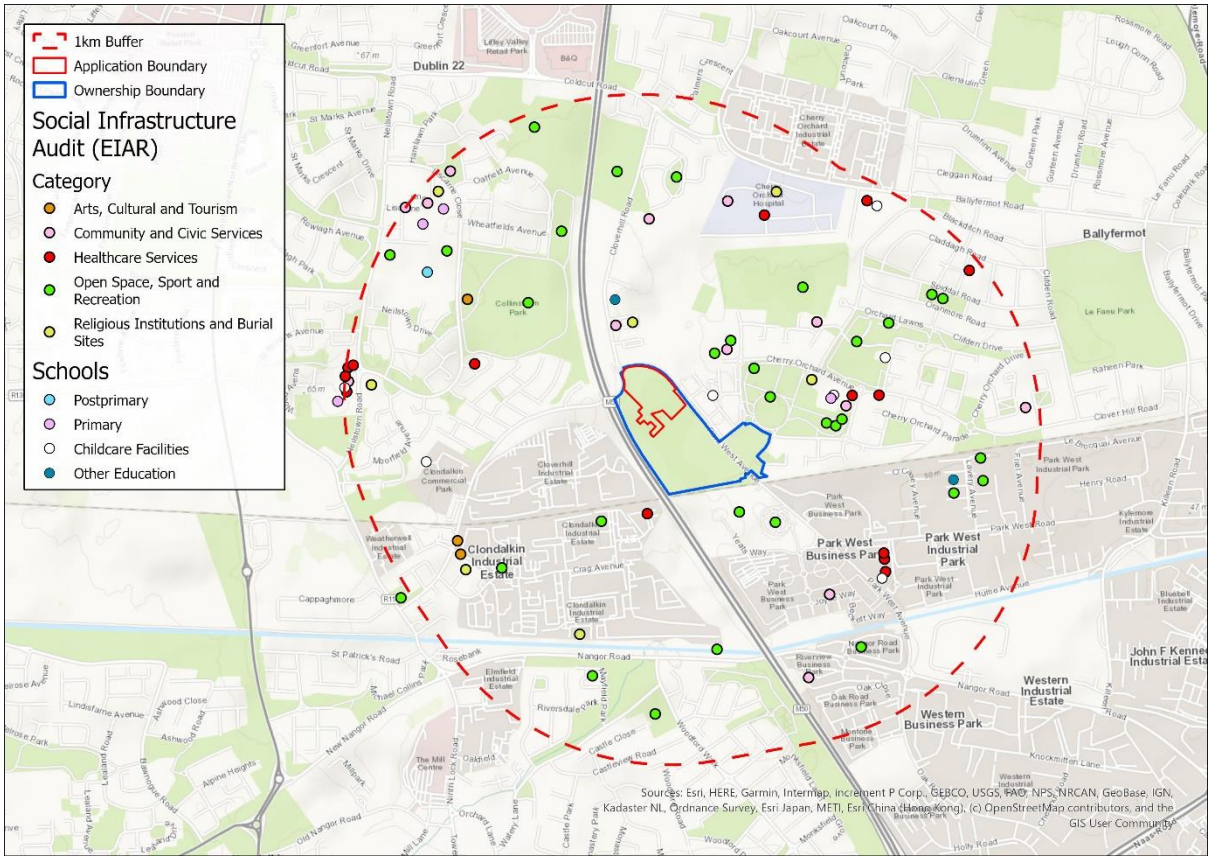


Figure 13.15 Existing Social Infrastructure and Amenities within the Study Area

However, it should be noted that the approved Phase 1 scheme includes c. 2,500sq.m of flexible community, arts and cultural space, as well as a creche, which will be a welcome addition to the area. Furthermore, the subject application is proposing to financially contribute to a planned Dublin City Council Athletics Track within the Park West – Cherry Orchard LAP Area, in close proximity to the site. When delivered and operational, these services and facilities will result in long term positive impacts on the population and human health of the area.

13.4.7 Surrounding Environment

The subject site is characterised as a greenfield site that is presently vacant and contains a large expanse of grassed lawn, mature trees and overgrown vegetation which form the western and northern boundaries of the subject site for Phase 2. The lands are largely flat in nature rising sharply to the M50 along the western boundary and fall southwards towards the rail station. The lands are bounded by the M50 to the west and the Park West-Cherry Orchard rail station to the south which provides excellent accessibility and connectivity opportunities. The site also benefits from direct access via Cedar Brook Avenue which connects with Park West Avenue and is served by the No.60 and G1 bus routes providing direct linkages to Dublin City Centre and the Docklands. The surrounding area is mixed use in nature with two large industrial estates each to the southwest and southeast of the site, residential developments located further east, Cloverhill Prison to the north and a number of recreational and green spaces including Cherry Orchard Park.

Figure 13.16 Aerial View showing Surrounding Environment (Source: Google Earth)

The Subject Site is part of the wider area identified under the Dublin City Development Plan 2022-2028 for regeneration which is reflected in the lands' designation as a Strategic Development Regeneration Area (SDRA 4). The Park West Cherry Orchard Local Area Plan for the area was adopted in 2019 and identified 8 no. Key Development Sites within the wider LAP lands that offer the potential to deliver approximately 2,000 residential units in tandem with employment and commercial development. The subject site represents part of Development Site 4 and will form the second of four phases of development aimed at delivering upon the aspirations of the LAP for the redevelopment of these lands.

A planning history search was undertaken by KPMG Future Analytics to identify any additional planning applications that may have been submitted since the authoring of the Parent EIAR. An analysis of the status of the applications was also undertaken to establish what developments have commenced construction and ultimately to better understand the surrounding environment and potential cumulative impact. This is set out in Section 15.5.3 Cumulative Impacts below.

13.5 Potential Impacts: Assessment

This section provides a description of the potential impacts that the proposed development, may have on population and human health during both the construction and operational phase of the scheme.

Potential impacts are assessed in terms of impact on socio-economic factors / conditions, impact on environmental factors such as air quality, noise and water quality and other physical factors such as traffic and transport and landscape and visual impact.

Where relevant, additional mitigation measures required to alleviate any such effects identified in relation to Phase 2 of the scheme (not previously captured in the Parent EIAR) has been set out in Section 13.5.4 below.

The analysis of impacts comprises a study of the key assessment themes as well as consideration of the construction and operational phases of the development, with a conclusion reached in relation to the proposed development on the environment. This has already been carried out for the consolidated scheme envisioned for Sites 4 and 5 of the LAP lands, under the Parent EIAR. This section will capture any additional impacts that have been identified in relation to Phase 2 of the scheme, as a result of design updates since the time of drafting the Parent EIAR. Table 13.10 below provides a summary overview of the impacts of the full extent of the development on Population and Human Health across the various environmental topics and sets out an assessment of the significance of those impacts.

Table 13.10 Potential Impacts Assessment Summary

Characteristics	Significance of Effects / Impact Assessment
Construction Phase	
Human Health	Slight or Non-Significant Impact
Socio-Economic	Slight positive, short-term impact; Non-Significant Impact
Air Quality and Climate Factors	Imperceptible, negative, short-term, non-significant impacts
Noise and Vibration	Negative, slight to moderate and brief to short-term construction noise impact; Non-Significant Impact
Water Quality	Negative, slight (not significant), likely and short-term in nature
Traffic and Transport	No significant impact
Landscape and Visual	Slight and neutral to moderate and negative
Operational Phase	
Human Health	Slight positive, long-term impact; no significant negative impact
Population	Positive permanent significant impact
Socio-Economic	Slight positive significant impact
Air Quality and Climate Factors	Long-term, neutral, imperceptible, and non-significant
Noise and Vibration	No significant negative impact
Traffic and Transport	Slight positive permanent impact; no negative impact
Landscape and Visual	No significant negative impacts
Community and Social Amenities	Positive significant and long-term impacts

Whilst it is important to address the significance of the effects assessed, the positive impacts that the proposed development will have on human health and wellbeing should also be highlighted. The proposed scheme creates a highly permeable and legible network of streets and spaces that optimises movement for sustainable modes of transport. As the subject lands are vacant and have attracted anti-social behaviour for many years, the proposed development to provide a new high-quality public realm, improved connectivity in and around the site will be an attractive and desirable update to the area and will positively impact human health over the long term.

13.5.1 Construction Stage

This Section of the Report sets out the impacts of the proposed scheme on Population and Human Health during the construction phase of development insofar as the impacts are considered to have changed since the Parent EIAR was undertaken. The impacts on population and human health are presented below across the relevant environmental topics where interactions occur. The main impacts

arising from the proposed development on population and human health relate to Air Quality, Climate, Noise and Vibration, Water Quality, Landscape and Transportation.

Population and Human Health

The main impact of the proposed development in the sole context of population and human health during the construction phase of the development is the employment opportunities that will be created when the scheme is being implemented. The impact is considered to be ***Positive, Imperceptible and Short-Term.***

Air Quality & Climate Factors

The Institute of Air Quality Management in the UK (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (2024) 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 the proposed development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. TII recommend the use of the IAQM guidance (2024) in their guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022).

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250m of a construction site, the majority of the deposition occurs within the first 50m (IAQM, 2024). 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.

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. The major dust generating activities are divided into four types within the IAQM (2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

When proposed mitigation is implemented where required there will be a further reduction of the predicted impacts on population and human health.:

- Demolition

  The Phase 2 development does not propose any demolition and so no impacts are predicted in this regard.

- Earthworks

  Given the scale of the full extent of the EIAR boundary which includes the Phase 2 lands and the total developable area exceeding 110,000sq.m the proposed earthworks (excavation, loading / unloading material, tipping and stockpiling) is considered large. When combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to dust-related human health impacts, there is an overall predicted high risk of dust soiling impacts and a ***low risk of dust-related human health impacts***. This risk is as a result of the proposed earthworks activities in the absence of mitigation.

- Construction

The dust emission magnitude for the proposed construction activities across the full extent of the development can be classified as large given the total building volume including the proposed Phase 2 scheme will be greater than 75,000 m3. When combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts, there is an overall predicted high risk of dust soiling impacts and a ***low risk of dust-related human health impacts***. This risk is as a result of the proposed construction activities in the absence of mitigation.

- Trackout / Movement of Heavy Vehicles

The dust emission magnitude associated with the movement of heavy vehicles is classified as medium by virtue of there being less than 50 outward HGV movements per day. As such, there is low risk of dust related human health impacts in the absence of mitigation measures.

Having regard to the above, it has been determined that there is an overall low risk of dust related human health impacts as a result of the construction phase of the proposed development. Therefore, in the absence of mitigation, there is the potential for ***imperceptible, negative, short-term, non-significant impacts*** to human health as a result of the proposed development. Climate related impacts associated with the proposed development primarily arise from Greenhouse Gas emissions which tend to occur during the construction phase of development as a result of embodied carbon in construction materials and emissions from construction activities. The Climate Change Risk Assessment of the construction phase of development has been scoped out as there are no residual medium or high-risk vulnerabilities to climate change hazards. As such, there are no climate related impacts to population or human health predicted at the construction stage of development. Consideration will be given to the following climate change hazards that have the potential to impact the population and human health during the operational stage of development which will be discussed in Section 13.5.2 below:

- Flood Risk
- Extreme temperatures
- Major Storms and Associated Damage and Risk to Health

Noise and Vibration

This section provides an analysis of the impacts on population and human health during the construction stage of development in relation to noise and disturbance experienced by neighbouring residents. A number of residential receptors have been identified and categorised into three decibel threshold values based on existing ambient noise levels in the absence of construction noise. In relation to vibration the main issues relate to damage to buildings and human perception of vibration. During construction phase piling is considered one of the primary sources of vibration and with humans being particularly sensitive to vibration stimuli can cause concern.

The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from and around the site. The closest Category A receptors from the area of construction works are residential properties at St Oliver's Park at distances of greater than 60m. The construction noise predictions indicate that noise levels from construction works will be below the CNT set out within BS5228 and above the baseline noise levels. As such, the predicted impact on the population and human health in respect of noise is considered ***negative, slight to moderate and brief to short-term***. The overall impact is deemed to be ***not significant.***

The closest external Category B receptors from the area of construction works are residential properties at Cedar Brooke Avenue at distances of greater than 40m. The construction noise predictions indicate

that noise levels from construction works will be below the CNT set out within BS5228 and above the baseline noise levels. As such, the predicted impact on population and human health is predicted to be ***negative, slight to moderate and brief to short-term.*** The overall impact is deemed to be ***not significant.***

In terms of the impacts of vibration on population and human health, vibration experienced by buildings which could affect those using the building are expected to be below recommended criteria and therefore unlikely to be perceived by people to such a degree that it would impact their health and wellbeing. The predicted vibration impacts are ***not significant***, and the worst-case effects can be described as ***short-term, negative, and imperceptible to not significant***.

Water Quality

Chapter 12: Water discusses the potential risks to groundwater quality due to construction activities, especially during site stripping and excavation work which may cause erosion due to rainfall and subsequent runoff. The erosion of soil can lead to sediments being washed into the receiving watercourses/sewers at higher rates of runoff. This has potential to cause a ***negative, slight (not significant) to moderate (significant) and short to medium-term impact*** on receiving watercourses/groundwater should no mitigation measures be implemented. There is also a risk of pollution of groundwater/watercourses/soils by accidental spillage of oils/diesel from temporary storage areas or where maintaining construction equipment. This has potential to cause a ***negative, slight (not significant) to moderate (significant) and short to medium-term impact*** on receiving watercourses/groundwater should no mitigation measures be implemented.

Landscape & Visual Impact

Changes to the landscape and visual amenities within an area can affect the emotional and physical health of the population. Potential impacts during the construction phase are related to temporary works, site activity, and vehicular movement within and around the subject site. Vehicular movement may increase in the immediate area, and temporary vertical elements such as cranes, scaffolding, site fencing, gates, plant and machinery etc., will be required and put in place. Most of the construction impacts will be temporary, and may include the following:

- Site preparation works and operations (including tree protection measures as appropriate).
- Site excavations and earthworks.
- Site infrastructure and vehicular access.
- Materials storage, spoil heaps etc.
- Construction traffic, dust and other emissions.
- Temporary fencing/hoardings, site lighting and site buildings (including office accommodation).
- Cranes and scaffolding.

Where trees are to be felled, or hedgerows cleared, these impacts will be permanent, however any proposed new planting will offset such effects, increasingly so as the proposed development matures.

The landscape and visual effects of these changes are most likely to be experienced as adverse effects by adjacent residents and users of Park West Avenue and Cedarbrook Way.

The Chapter concludes that, generally, landscape and visual effects during the Construction Phase are likely to vary from slight and neutral to moderate and negative, depending on the stage of construction, and the intensity of site activity. The construction impacts will be of short-term duration.

Transportation

The main impacts associated with the transportation environmental topic on population and human health that may occur during the construction stage of the development relates to construction traffic

and increased movements of HGVs to and from the site and the disturbance this may cause to existing residents in the area. As outlined in Chapter 14 of this Environmental Report, the day-to-day traffic movements associated with construction activities are predicted to be less than 3% of existing vehicular movements on Park West Avenue which is less than the recommended 10% increase threshold as set out in the TII Guidelines. Furthermore, it is predicted that the majority of increased trips arising from construction activities will take place outside of peak hours and are not therefore predicted to materially impact the existing traffic network or cause adverse disturbance to existing residents. It is therefore concluded that ***no significant impact*** on the population and human health of existing residents arising from increased construction traffic will take place.

13.5.2 Operational Stage

This Section of the Report sets out the impacts of the proposed scheme on population and human health during the operational phase of development insofar as the impacts are considered to have changed since the Parent EIAR was undertaken. The impacts on population and human health are presented below across the relevant environmental topics where interactions occur. The main impacts arising from the proposed development on population and human health relate to Air Quality & Climate, Noise and Vibration, Water Quality, Landscape and Transportation.

Population and Human Health

The main impacts of the proposed development in the sole context of population and human health during the operational phase of the development are the delivery of 137no. affordable homes to the area, the provision of dedicated pedestrian and cycle linkages and high quality public and communal open space. The operation stage of the development is unlikely to cause any adverse impacts on the existing and future residents of the locality in terms of human health.

As stated above, the proposed development includes 137no. affordable homes comprising two and three bed units. Given the socioeconomic profile for the area, it is expected this unit mix will cater to the housing need within the locality, making it more affordable for people to live and work in the area.

It is reasonable to consider that positive impacts generated by the proposed development on the local economy will, in turn, give rise to improvements in vibrancy and vitality of the area contributing to a stronger sense of place which is positively related to health.

The impacts described above are considered to be ***Positive, Imperceptible and Long-Term.***

Phase 2 will provide badly needed affordable homes on a vacant site opposite the existing development of Cedarbrook. The overall scheme has been designed to encourage active travel and discourage private car use. The creation of safe and attractive paths and high quality communal and public open space can create more sustainable habits for the benefit of the neighbourhood.

Air Quality & Climate Factors

Chapter 5 and 6 on Air Quality and Climate Factors conclude that traffic related air emissions have the potential to impact air quality which can affect human health. A detailed air dispersion modelling assessment of traffic emissions was conducted, and it was determined that emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health. Therefore, it can be concluded that the impact of traffic emissions on air quality and human health during the operational phase is ***negative***, ***long-term, direct, localised and imperceptible,*** which is an overall non-significant effect in EIA terms.

To determine the vulnerability of the proposed development to climate change, the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate

hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog.

Chapter 6 further outlines the following topics.

- Flood Risk
- Extreme Temperatures
- Major Storms and Associated Damage and Risk to Health

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. The below table details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined.

This is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards.

Table 13.11 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flood (coastal, pluvial or fluvial)	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Cold	2 (Medium) - landscaping	2 (Medium)	4 (Medium Risk) – to be reduced to low through mitigation
Drought	1 (Low)	2 (Medium)	2 (Low Risk)
Wind	1 (Low)	2 (Medium)	2 (Low Risk)
Wildfire	1 (Low)	1 (Low)	1 (Low Risk)
Fog	1 (Low)	1 (Low)	1 (Low Risk)
Lighting and Hail	1 (Low)	1 (Low)	1 (Low Risk)
Landslides	1 (Low)	1 (Low)	1 (Low Risk)

Flood

In relation to coastal flooding the SSFRA has concluded that the proposed development is not at risk coastal flooding. This site is located c. 13.1 km inland from the Irish Sea and c.4.7 km from the nearest location at risk of coastal flooding. Additionally, there is at least a 53.50m level difference between the lowest proposed building floor level (56.45m) and the record high tide event and the site is outside of the 1-in-1,000 year flood plain.

There is a risk of fluvial flooding at the proposed development location has been assessed as extremely low, as per the SSFRA. The site is located outside the 1 in 1,000 year fluvial flood plain. The finished floor levels throughout the development have generally been set at least 300mm above the level of the adjacent road channel line. An appropriate overland flood route is also designed into the development to convey surface water runoff along the internal roads network, away from buildings.

There is the potential for pluvial flooding on site due to increased rainfall. However, a number of management measures have been incorporated into the design of the development to reduce the risk of pluvial flooding. The drainage design for the proposed development has been adequately designed with an additional 20% climate change allowance. This additional 20% accounts for the medium risk RCP4.5 future scenario, allowing an additional 30% would account for the high risk RCP8.5 future scenario. Therefore, the exposure has been closed as ‘medium’ in Table 6.11 above. However, the

SSFRA has indicated that the overall risk to the proposed development as a result of surface water flooding is low with the appropriate design mitigations in place (see SSFRA for full details).

Overall, it can be concluded that the proposed development has a worst-case low vulnerability due to potential future flooding.

Extreme Temperatures

Landscaping has been assessed as having a medium vulnerability to extreme cold temperatures based on the information available at the time of undertaking this assessment. The proposed planting scheme will need to take extreme cold temperatures into account which will reduce the vulnerability of the landscaping elements to low.

Extreme temperatures, both extreme heat and extreme cold, have the potential to impact the building materials and some related infrastructure. However, high quality, durable building materials will be selected for the proposed development at the detailed design stage. Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including; The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest available IPCC report. In addition, should the updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account. The proposed development has been designed to reduce the impact to climate where possible (see the project Climate Action Energy Statement prepared by Waterman Moylan for full details). This will primarily be through passive strategies such as an energy efficient envelope which in turn reduces the demands relating to items such as HVAC and renewable energy systems. However, these design elements in addition to reducing energy demand within the building also ensure that buildings are more resistant to extreme temperature events.

Wildfire

In relation to wildfires, the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2023), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a built-up, suburban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

Extreme Wind, Lightning, Hail, Fog

In relation to extreme winds, the buildings shall be designed to the appropriate standards to account for the relevant wind loadings events for RCP4.5 and RCP8.5. If required as part of the building design, lightning protection shall be provided for. Hail and fog are not predicted to significantly affect the buildings due to their design.

Landslides

The site is considered flat, as can be seen in site sections - surrounding lands are similar in plain makeup, with no steep slopes or forested areas which indicates a low risk for landslides. In addition, the Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2024) was reviewed to inform the risk from landslides at the proposed development. There have not been any

historical landslide events in the vicinity of the proposed development and the area is of low susceptibility to future landslides. Therefore, the vulnerability of the proposed development to landslides is classed as low.

Noise and Vibration

Noise and vibration has been considered in terms of two aspects. Firstly, the outward impact of the development and secondly, the inward impact of existing noise and vibration sources on the development itself. The environmental noise survey was conducted in general accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

The development lands in question are in proximity to the M50 Motorway and Dart + South West railway line, with noise from the road and rail having the potential to impact the residential development proposed.

The existing noise climate within the development lands was surveyed and the results summarised in Section 7.3 of Chapter 7. The results of the survey have indicated that the M50 contributes significant noise levels at the measurement locations on the west boundary of the site. In addition to this it was noted that noise emissions from the railway on the south boundary contributed to overall noise levels during the day period.

There are no expected sources of vibration associated with the operation phase of development, therefore there is no predicted impact in that regard.

Following implementation of sound insulation mitigation, the residual impacts are predicted to be ***long-term, neutral and not significant.***

It can be concluded that the development site may be categorised as Medium to High Risk and as such an Acoustic Design Strategy is 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 *Professional Guidance on Planning & Noise* (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."

Therefore, following the guidance contained in (ProPG) does not preclude residential development on sites that are identified as having medium or high-risk noise levels. It merely identifies the fact that a more considered approach is required to ensure the developments on the higher risk sites are suitable designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

With increased traffic movements, the noise levels in the surrounding area have the potential to increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site. In this assessment, the impact of the

interactions between traffic and noise are considered to be ***imperceptible to not significant*** on all junctions.

Water Quality

The proposed development will result in an increased impermeable area and there is potential for an increase in risk of higher rates of surface water runoff leading to increased downstream flooding which could have an impact on human health.

There is potential for leaks in the foul network to result in contamination of the groundwater. Accidental spills of fuels/hydrocarbons and washing down into the drainage pipe network has the potential to impact on the receiving hydrogeology. There is a potential for Watermain leaks which would increase the volume of water permeating through the underground soil strata.

The operation of the proposed development has potential to cause a ***negative, slight (not significant) to moderate (significant), short-term to permanent impact*** on receiving watercourses/groundwater should no mitigation measure be implemented.

There are no anticipated operational stage cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a ***neutral, imperceptible and permanent*** increased water supply demand and increase to foul flows generated.

Landscape & Visual Impact

The designed scheme seeks to consolidate a key part of the urban plan and harmonise and integrate the development within the existing landscape and the broader urban environment, in line with the Dublin City Development Plan 2022-2028, the Park West and Cherry Orchard LAP, and associated policies and objectives. It must do this whilst adhering to national planning policy which seeks the densification and the provision of increased height on appropriate urban sites. The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials.
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass
- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration;
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible);
- Simplification and rationalisation of the proposed roof lines.
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities.
- The provision of secure private gardens
- Sustainable approach to drainage and biodiversity

- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

In terms of potential visual impacts, whilst the proposed scheme is not uncharacteristic within the broader context, there is a clear change of scale between the relatively green site and what is proposed. Sensitivities may well be somewhat dulled by the degraded nature of the site and the expectation of new homes and infrastructure. The quality of the proposed buildings and their setting offers a coherent and vibrant completion of this quarter. The potential for a measure of visual impact, experienced by people visiting, living in, or using these areas, is therefore reasonably high. The selected viewpoints for the preparation of photomontages takes this into account by taking views from corresponding locations.

The design rationale adopted and the architectural and landscape architectural approach to the design of the proposed scheme and the details employed, seek to respond to such issues and to mitigate negative effects on both the broader landscape character and visual amenity of the area – these are outlined further in, Mitigation Measures, below.

Transportation

Chapter 14 outlines that the traffic impact from the proposed development during the Operational Stage is predicted to be 10% or greater at all junctions included in the traffic modelling that was undertaken for the purpose of this project.

Overall, the impact of the proposed development at Cherry Orchard Point on the surrounding transportation network will not be significant. Six of the eight road junctions that were assessed will continue to operate a satisfactory level up to 2042 with the development in place. The existing roundabout at the junction of Park West Avenue and Park West Road is likely to reach capacity in 2027 with or without the proposed development.

It is determined that there will be no significant impact on the existing and proposed traffic and transport in the surrounding area expected to arise from the construction or operational stages of the proposed development at Cherry Orchard Point.

In fact, the proposed development which prioritises pedestrian and cycle mobility will result in long term positive impacts on human health and wellbeing.

13.6 Cumulative Impacts

Table 13.12 summarises planning applications for Key Development Sites and other lands that have been granted and works commenced, in the Cherry Orchard LAP Area.

Table 13.12 Planning History – Residential Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot.	Granted 03-10-2022

		The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022
	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to	Granted 08/10/2018 Commenced

		boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	

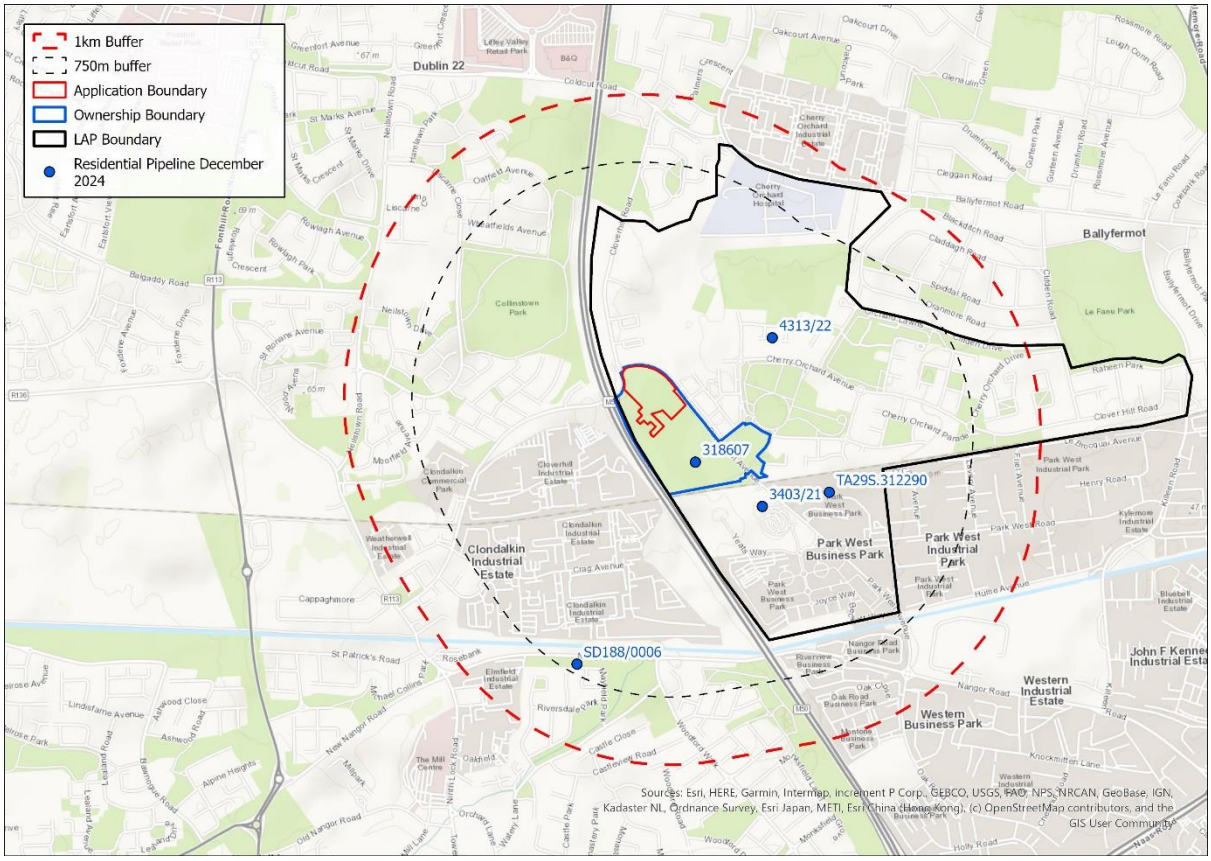


Figure 13.17 Extant Residential Schemes Granted Planning Permission within the LAP (2019) Boundary

Table 13.13 Planning History – Retail / Commercial Schemes within the Cherry Orchard LAP Area

Reg. Ref.	Address	Summary Development Description	Decision and Date
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021 Commenced
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022

312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	Granted 16/06/2022 Commenced
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021 Commenced
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	Granted 31 Jul 2019 Commenced
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include	Granted 4th July 2024

	Industrial Estate, Dublin 22, Co. Dublin	for internal alterations and extension of current office floor areas on ground and first floor level.	Commenced
SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023 Commenced

**These applications are South Dublin County Council*

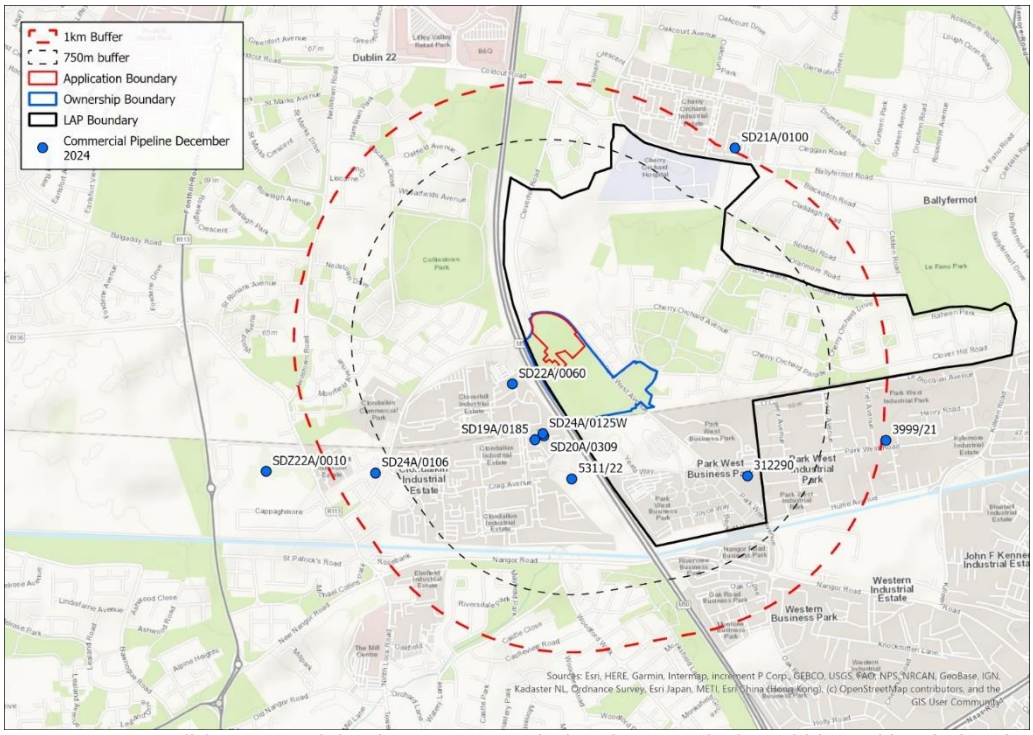


Figure 13.18 Extant Retail / Commercial Schemes Granted Planning Permission within and bordering the LAP (2019) Boundary

Since the completion of the Parent EIAR, the DART+ South West Project has been granted permission and will provide a sustainable, electrified service with increased capacity and frequency for services between Park West Cherry Orchard and Dublin City Centre.

Table 13.14 DART + South West Rail Order

ABP Reference	Development Description	Status	Date
316119	DART+ South West Electrified Heavy Railway Order - Hazelhatch & Celbridge Station to Heuston Station, and Hesuton Station to Glasnevin	Make Railway Order w cons	**13/11/2024**

It is expected that once this project is delivered, it will increase the train capacity to double the current (12) trains per hour per direction and increase passenger capacity from the current peak capacity of approximately 5,000 passengers per hour to around 20,000 passengers per hour per direction.

The planned infrastructure improvements include:

- 20 km of electrification and re-signalling of the Hazelhatch and Celbridge Line to Heuston and the south city via Phoenix Park Tunnel.
- Construction of a new station at Heuston West to serve the community of Clancy Quay and Island Bridge.
- Four-tracking of the rail line from Park West and Cherry Orchard Station to Heuston to enhance capacity.
- Civil, bridge and ancillary works as necessary to accommodate the project.
- Upgrading of the Phoenix Park Tunnel.
- New electric DART carriages for the DART+ Programme will be deployed on Hazelhatch and Celbridge services.

The DART + works are anticipated to be completed by 2030 and will most likely run in parallel with the construction phase of the proposed residential development.

The main cumulative impacts arising from the proposed development when considered in combination with the abovementioned developments on Population and Human Health are potential pollution and nuisance resulting from the construction phase, vis-à-vis, air quality, dust, construction noise and traffic etc. During the operational phase of development, the proposed scheme including the approved Phase 1 development, there will be c.1,000 units for the area that will result in a population increase and the creation of a new sustainable community in the area. The additional population created by the proposed scheme in tandem with other neighbouring developments will contribute to creating a critical mass needed to support additional services and amenities. As outlined in the Parent EIAR there is additional retail, commercial and community floorspace planned for the area which will create employment opportunities for existing and future residents and enhance the existing offering in the area.

However, it should be considered that the proposed development, alongside the relevant residential and commercial planning applications cited above, form part of a key growth area as identified in Local Area Plan and DCC CDP. The cumulative impact of the development of adjacent lands within Study Area will be the resulting rise in population, in line with national, regional, and local planning policy for Park West and Cherry Orchard. This impact will be long term and positive in the context of the development zoning objectives for the subject site, and wider local, regional, and national planning policy. This is further supported by the strategic location of lands within the Study Area and their proximity to high-quality public transport services, and social and community services. The cumulative impact of the full development of lands in line with the objectives of the Local Area Plan will enhance the social and economic viability of the area and is considered to be a long term positive for the area.

13.7 Mitigation Measures

13.7.1 Construction Stage

A range of construction related remedial and mitigation measures are proposed throughout this Environmental Report with reference to the various environmental topics examined, and the inter-relationships between each topic. Through the provision of these remedial and mitigation measures, any negative impacts on Population and Human Health during the construction phase shall be appropriately mitigated. Chapter 18 '*Summary of Mitigation Measures and Residual Impacts'*, of this Environmental Report provides a summary of mitigation measures proposed.

Air Quality & Climate Action

The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be

responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan (Appendix 5.1 of Phase 1 Parent EIAR).

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the outlined measures draw on best practice guidance from Ireland, the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Noise & Vibration

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2.

Predictions indicate that moderate construction noise impacts are expected to occur when work is ongoing at boundary locations adjacent to noise sensitive locations, hence the contractor will ensure that all best practice noise and vibration control methods will be used.

Water

There are no direct hydrological links (surface water drainage systems or natural watercourses) between the subject site and the Blackditch Stream. There may be an indirect link from surface water runoff which may have the potential to run off the site boundary to the surface water gullies on the adjacent road networks. These networks outfall to the Blackditch Stream.

The following Mitigation Measures are proposed to address potential impacts to water quality and are required to protect the Blackditch Stream, and the Camac River which has an ultimate outfall to the River Liffey at Heuston. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001)
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- CIRIA 697, The SUDS Manual, 2007
- UK pollution Prevention Guidelines (PPG) UK Environment Agency, 2004

No additional mitigation measures at construction stage are anticipated for the Phase 2 subject site beyond those outlined in Chapter 15 of this Environmental Report and further outlined in Chapter 18.

Landscape and Visuals

The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. The perimeter site hoarding will screen from view much of the construction activity and materials at ground level. Other mitigation measures proposed during this delivery stage of the development, revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures, etc. Such mitigation will be set out in the Construction Management Plan prepared for the scheme. This will be a working document which will be continually reviewed and amended through the construction phase to ensure effective mitigation throughout.

The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

- Daily and weekly working hours;
- Agreed haul routes for incoming materials;
- Licensed hauliers to be used;
- Disposal sites;
- Travel arrangements for construction personnel;
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;
- Temporary construction entrances to be provided;
- Wheel wash facilities if required;
- Road cleaning and sweeping measures to be put in place if required;
- Temporary construction signage to be put in place and maintained.

The planning application includes an Outline Construction Management Plan, prepared by Waterman Moylan Consulting Engineers, which outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. This Outline Construction Management Plan forms the basis for the required measures to be included in the appointed Contractor's Construction Management Plan. As such it references construction phase mitigation measures which are relevant to the assessment of Landscape and Visual Impact.

Transportation

The primary mitigation and monitoring measures during the Construction Stage will be the implementation by the selected Contractor of the Construction Management Plan and the Construction Traffic Management Plan.

The assessment of predicted impacts concluded that the construction stage of the proposed development is not anticipated to impact on the operational performance of the local road network.

Due to the proximity of the subject site to bus and rail services together with existing cycle lanes, it is intended to limit parking for construction staff and to encourage the use of car sharing and public transport.

The contractor will be obliged to ensure that any sub-contractors engaged on the site are made fully aware of the required mitigation measures and that they are properly implemented as part of any works that they undertake.

13.7.2 Operational Stage

The Proposed Development has been designed to avoid negative impacts on population and human health through the design and provision of physical and social infrastructure as described in Chapter 2 of this Environmental Report. Compliance with the proposed design and layout will be a condition of any permitted development. Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission. Furthermore, measures outlined in the Chapters of this Environmental Report which address other environmental matters such as Water, Air Quality, Climate Factors, Landscape and Visual Impact and Noise sufficiently address monitoring requirements. Chapter 18 of this Environmental Report provides a summary of mitigation measures proposed as a result of this Environmental Report.

Air Quality & Climate Action

No site-specific mitigation measures are proposed for the operational phase. The significance of the impact of traffic emissions on air quality is assessed for the opening year only according to the TII guidance (2022) which results in only 'neutral' increases in pollutant concentrations and an imperceptible impact.

However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

These measures must be set at a national level. In relation to the proposed development, the inclusion of bike parking facilities and electric vehicle charging infrastructure as well as its close proximity, and accessibility, to the train and bus routes will all help in promoting more sustainable modes of transportation and reducing private vehicle trips which will have the benefit of reducing air emissions from traffic.

Noise & Vibration

Following implementation of the sound insulation mitigation the residual impacts are predicted to be long-term, neutral and not significant.

All assessed junctions indicate that impacts will be ***neutral to negative, imperceptible to slight and long term.***

Noise emissions from operational plant and activities shall be designed in accordance with BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound. The residual impacts are predicted to be ***long-term, negative and not significant.***

Water

The implementation of the operational stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the development lands.

The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.

Surface water outflow will be restricted to below the equivalent greenfield runoff rate from the proposed attenuation tanks and basins as per the catchment design, in accordance with Dublin City Council requirements.

Sustainable urban drainage measures, permeable paving, and filter strips/swales will be provided to improve water quality.

A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.

A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections.

No additional mitigation measures at operational stage are anticipated for the Phase 2 development beyond those outlined in the Parent EIAR.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

Landscape and Visuals

The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials;
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass
- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration;
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible);
- Simplification and rationalisation of the proposed roof lines, including green roofs
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities, in turn combining with internal cultural spaces.
- The provision of secure communal spaces with each residential block.
- Sustainable approach to nature-based drainage and to enhance biodiversity
- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

Transportation

The primary mitigation and monitoring measures during the Operational Stage will be the implementation of the Mobility Management and Travel Plan.

To reduce traffic impact, mitigate against possible overspill car parking and to promote more sustainable modes of transport, a Mobility Management and Travel Plan has been prepared for the development and will be updated on a regular basis.

A management company will be appointed by the developer to manage the overall development and a senior member of staff from the management company will be appointed as the coordinator.

The coordinator is responsible for:

- Implementation and maintenance of the Plan.
- Monitoring progress of the Plan.
- Liaison with public transport operators and officers of the Planning and Roads Authority.
- Production of information reports for the developer, the occupier (s) and the Planning and Road Authorities.
- Ongoing assessment of the objectives of the Plan.

The Mobility Management and Travel Plan Co-ordinator will be responsible for the management of inappropriate parking within the development. This parking management will ensure that spaces are reserved for those who have been allocated spaces and will be accessible only to those users.

13.8 Interactions and Residual Impacts

There are numerous inter-related environmental topics described in detail throughout this Environmental Report which are of relevance to population and human health. The main high-level interactions between Population and Human Health and other environmental factors include Air Quality and Climate Factors, Noise and Vibration, Landscape and Visual Impact, Water, Waste Management, and Traffic and Transportation. Although these have been covered in detail in the respective Chapters of this Environmental Report, it was considered prudent to provide a robust description of the same within this section.

Air Quality and Climate Factors

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. Therefore, the predicted impact is short-term, imperceptible, negative and non-significant with respect to population and human health during construction, and ***long-term, imperceptible, neutral and non-significant*** during the operational phase.

Noise and Vibration

The interaction with Noise and Vibration can have an impact on Population and Human Health, mainly during the construction phase. Chapter 7 on Noise and Vibration notes that the largest noise and vibration impact will occur during the construction stage due to the operation of various plant machinery and HGV to, from and around the site, noise levels relating to site clearance, ground excavation and loading lorries etc. The Chapter also notes that the additional traffic introduced into the local road network due to the construction phase of the proposed development will not result in a significant noise impact. The predicted impact assessment in Chapter 7 has concluded that, provided the proposed mitigation measures are implemented, there is no long-term significant impact from owing to noise and vibration from the proposed development.

As a result, there is no significant impact perceived from the same on population and human health.

Landscape and Visual Impact

The landscape and visual aspects of the development invariably intertwine in relation to the social qualities of passive and active amenities and civic qualities in the public realm, transport, natural heritage particularly relating to enhancing biodiversity and creating resilience to climate change.

The proposed development will impact on the urban landscape to varying degrees in terms of its perceived nature and scale. These effects are tempered and conditioned by sensitivities associated with the receptor. The duration of such impacts is however determined by the design life of the proposed development. In this case the building development has a design life of up to 60 years. Impacts on landscape character are therefore deemed to be of long-term duration in this instance.

In assessing the landscape character impacts, there are three main inter-related aspects to be addressed in considering the development proposals, namely:

- The perceived character of the area, how it is affected by the proposal and how well it integrates, particularly in the context of a changing environment.
- Effects of the proposed development on social and cultural amenity
- The proposed views of the development, relative to the existing site and context and the associated impact on visual amenity

Water

The proposed development can impact the water quality within the local area as a result of contamination during any given phase of the development. Chapter 12 on Water identifies that there is a risk to Human Health should the ground water become contaminated during the construction or operational stages, and water is consumed.

Material Assets – Traffic and Transportation

As per Chapter 14 on 'Material Assets – Traffic and Transport', during the construction stage, some of the construction traffic movements will be undertaken by heavy goods vehicles (HGVs), including vehicles movements associated with appointed contractors and staff. The Chapter notes that the expected increase in the day-to-day traffic movements associated with construction activities is less than the benchmark of 10% set out in the TTA Guidelines published by TII.

The Chapter concluded as such no significant impact on roads and traffic will arise from the Construction Stage of the proposed development.

Material Assets – Waste Management

The inappropriate management of waste during the construction phase, including storage, handling and the use of insufficient segregation techniques has the potential to negatively impact the health of the construction workers. Likewise, during the operational phase the potential impacts on the environment and subsequently human health, from the proposed development would be caused by improper or the lack thereof of waste management. According to Chapter 15 on Material Assets – Waste Management, a carefully planned approach to waste management and adherence to the site-specific Resource and Waste Management Plan during the construction phase, will ensure that the effect on the environment will be short-term, neutral and imperceptible. With regard to the operational phase, the Chapter concludes – provided the mitigation measures in the development OWMP (Appendix 15.2) and in Chapter 15 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.

As a result, it is considered that there is no subsequent significant impact on population and human health from the proposed development during the construction or operational phases.

Please refer to Chapter 17 Interactions for more information from each Chapter.

13.9 Difficulties Encountered

There were no significant difficulties encountered in compiling the information contained in the Population and Human Health Chapter.

14 Material Assets – Traffic and Transport

14.1 Introduction

14.1.1 Background

This chapter of this Environmental Report - Addendum to Approved Phase 1 Parent EIAR (This Environmental Report) provides an assessment of the impact that Phase 2 of the proposed development at Cherry Orchard Point, Park West Avenue, Dublin 10 will have on traffic and transportation infrastructure and network in the surrounding area.

This chapter was completed by Brian McCann, BE, MSc (Eng), DIC, CEng, FIEI, MIStructE, MConsEI with input from the other members of the design team. . Brian has in excess of 30 years' experience of transportation planning and assessment.

This chapter sets out the existing receiving environment in terms of roads conditions, traffic activity and transportation accessibility. It also describes the proposed development in terms of construction and operational traffic impact on the receiving environment and any appropriate mitigation measures.

A full description of the proposed development can be found in Chapter 3.0: *Description of Scheme* on this Environmental Report.

A detailed Traffic & Transport Assessment was also prepared by Waterman Moylan in November 2024 in compliance with Section 2.3 of Appendix 5: *Transportation and Mobility Technical Requirements* of the Dublin City Development Plan 2022 – 2028.

The TTA presents survey data for the existing traffic conditions and a detailed estimation of the transport demand that will be generated by the development. The TTA also addresses the existing capacity on the public transport network. The traffic generated during both the morning and evening peak times is assessed as well as an estimation of the construction stage traffic. An assessment of the percentage impact of traffic on local junctions, and accessibility of the site by sustainable modes including walking, cycling and public transport is also included.

14.1.2 Methodology

The methodology for the preparation of this chapter of this Environmental Report included: -

(a) Desktop review of the planning stage documentation provided by the project design team.

(b) Visits to the site and surrounding area including survey of 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 Transport Infrastructure Ireland (TII), National Transport Authority (NTA) and Dublin City Council (DCC).

(e) Review of the Traffic & Transport Assessment prepared by Waterman Moylan in November 2024.

(f) Review of future trips to and from the proposed development.

(g) Review of trips from future contiguous developments.

(h) Review of public transport, both existing and proposed.

(i) Assessment of the transportation impacts of the development.

Guidance for the preparation of this chapter was obtained from the following documents:

- Park West – Cherry Orchard Local Area Plan (LAP), Dublin City Council, November 2019
- Dublin City Development Plan 2022 – 2028.
- Park and Ride Report, NTA, August 2015.
- Scoping for TTA, Waterman Moylan, September 2022.
- Greater Dublin Area Transport Strategy 2022 – 2042, NTA.
- Technical Note on Park and Ride, Waterman Moylan, June 2022.
- Design Manual for Urban Roads and Streets (DMURS).
- Traffic and Transport Assessment Guidelines, TII, May 2014
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, TII, May 2021.

14.2 Receiving Environment

14.2.1 Site Location and Zoning

The two sites for the overall development (part of the overall the Park West – Cherry Orchard Local Area Plan) are located in the administrative two sites for the overall development area of Dublin City Council (DCC) within the area bounded by the M50 Motorway to the west, Ballyfermot Road to the north, Le Fanu Road to the east and the Grand Canal to the south. See Figure 14.1.

The LAP extends to an area of 267.5 ha of which Sites 4 M50-Cedarbrook Avenue and Site 5 Barnville extend to a total of 14.0 ha.

At the time of writing in January 2025, the site comprised undeveloped greenfield sites. Both sites were unoccupied with no traffic movements in or out.

In the Dublin City Development Plan 2022 – 2028, the subject site is zoned Z14 *Strategic Development and Regeneration Area* (SDRA).

SDRA 4 Park West / Cherry Orchard guided the preparation of a new Local Area Plan for Park West / Cherry Orchard, which came into effect in November 2019. The objective of the Plan is to deliver private, social and affordable housing, schools, sports and recreational facilities, retail facilities and employment opportunities in consultation with local community and youth services.

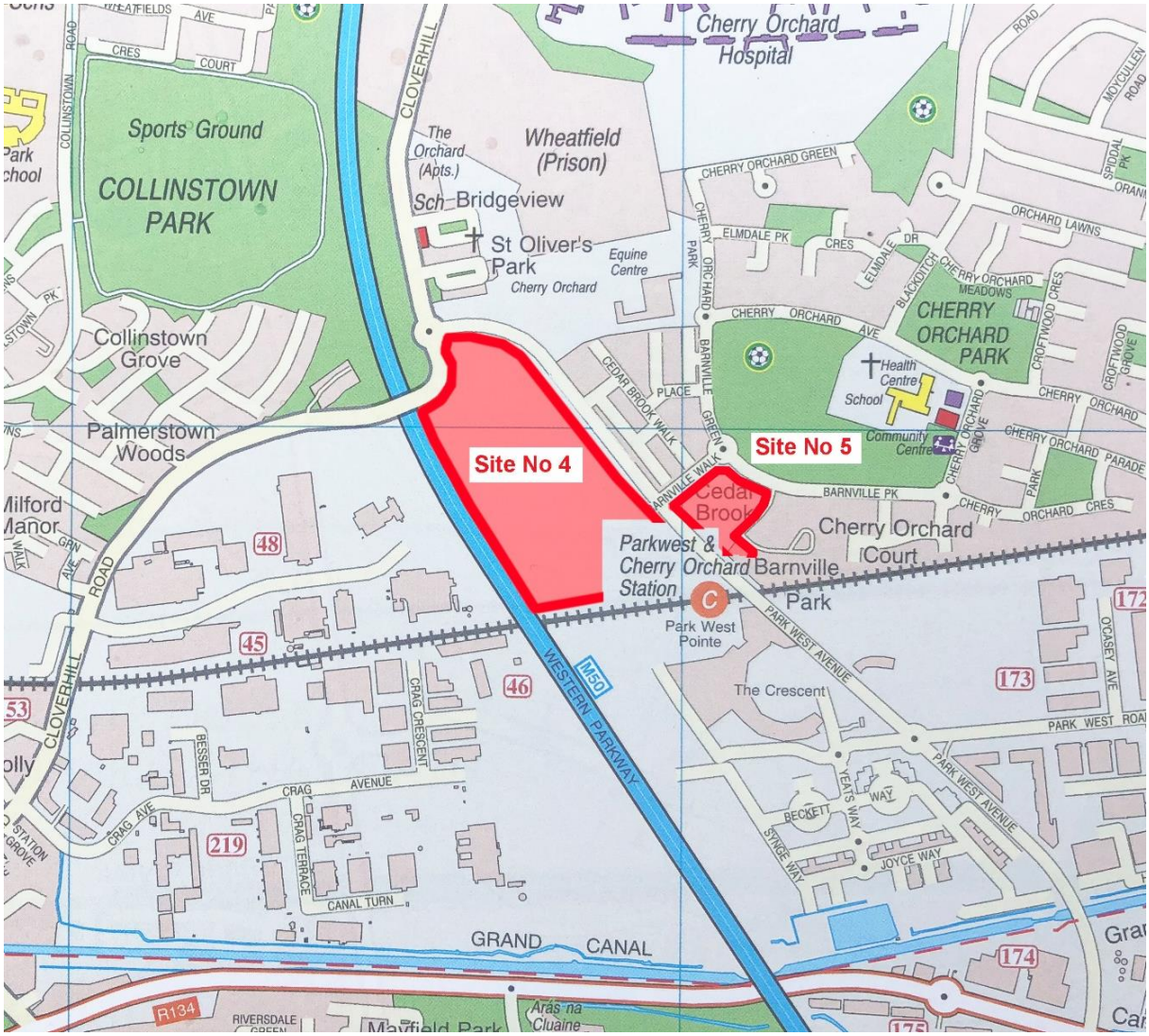


Figure 14.1 **Location Map**

14.2.2 Phasing

Sites 4 and 5 are being developed in four phases as shown on Figure 14.2.

Figure 14.2 ***Project Phasing***

14.2.3 Project Timescale

For the purpose of this Environmental Report, the Base Year has been taken as 2022, the Opening Year as 2027, the Design Year as 2032 (Opening Year + 5) and the future Year as 2042 (Opening Year + 15).

14.2.4 Local Road Network

The proposed development is located on either side of Park West Avenue between the R134 Nangor Road and Ballyfermot Road / Coldcut Road.

Park West Avenue is a wide single carriageway road with a north – south alignment and a posted speed limit of 50 kph. It is linked to Cloverhill Road via a roundabout junction at its northern end and to the R134 Nangor Road via a signalised crossroads at its southern end.

Park West Avenue has a 9.0-metre-wide carriageway with footpaths and cycle tracks on both sides. Speed ramps are provided for traffic calming. There are no parking restrictions. See Figure 14.3.

Figure 14.3 *Park West Avenue looking north from the bridge over the railway.*

14.2.5 Existing Traffic Conditions

The existing traffic conditions on the road network in the area of the proposed development were obtained from a classified traffic survey which was carried out by IDASO on Tuesday 8th November 2022 over a period of 24 hours at the locations shown in Figure 14.4.

In addition to motorised traffic, the survey recorded pedestrians and pedal cycle movements. The survey confirmed the AM and PM Peak Hours to be 08:00 – 09:00 and 17:00 – 18:00.

From the results of the survey, the 24-hour traffic flow recorded on Park West Avenue was some 11,004 vehicles per day. The two-way traffic flow on Park West Avenue was some 1,103 vehicles per hour (vph) during the AM peak hour 8 – 9 reducing slightly to 1,046 vph during the PM peak hour 5 - 6.

Similarly, the 24-hour traffic flow recorded on Barnville Walk was some 4,092 vehicles per day. The two-way traffic flow on Barnville Walk was some 329 vehicles per hour (vph) during the AM peak hour 8 – 9 increasing to 422 vph during the PM peak hour 5 - 6.

The pedestrian movements recorded on Park Avenue varied from 200 persons per hour at the railway station to 40 persons per hour at Junction 4. The corresponding cycle movements varied from 6 – 18 cyclists per hour. Pedestrian and cycle movements recorded at the other junctions were significantly lower.

Section 4.5.2 of the Park West - Cherry Orchard Local Area Plan 2019 advised that

'*The road network serving Park West – Cherry Orchard experiences some traffic congestion during peak hours in areas such as Cloverhill Road, Park West Avenue and Le Fanu Road with the highest delays occurring where these roads connect to regional roads such as Ballyfermot Road and the New Nangor Road.'*

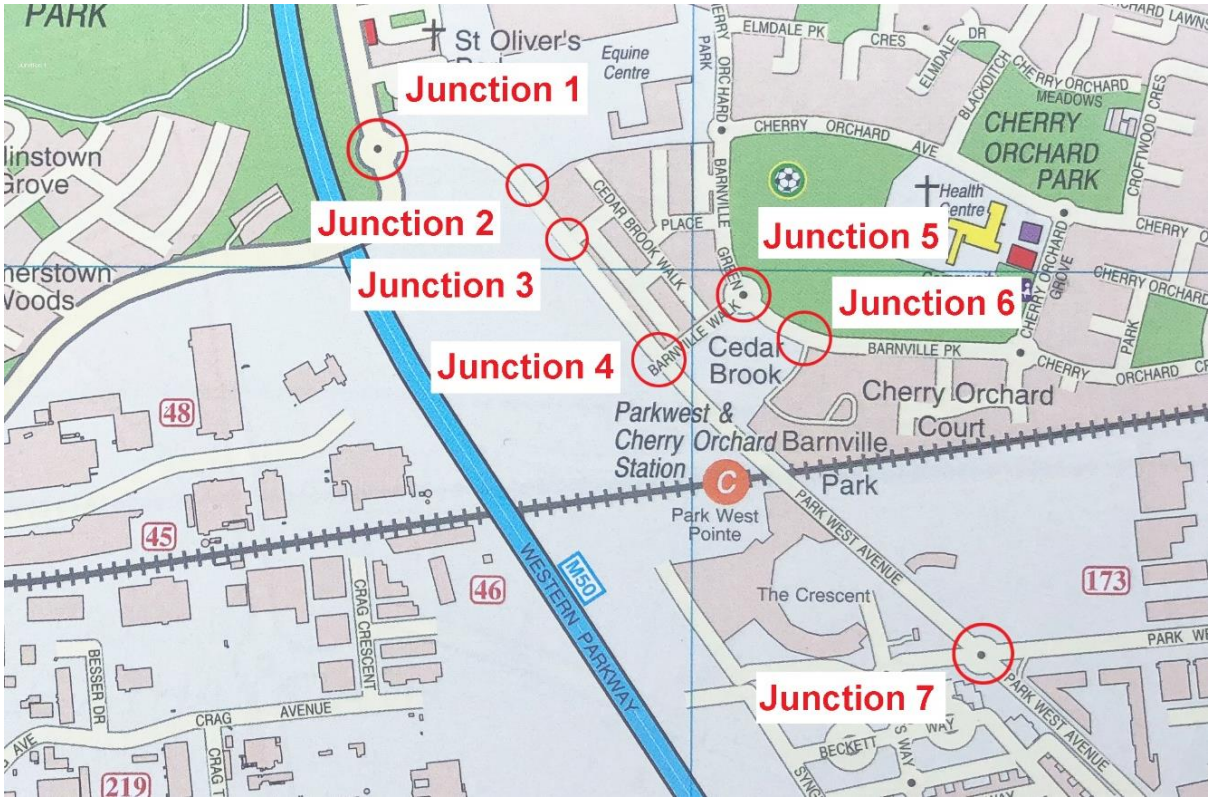


Figure 14.4 Locations of Traffic Surveys

14.2.6 Existing Bus Service

Park West Avenue

Bus services in the area of the proposed development are a combination of historic services operated by Dublin Bus and new services provided under the auspices of Bus Connects. See Figure 14.5.

Dublin Bus Routes 79 and 79a which formerly served Park West Avenue, and the Park West & Cherry Orchard Station were replaced by Bus Connects Routes G1 and 60 in October 2022. See Figure 14.5. Timetables for Routes G1 and 60 are included in Appendix B of this TTA.

Route G1 is a 24-hour service which is part of the G spine. It links the site for the proposed development to New Wapping Street in the City Centre via Inchicore and to the Luas Red Line at the Red Cow. Services operate at 15-minute intervals in both directions Monday – Saturday reducing to 20-minute intervals on Sundays. A reduced frequency operates during the early morning and at night.

Route 60 links the site to Sir John Rogerson's Quay in the City Centre via Heuston Station and to the Luas Red Line at the Red Cow via Clondalkin. Services operate at 60-minute intervals in both directions.

Bus stops for these services are located on Park West Avenue, Barnville Walk and Cedar Brook Way.

Passenger Capacity

Based on a review of the fleet of double deck buses operated by Dublin Bus in the area of the proposed development, the average capacity of each bus including standing passengers was found to be 87 passengers per bus.

Current timetables for Routes G1 and 60 provide for 5 buses per hour in each direction with a total capacity of 435 passengers per hour in each direction (5 buses x 87 passengers per bus).

For an assessment of future capacity to cater for future demand post development, See Section 14.6.4 of this TTA.

Nangor Road

Other contiguous services continue to be provided by Dublin Bus Route 151 along Nangor Road at a walking time of 16 minutes (1.3km) from the proposed development. Services operate at 20-minute intervals in both directions Monday – Saturday reducing to 30 minute intervals on Sundays. A reduced frequency operates during the early morning and at night.

Future Changes

As part of the Bus Connects project, the existing Route 151 is due to be replaced by Routes D1 and D3.

14.2.7 Existing Car-Sharing Service

An existing car sharing base operated by GoCar Ireland is located at The Crescent Building in the Park West Business Park. This base is located in the Information Centre car park off Yeats Way at a walk time of 8 minutes (600 metres) from the subject site.

14.2.8 Existing Cycle Facilities

The existing cycle facilities in the area of the subject site comprise cycle tracks on both sides of Park West Road, partly on-road and partly off-road.

14.2.9 Existing Pedestrian Facilities

Existing pedestrian facilities in the area of the subject site comprise footpaths on both sides of Park West Road, Barnville Walk, Barnville Place, Cedar Brook Walk and Cedar Brook Way.

There are no footpaths on Cedar Brook Avenue which is primarily a residential parking area.

Pedestrian crossing facilities are provided at the following locations:

- Junction 1: Uncontrolled Crossing (Cloverhill Road / Park West Avenue)
- Junction 4: Signalised Crossing (Park West Avenue / Barnville Walk).

14.2.10 Existing Rail Services

Existing Station

Park West & Cherry Orchard Station which opened in 2008, is an intermediate station on the Kildare Commuter Line with regular commuter and inter-city services including stopping services from Portlaoise and Newbridge to Heuston Station and from Hazelhatch & Celbridge to Grand Canal Dock.

Services

In common with established practice and other transportation studies and reports, the TTA for Cherry Orchard Point – Phase 2 assessed the impact of the proposed development on the rail service during the AM peak.

The journey time to Heuston is some 9 - 11 minutes and the journey time to Grand Canal Dock is some 40 – 45 minutes. There are 5 existing services from Park West and Cherry Orchard to the City Centre during the AM Peak Hour 8 – 9.

At other periods outside the AM Peak, rail services at Cherry Orchard & Park West are provided between Hazelhatch and Grand Canal Street at hourly intervals.

Rail Mode Share

Section 2.9.1 of the Park West - Cherry Orchard Local Area Plan 2019 advised that

'In examining the Census data and the breakdown of sustainable modes of transport, rail represent a very low) 2%. This is despite its central location and despite 2,550 people having access to the station within a 15-minute walk.

Passenger Capacity – AM Peak

Commuter services in both directions from at Park West & Cherry Orchard are provided by four / eight car 29000 class railcar sets each with capacity of 640 / 1,280 passengers per set or a 6-car High Capacity Inter City railcar set with a capacity of 406 passengers.

For an assessment of future capacity to cater for future demand post development, See Section 14.6.3.

14.2.11 Access to Services and Amenities

Overall, walking and cycling access to the various services and amenities in the area of the subject site is good for some facilities but not so good for others.

Access is good to the rail based public transport serving an east -west corridor. Access is moderate to the bus based north-south corridor.

Access also is good to local amenities and community services.

However, access is not good to retail or other commercial services with the nearest retail provision located to the northeast in the Ballyfermot area at a walking distance of 20 – 40 minutes or a cycling distance of up to 10 minutes.

The approved supermarket at Cherry Orchard Point is expected to make good this deficit.

14.2.12 Road Collision Statistics

Road traffic statistics for the area around the subject site are normally available on the Road Safety Authority (RSA) website www.rsa.ie.

However, at the time of writing in January 2025, the RSA were in the process of reviewing their road traffic collision (RTC) data sharing policies and procedures. As a result, the RSA were unable to share record-level RTC data pending completion of this review.

14.3 Planned Future Receiving Environment

14.3.1 BusConnects

Service improvements arising from the network redesign by Bus Connects in the Ballyfermot / Clondalkin area had only been partly implemented at the time of writing in January 2025.

Services G1 and 60 illustrated on Figure 14.5 are currently operational. In the near future, both are expected to be operated by the electric buses.

Also in the near future, services D1 and D3 on Spine Route D are expected to replace Dublin Bus Route 151 along the Nangor Road.

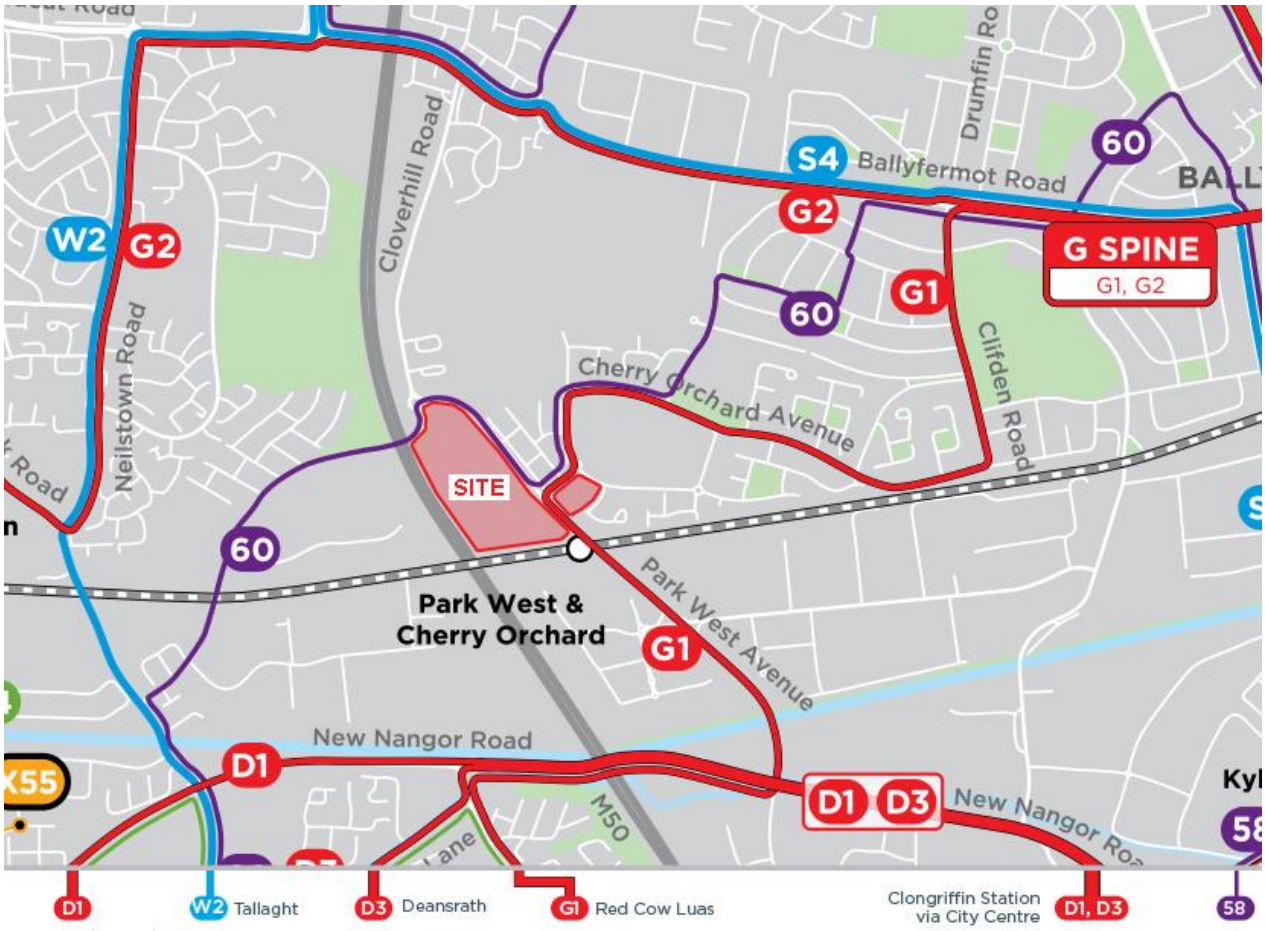


Figure 14.5 Extract from Bus Connects Map for the Ballyfermot/Clondalkin Area

14.3.2 Pedestrian and Cycling Facilities

There are a number of new pedestrian or cycling facilities proposed in the area of the subject site including: -

- New / improved off road pedestrian and cycle facilities along Ballyfermot Road as part of the Bus Connects Liffey Valley to City Centre Core Bus Corridor works.
- New / improved pedestrian and cycle facilities within the adjacent City Edge development area immediately to the east and south of the subject site
- New cycle facilities as part of the Grand Canal Greenway.

New and improved pedestrian and cycle facilities within the curtilage of the subject site are described later in this chapter.

14.3.3 Rail Improvements

The DART Expansion Project proposed by Irish Rail will deliver new electrified rail services between the existing DART network in the City Centre City Centre and Hazelhatch. The service through Park West & Cherry Orchard will provide an increased service frequency and enhanced passenger capacity.

The DART + SouthWest project illustrated in Figure 14.6 will provide:

- An increase in train frequency from the current 12 trains per hour per direction to 23 trains per hour per direction on this corridor.
- A quadrupling of passenger capacity from 5,000 passengers per hour per direction to 20,000 per hour per direction.

An application for a Railway Order for the DART+ South West project was submitted to An Bord Pleanala in March 2023 and approved by An Bord Pleanala in November 2024 (ABP Ref: 316119).

The works proposed in the Railway Order application include

- 20km of electrification and re-signalling of the Hazelhatch and Celbridge Line to Heuston and the south city via Phoenix Park Tunnel
- Construction of a new station at Heuston West to serve the community of Clancy Quay and Island Bridge
- Four-tracking of the rail line from Park West and Cherry Orchard Station to Heuston to enhance capacity
- Civil, bridge and ancillary works as necessary to accommodate the project
- Upgrading of the Phoenix Park Tunnel
- New electric DART carriages for the DART+ Programme will be deployed on Hazelhatch and Celbridge services.

Works at Park West and Cherry Orchard will include the erection of infrastructure to support the electrification of the commuter rail services through the station.

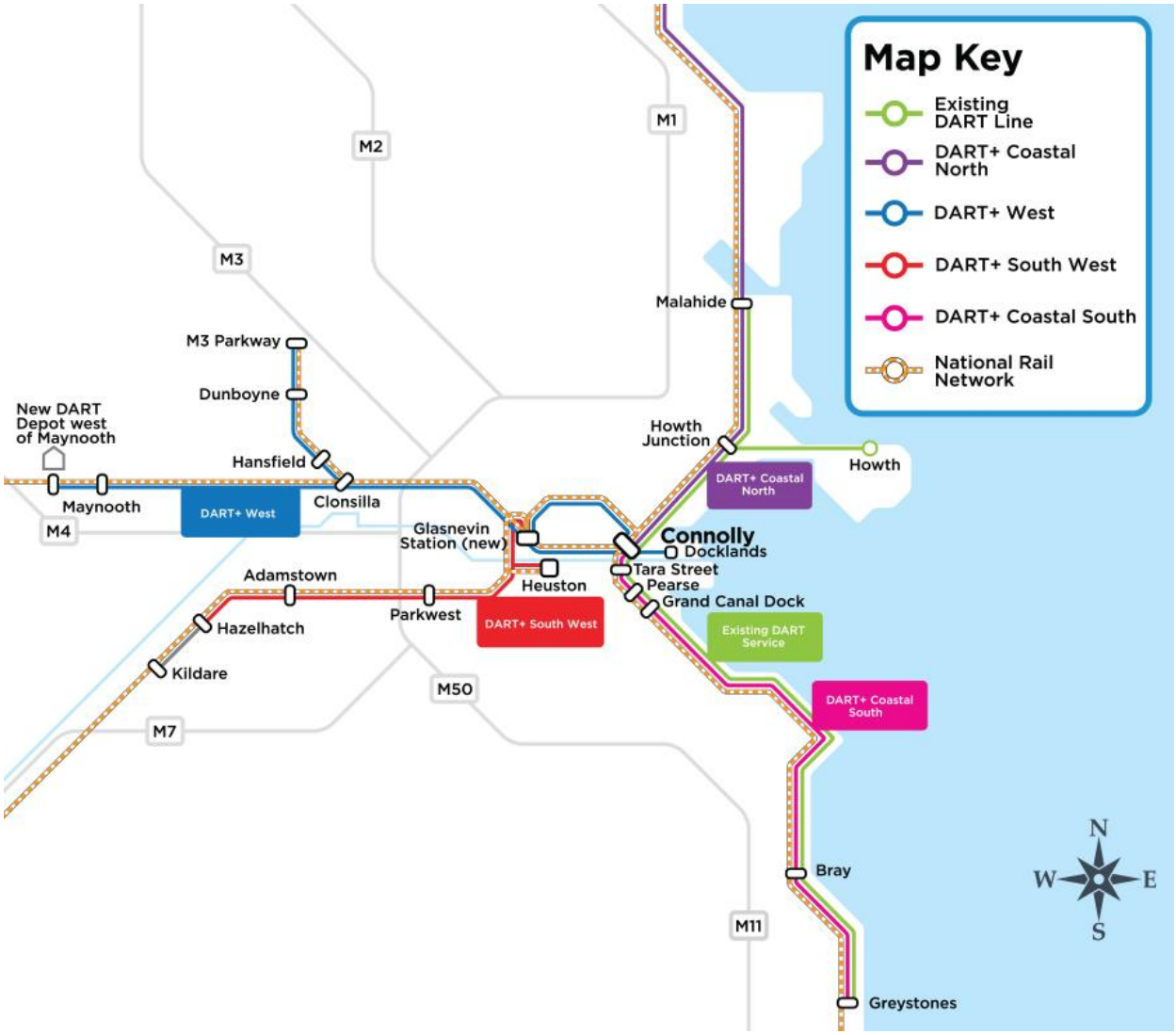


Figure 14.6 Extract from Irish Rail DART + Map

14.3.4 Car Sharing

A total of 14 No. new car sharing facilities are proposed in the area of the subject site as part of the adjacent Park West SHD in addition to the 11 new spaces approved for Phase 1 of the subject site.

14.3.5 Bleeper Bike

As part of the development of Site 4, it is proposed that the operating zone for the Bleeper Bike service be extended to include Cherry Orchard Point.

14.3.6 Roads and Junctions

Proposals for new or improved roads in the area of the subject site comprise the Cherry Orchard Link Roads shown as a line of black dots on Map D of the Dublin City Development Plan 2022 – 2028. This proposal does not affect or impact on the subject site.

The applicants are not aware of any new other road or junction works proposed in the area of the subject site other than the improvements on the Clondalkin to Drimnagh Core Bus Corridor being promoted by Bus Connects along the Nangor Road. This Corridor was approved by An Bord Pleanala in November 2024 (ABP 317070-23). It is located at a walking distance of some 16 minutes (1.3km) from the subject site.

14.4 Characteristics of Proposed Development

14.4.1 Approved Development – Phase 1

A planning application for Phase 1 of the proposed development on Site 4 at Cherry Orchard was lodged by The Land Development Agency (LDA) with An Bord Pleanala on 1st December 2023 and approved in July 2024 (ABP-318607-23).

The application, which is illustrated in Figure 14.7, was for a residential led mixed use scheme comprising:

- A total of 708 residential apartments in a number of blocks.
- A total of 4,790 sqm non-residential development comprising
    - Supermarket (2,523 sqm).
    - Retail Units (373 sqm)
    - Creche with accommodation for 25 staff and 104 children (672 sqm)
    - Community Facilities (1,222 sqm)
- A total of 444 car parking spaces including 222 spaces equipped with fully functional EV Charging Point(s) and the remaining 222 spaces designed to facilitate the relevant infrastructure to accommodate future EV charging.
- Motorcycle parking (22 spaces).
- A total of 1,618 bicycle parking spaces

The permitted development includes vehicular access from four junctions on Park West Avenue.

The planning permission for the proposed development approved by An Bord Pleanala on 9th July 2024 included 24 conditions.

Condition 18(a) requires that the residential car parking spaces shall be permanently allocated to residential use.

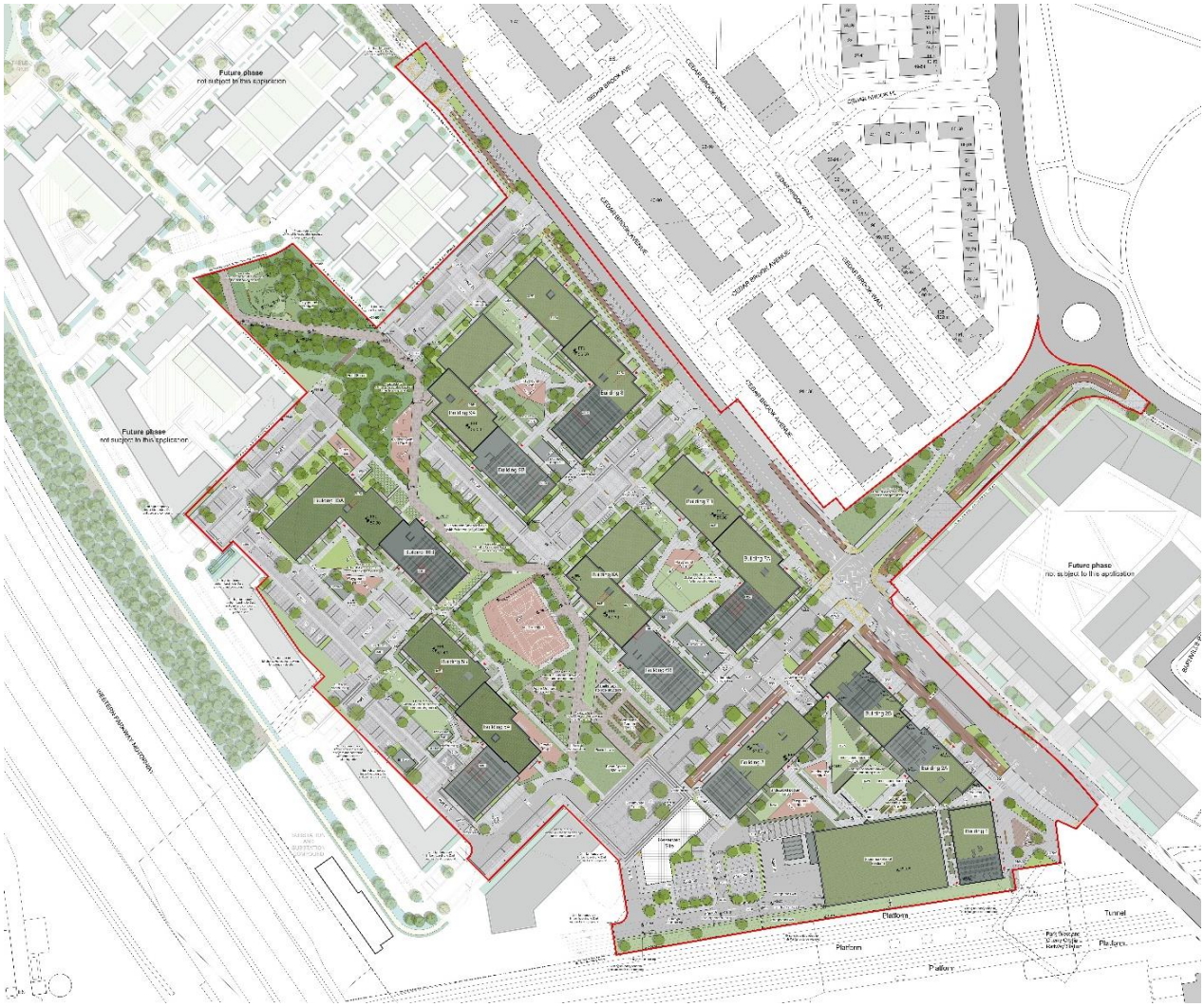


Figure 14.7 Approved Site Layout – Phase 1

14.4.2 Proposed Development – Phase 2

The proposed development of Phase 2 on Site 4 at Cherry Orchard Point will comprise:

- 137 residential units comprising
  - 13 x 2 bed houses
  - 88 x 23 bed houses
  - 18 x 2-bed apartments
  - 18 x 3-bed duplex
- A total of 141 car parking spaces comprising
  - 27 on-curtilage spaces for the houses.
  - 107 on-street spaces for the houses, apartments and duplex.
  - 3 on-street accessible spaces for the houses, apartments and duplex.
  - 4 on-street accessible spaces
- A total of 306 cycle parking spaces
  - 194 on-curtilage spaces for the houses.
  - 90 spaces for the apartments and duplex.
  - 4 cargo spaces for the apartments and duplex.
  - 18 spaces for visitors

The layout of the proposed development (Phase 2 of the overall development) is illustrated on Figure 14.8.

Figure 14.8 Proposed Site Layout – Phase 2

14.4.3 Future Development – Phase 3

The future development of Phase 3 on Site 5 at Cherry Orchard Point is expected to comprise: -

- A total of 254 residential apartments in 6 blocks.
- A total of 1,200 sqm non-residential development comprising
  - Retail (800 sqm).
  - Community (400 sqm)
- A total of 142 car parking spaces comprising
  - 127 spaces for apartments.
  - 3 spaces for retail.
  - 2 spaces for car sharing (GoCar).
- A total of 544 cycle parking spaces with 533 spaces for residents / visitors and 11 spaces for customers at the retail.

14.4.4 Future Development – Phase 4

The future development of Phase 4 on Site 4 at Cherry Orchard Point is expected to comprise: -

- Commercial units in 4 blocks (16,310 sqm).
- A total of 82 number car parking spaces.
- A total of 300 cycle parking spaces with 218 spaces for staff and 82 spaces for visitors.

14.4.5 Overall Development

The overall development of Phases 1, 2, 3 and 4 on Sites 4 and 5 at Cherry Orchard Point is expected to comprise: -

- 1,099 residential units comprising: -
  - 101 number Houses.
  - 18 Duplex
  - 980 number Apartments (708 + 18 + 254 + 0).
- Total non-residential development of 22,300 sqm comprising:
  - 1 x Supermarket (2,523 sqm).
  - 3 x Retail (222 sqm + 151 sqm + 800 sqm + 0).
  - 1 x Creche (672 sqm).
  - 4 number Commercial (16,310 sqm).
  - 2 x Community (1,222 sqm + 400 sqm).
- 799 car parking spaces (444 + 141 + 132 + 82).
- 2,768 cycle parking spaces (1,618 + 306 + 544 + 300).
- 22 motorcycle parking spaces.

14.4.6 Design Population

The approved Phase 1 development comprises a total of 708 apartments with 1,174 bedrooms and a design population of 2,247 persons.

The proposed Phase 2 development will comprise a total of 137 residential units (101 x houses, 18 x apartments and 18 x duplex) with a total of 380 bedrooms and a design population of 645 persons.

14.4.7 Access Points

Access to the proposed development on Site 4 is proposed from four junctions on Park West Avenue as shown on Figures 14.7 and 14.8.

Three of the four junctions on Park West Avenue will be at-grade with priority control. Sightlines at these junctions will comply with the requirements of DMURS.

The fourth junction will from an at-grade signalised crossroads with Barnville Park. The signals at this junction will incorporate cycle and pedestrian phases.

Access to Site 5 will be from an at-grade priority junction to be located on Barnville Park.

Access to the cycle parking provided is shown on the architectural and engineering drawings included in the planning application.

14.4.8 Internal Layout

The proposed internal layout on Site 4 Phase 2 including roads, cycle facilities and pedestrian facilities.is shown in Figure 14.8.

The pedestrian and cycle access to the proposed development have been integrated with the surrounding road network.

The overall development provides for upgraded footpaths and cycle tracks on the Park West Avenue together with pedestrian and cycle phases in the signalised junction at Barnville Walk.

14.4.9 Proposed Car Parking

A total of 141 number car parking spaces will be provided in Phase 2 comprising: -

- 27 spaces on curtilage
- 110 spaces on-street
- 4 accessible spaces on-street.

The locations of the car parking spaces are shown on Figure 14.8 and on the architectural and engineering drawings included with the planning application.

14.4.10 Car Park Management

Permits for access by residents without on-curtilage parking to the 110 private on-street spaces will be issued by the Management Company with not more than one permit per unit.

For residents who require occasional car use without the need to own a vehicle, Phase 1 includes 11 spaces permanently allocated for car sharing with vehicles supplied by GoCar or similar company.

14.4.11 Proposed Cycle Parking

A total of 306 cycle parking spaces are proposed to be located as follows:

- 194 long stay spaces for houses with no rear access
- 90 long stay spaces for apartments and duplex.
- 4 cargo spaces for the apartments and duplex.
- 18 short stay spaces for visitors

The locations of these spaces are shown on the architectural and engineering drawings included in the planning application.

14.5 Predicted Impacts

14.5.1 Predicted Traffic Impact - Construction Stage

Construction Traffic Access Routes

Construction traffic routes to the proposed development are facilitated by the high standard of the existing road network in the surrounding area.

The primary construction access route is expected to be from the R134 Nangor Road via Park West Avenue. The secondary construction access would be from Ballyfermot Road / Coldcut Road via Cloverhill Road and Park West Avenue. See Figure 14.9.

At the time of writing in January 2025, both of the proposed construction access routes are fully operational and open to traffic including road markings and traffic signals.

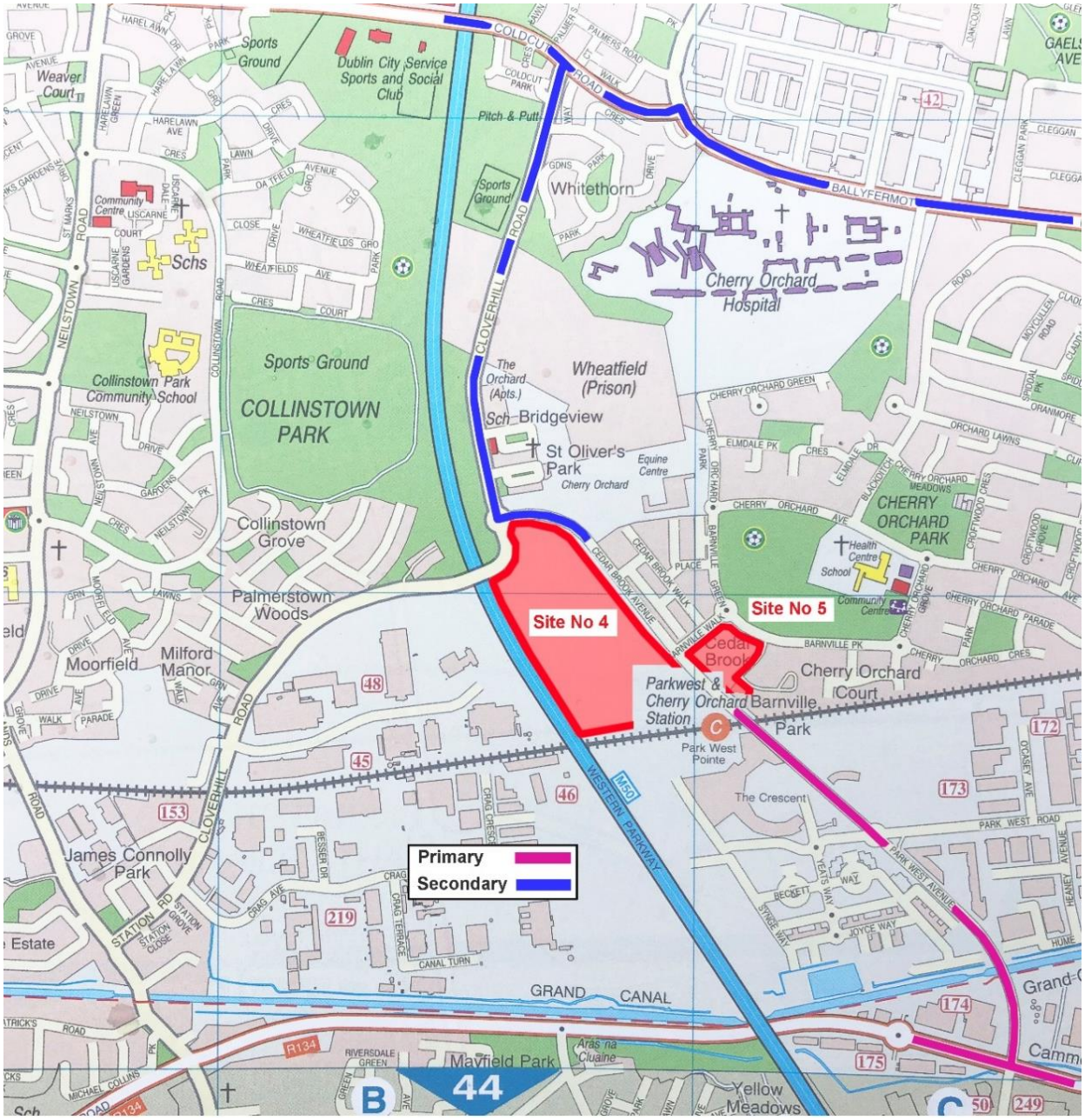


Figure 14.9 Construction Traffic Access Routes

Construction Traffic Volumes

During the construction stage of the proposed development, some construction traffic movements will be undertaken by heavy goods vehicles, though there will also be vehicle movements associated with the appointed contractors and their staff.

An estimate of the day-to-day traffic movements associated with the construction activities, based on experience of similar sites, considered that the number of construction related heavy goods vehicle movements to and from the application site will be no more than 3 arrivals/departures per hour, with the majority of the trips undertaken outside the network AM and PM peak hours. In addition, traffic movements generated during the earthworks phase of the development are predicted to generate an average of 24 arrivals and 24 departures per working day equivalent to 3 arrivals and 3 departures per hour.

Allowing for other concurrent on-site activities during the same period particularly completion and fit-out to Phase 1, the construction related truck movements are expected to peak at 5 arrivals and 5 departures per hour during a 10-hour day between 08.00 and 18.00.

The general workforce is likely to be c. 100 in number, reaching up to 150 persons at peak times. It is estimated that c. 80% of the workforce will travel to/from the site by a vehicle and will carpool on average 2 workers per vehicle. As a result, the site is expected to attract/generate 40-60 number of cars / vans per day, with up to 50% the trips being undertaken outside the AM and PM peak hours.

Based on the above, it is estimated that the daily construction traffic movements during the AM Peak Hour 08.00 – 09.00 is predicted to be:

- Car / Van 20 arrivals and 3 departures per hour
- HGV: 6 arrivals and 6 departures per hour
- Total 35 movements per hour.

The number of construction vehicle movements is low compared to the number of vehicular trips expected to be generated by the proposed development during the operational phase and most of the trips will occur outside of the traditional peak hours.

Parking During Construction

Off-street parking for construction staff on Phases 1 and 2, if constructed concurrently, will be provided on the Phase 3 site where a construction carpark will be created at the start of works by the laying of a temporary surface for vehicles. Parking will not be provided for construction staff on public roads. Construction staff will be encouraged by their employer as part of the Workplace Travel Plan to reduce the use of the car for the journey to work by car sharing and / or travelling by public transport. Workers will be encouraged to keep themselves informed about the public transport options and active mode facilities provided in the surrounding area.

Predicted Traffic Impact - Construction Stage

The traffic movements predicted to be generated during the construction stage represent some 3.1% of the surveyed traffic flow of 1,103 vehicles per hour on Park West Avenue during the AM Peak. This increase is less than the 10% threshold set out in the *Traffic and Transport Assessment Guidelines* published by TII in May 2014 and as a result, no further transportation assessment is required.

The number of construction vehicle movements is low compared to the number of vehicular trips expected to be generated by the proposed development during the operational phase. It should be noted that most of such trips will occur between 10am and 5pm outside of the traditional peak hours, and it is not considered that this level of construction traffic would result in any operational problems.

Summary of Traffic Impacts – Construction Stage

Having regard to the predicted impacts described above, it can be concluded that no significant impact on roads and traffic will arise from the Construction Stage of the proposed development at Cherry Orchard Point.

14.5.2 Predicted Traffic Impact – Operational Stage – Roads and Junctions

The traffic impact of the Cherry Orchard Point on the surrounding road network was assessed by modelling the projected traffic movements in future years on the surrounding road network including the junctions.

Future Base Traffic Flows

The methodology adopted for the determination of base flows for future years is described below.

Firstly, the AM and PM peak traffic hours were extracted from the traffic survey carried out by IDASO in November 2022.

Secondly and in line with the '*Transport Assessment Guidelines (May 2014)*', the years to be assessed were selected to be:

- 2022 Base Year:

  2027 Opening Year:
- 2032 Design Year (Opening Year + 5)
- 2042 Future Year (Opening Year + 15)

Thirdly, the base traffic flows for the selected future years were obtained by factoring up the 2022 baseline traffic flows using factors from the TII Publication – *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections* (May 2021).

The Central Growth Rate factors extracted from Table 6.1 of that publication are set out below.

- 2022 – 2027: 1.084
- 2022 – 2032: 1.149
- 2022 - 2042: 1.201

To quantify the levels of traffic in the area of the subject site, a classified traffic survey on the roads in the area of the proposed development was carried out by IDASO on Tuesday 8th November 2022 over a period of 24 hours. During the two years since the survey, there have been no developments in the surrounding area that would generate a significant increase or decrease in the traffic flow on the local road network. Natural changes in traffic flow are addressed by the application of factors from the TII Publication – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2021).

For the purpose of cumulative impact, the base flows for the seven selected junctions for 2027, 2032 and 2042 included traffic forecast to be generated by the contiguous Park West development 3.

Trip Generation

Trip generation for Site 4 and Site 5 has been estimated based on the trip rates obtained for each proposed land use category from the Trip Rate Information Computer System (TRICS) modelling software database. TRICS is the national standard of trip generation and analysis in Ireland and UK. For the purpose of this TTA, trip generation for the Commercial units has been calculated based on the 82 car parking spaces proposed to serve them.

The overall quantum of residential development used for trip generation for Phases 1, 2 and 4 in the TTA for Cherry Orchard Point – Phase 2 was conservatively taken as 861 units as assessed in the TTA prepared by Waterman Moylan for Phase 1 in September 2023 rather than the 845 units described in the Phase 2 TTA on the basis that the quantum of future development in Phases 3 and 4 has not been confirmed to date.

The quantum of development assumed for Phase 3 on Site 5 was 254 units.

Based on a total of 862 residential units, 16,310 sqm Commercial and supporting development, the total number of peak hour trips generated by the development of Site 4 is expected to be 413 in the AM and 459 in the PM Peak.

Based on a total of 254 residential units and supporting development, the total number of peak hour trips generated by the development of Site 5 is expected to be 108 in the AM and 130 in the PM Peak.

Trip Distribution

For the purpose of the Phase 2 TTA, it was assumed, on the basis of the characteristics of the receiving environment and experience of similar developments, that the future trip distribution for Phases 1, 2 and 4 on Site 4 will be the same for both the AM and PM trips.

The trip distribution assumed for Site 4 the AM and PM Peaks was based on the assumption that: -

- 35% would travel in a northerly direction travel north to/from the proposed development.
- 25% would travel in an easterly direction to/from the proposed development.
- 40% will travel in a southerly direction to/from the proposed development.

The trip distribution assumed for Site 5 the AM and PM Peaks was based on the assumption that: -

- 25% would travel in a northerly direction travel north to/from the proposed development.
- 240% would travel in an easterly direction to/from the proposed development.
- 35% will travel in a southerly direction to/from the proposed development.

Development Generated Traffic

The predicted number of trips in the AM Peak Hour is 194 inbound and 219 outbound from Site 4 and 43 inbound and 65 outbound from Site 5.

The predicted number of trips in the PM Peak Hour is 216 inbound and 243 outbound from Site 4 and 72 inbound and 58 outbound from Site 5.

Post Development Traffic Flows

The post development traffic flows for 2027, 2032 and 2042 were obtained by adding the distributed trips generated by the proposed development to the Base Flows, These post development traffic flows were then used in the assessment of the sr4urrioundung junctions.

Modelling Software

There are various modelling software packages available to assess every type of junction. Waterman Moylan uses ARCADY, TRANSYT and PICADY to analyse roundabouts, signalised and priority junctions, respectively.

ARCADY is a software for modelling roundabouts. This programme utilises roundabouts geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the roundabout.

TRANSYT (Traffic Network Study Tool) software is a widely accepted software for modelling signalled controlled junctions. This programme utilises the phases input by the user and optimises their timings over a cycle time. The outputs of a TRANSYT assessment include a Degree of Saturation percentage (DOS%) figure and queue length for each link on the road network.

PICADY is a software for modelling priority-controlled junctions. This programme utilises junction's geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the junction.

Future Traffic

The future traffic used in the assessment of the surrounding road network during the Operational Stage has been based on the trips generated by the following developments: -

- The approved development of Phase 1 on Site 4.

- The proposed development of Phase 2 on Site 4.
- The future development Phase 3 on Site 5.
- The future development Phase 4 on Site 4.
- The contiguous development at Park West SHD on Site 6.

The traffic from these developments were not included in the traffic survey as they were all still at the pre-construction stage.

Junctions Assessed

The following junctions on the surrounding road network were assessed for the Operational Stage:

- Junction 1: Cloverhill Road / Park West Avenue / Station Road.
  Junction 1 is an existing Three-arm Roundabout.
- Junction 2: Park West Avenue / Cedar Brook.
  Junction 2 is an existing Priority T-junction proposed to be upgraded to a Signalised Crossroads.
- Junction 3: Park West Avenue / Cedar Brook Walk.
  Junction 3 is an existing Priority T-junction proposed to be upgraded to a Priority Staggered Junction.
- Junction 4: Park West Avenue / Cedar Brook Way.
  Junction 4 is an existing Signalised T-junction proposed to be upgraded to a Signalised Crossroads.
- Junction 5: Unnamed Road / Cedar Brook Way.
  Junction 5 is an existing Three-arm Roundabout.
- Junction 6: Barnville Park / Unnamed Road.
  Junction 6 is an existing Priority T-junction.
- Junction 7: Park West Avenue / Park West Road.
  Junction 7 is an existing Four-arm Roundabout.
- Junction 8: Park West Avenue / Site Access.
  Junction 8 is a proposed Priority T-junction.

Locations of Junctions

The locations of the assessed junctions are shown in Figure 14.10.

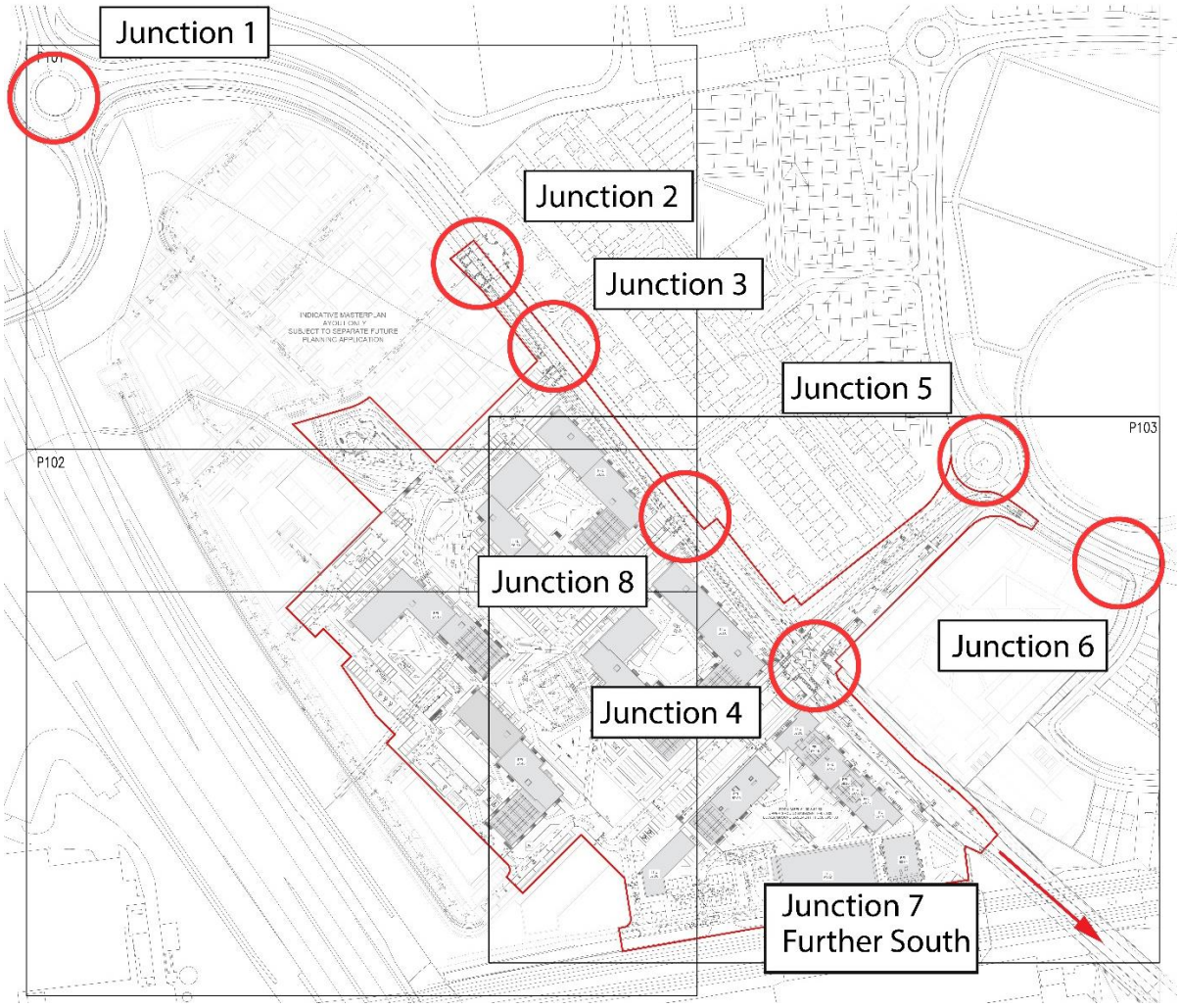


Figure 14.10 Locations of Junctions Assessed

Percentage Traffic Impact

The extent of the traffic impact from the proposed development was determined by initially checking where generated traffic would exceed 10% of the 2022 baseline traffic flow on the adjoining road or 5% on the road where congestion exists, or the location is sensitive. This is in line with the *Traffic and Transport Assessment Guidelines* published by TII in May 2014. The predicted increase in traffic increase at all of the assessed junctions is greater than 10% as shown in Table 14.1. Therefore, further assessment was required.

The proposed / upgraded junctions have been modelled for the DO-SOMETHING scenarios, whilst the existing junctions were modelled for the BASELINE and DO-NOTHING scenarios.

Table 14.1 Increase in Traffic Flows at Junctions

Junction	AM Baseline	PM Baseline	Proposed Development AM	Proposed Development PM	% Increase AM	% Increase PM
Junction 1	1,404	1,204	177	200	13%	17%
Junction 2	1,040	991	260	291	25%	29%
Junction 3	1,059	1,003	260	291	25%	29%
Junction 4	1,164	1,153	401	452	34%	39%
Junction 5	355	457	184	212	52%	46%
Junction 6	109	137	129	153	118%	112%
Junction 7	1,964	1,707	203	229	10%	13%
Junction 8	893	834	280	314	31%	38%

Results of Junction Modelling

Notwithstanding that the traffic impact from the proposed development is predicted to be 10% or greater at all of the seven road junctions included in the traffic modelling undertaken for this project, the results of the traffic modelling predict that all of assessed junctions, except Junctions 4 and 7, will operate within capacity in the AM and PM peaks hours with the proposed development in place in the Opening Year 2027 through the Design Year in 2032 to the Future Year 2042.

For the DO-NOTHING scenario, Junction 4 is predicted to operate within capacity and will continue to do so for during 2027, 2032 and 2042, should the proposed development not take place.

For the DO-SOMETHING scenarios, Junction 4 is predicted to operate above capacity during 2027, 2032 and 2042 in both peak hours with the inclusion of the proposed development trips.

Junction 4 has been designed in compliance with current national and local policies which prioritise cycle and pedestrian movements over road traffic. The restricted capacity proposed at Junction 4 is largely due to the application of these policies when an alternative design for traffic movements albeit with longer crossing times for pedestrian and cyclists could bring the junction within capacity for 2027, 2032 and 2042.

Junction 4 was included in the planning application for Phase 1 for which permission was approved by ABP in July 2024 (ABP-318607-23).

For the DO-NOTHING scenario 2027, Junction 7 is indicated to operate marginally above capacity in the PM Peak Hour even without the inclusion of the proposed development trips. This finding is consistent with Section 4.5.2 of the LAP which notes that the road network serving Park West – Cherry Orchard experiences traffic congestion in peak hours in areas such as Park West Avenue. The Park West – Cherry Orchard LAP also include provision for capacity enhancements, key new connections and enhanced public transport.

For the DO-SOMETHING scenario and with the inclusion of the proposed development trips, the results of the assessment predict that Junction 7 will continue to operate within capacity up to and including 2042 during the AM Peak Hour. During the PM Peak Hour, RFC is predicted to exceed capacity with queues and delays on Park West Road (W) during the PM Peak Hour departures.

In summary and as part of the ongoing implementation of the Park West – Cherry Orchard LAP, the results of the assessment predict that Junction 7 will require upgrading, most likely to a signalised crossroads, about 2027 with or without development at Cherry Orchard Point.

Summary of Predicted Impacts – Operational Stage – Roads and Junctions

Having regard to the predicted impacts described above, it can be concluded that no significant impact on roads and traffic will arise from the Operational Stage of the proposed development at Cherry Orchard Point.

14.5.3 Predicted Traffic Impact – Operational Stage - Rail Services

The traffic impact of the Cherry Orchard Point on the surrounding public transport network and services was assessed by modelling the projected traffic movements in future years on the surrounding road network including the junctions and by reviewing the future passenger loadings in relation to capacity for public transport, both rail and bus.

Passenger Demand

Based on a design population of up to 3,000 persons (2,247 persons for Phase1 and 645 persons for Phase 2) and a modal spilt for rail of 20 – 30%, the peak demand from the proposed development for travel by rail is expected to be 600 – 900 passengers per day.

(3,000 persons x 20 – 30% split = 600–900 passengers per day).

Based on the location of Park West, it is expected that 75% of these passengers can be expected to travel eastbound towards the City Centre with 50% travelling during the AM Peak Hour giving a projected demand of 168 –253 passengers per hour eastbound during the AM Peak Hour.

(600 - 900 passengers per day x 50% AM Peak x 75% eastbound = 225–338 passengers per hour).

Train Capacity

There are five existing rail services departing Park West & Cherry Orchard during the AM Peak Hour 08.00 – 09.00. Commuter services in both directions at Park West & Cherry Orchard are provided by four / eight car 29000 class railcar sets each with capacity of 640 / 1,280 passengers per set or a 6-car High Capacity Inter City railcar set with a capacity of 406 passengers.

The use of the 29000 class railcar sets in lieu of the Inter City railcar sets on one of more of the five services to the City Centre between 08.00 and 09.00 would significantly increase the overall passenger capacity for commuters.

Demand v Capacity

The demand of 225 –338 passengers per hour during the AM Peak Hour is well below the minimum capacity of 2,030 persons per hour provided between 08.00 and 09.00 towards the City Centre by five 6-car High Capacity Inter City railcar sets each with a capacity of 406 passengers.

The conclusion of this assessment is that the future capacity of the rail service at Park West and Cherry Orchard will be more than sufficient to cater for future passenger demand from Cherry Orchard Point even without the additional capacity that can readily be provided by the rostering of 29000 class railcar sets in lieu of the Inter City sets prior to commissioning of the high capacity DART+ South West services.

Summary of Predicted Impact – Operational Stage – Rail Services

Having regard to the predicted impacts described above, it can be concluded that no significant impact on rail based public transport services will arise from the Operational Stage of the proposed development at Cherry Orchard Point.

14.5.4 Predicted Traffic Impact – Operational Stage – Bus Services

Passenger Demand

Based on a design population of up to 3,000 persons (2,247 persons for Phase 1 and 645 persons for Phase 2) and a modal spilt for bus of 15 – 25%, the peak demand from the proposed development for travel by bus is expected to be 600 – 900 passengers during the AM Peak Hour.

(3,000 persons x 15 – 25% split = 450–750 passengers per day).

Based on the location of Park West, it is expected that 50% of these passengers can be expected to travel towards the City Centre with 50% travelling during the AM Peak Hour.

(450– 750 passengers per day x 50% AM Peak Hour x 50% northbound = 112 – 188 passengers per hour).

Bus Capacity

Based on a review of the fleet of double deck buses operated by Dublin Bus in the area of the proposed development, the average capacity of each bus including standing passengers was found to be 87 passengers per bus.

Current timetables for Routes G1 and 60 provide for 5 buses per hour in each direction with a total capacity of 435 passengers per hour in each direction (5 buses x 87 passengers per bus).

Demand v Capacity

The demand of 112 – 188 passengers per hour during the AM Peak Hour is well within the existing capacity of 435 passengers per hour provided by the current timetable (5 buses x 87 passengers per bus).

The capacity of the bus services used in this review is the existing startup schedule on the new Bus Connects routes. These schedules are expected to be increased by Dublin Bus through timetable changes as demand increases.

The capacity used in this TTA is for buses passing Park West & Cherry Orchard Station only and does not include contiguous services on Nangor Road or Ballyfermot Road a relatively short walk from the proposed development.

The conclusion of this assessment is that the future capacity of the bus service at Park West and Cherry Orchard will be more than sufficient to cater for future passenger demand from Cherry Orchard Point even without the benefit of the additional services which can be provided by increased frequency as passenger demand builds up.

Summary of Predicted Impact – Operational Stage – Bus Services

Having regard to the predicted impacts described above, it can be concluded that no significant impact on bus based public transport services will arise from the Operational Stage of the proposed development at Cherry Orchard Point.

14.6 Do Nothing Scenario

Sites 4 and 5

As set out in Section 13 of the Dublin City Development plan 2022 – 2028, Dublin City Council have zoned the subject site Z14 *Strategic Development and Regeneration Area* (SDRA).

SDRA 4 Park West / Cherry Orchard guided the preparation of a new Local Area Plan (LAP) for Park West / Cherry Orchard, which came into effect in November 2019. The objective of the LAP is to deliver private, council and affordable housing, schools, sports and recreational facilities, retail facilities and employment opportunities in consultation with local community and youth services.

Should the proposed development not take place, the subject site will continue to comprise undeveloped unoccupied greenfield lands with no traffic movements in or out and a key objective of the Development Plan will not be achieved. Background traffic will however continue to increase in line with the TII Travel Demand Predictions for the Dublin area.

Given the location and zoning of the subject site, it is reasonable to assume that a similar development, with a potentially more intensive requirement for vehicular trips, is likely to be established on this site at some stage in the future.

The benefits from the proposed development at Cherry Orchard Point including junction upgrade works, pedestrian routes, cycle paths, etc. would improve the current setting. The Do-Nothing scenario would result in no improvement measures or provision of residential accommodation.

General Traffic

Should the proposed development not take place, background traffic on the road network in the surrounding area will continue to increase in line with the TII Travel Demand Predictions for the Dublin area.

Junction 7

Junction 7 is an existing four-arm roundabout located at the junction of Park West Avenue and Park West Road south of the railway bridge. There are no proposals to upgrade this junction.

For the DO-NOTHING scenario, even without the inclusion of the proposed development trips, the results of the junction assessment predicted that Junction 7 will continue to operate within capacity in the AM Peak Hour up to 2042 but not so in the PM Peak Hour. During the PM Peak Hour, Junction 7 is predicted to reach capacity in 2027 and exceed capacity in 2042 on Park West Road (W) during the PM Peak Hour departures.

In summary, Junction 7 will require upgrading by Dublin City Council as part of the ongoing implementation of the Park West – Cherry Orchard LAP, most likely to a signalised crossroads, about 2027 with or without development at Cherry Orchard Point.

An assessment of Junction 7 was included in the planning application for Phase 1 for which permission was approved by ABP in July 2024 (ABP-318607-23).

14.7 Potential Cumulative Impacts

For the purpose of cumulative impact, the Traffic and Transport Assessment Guidelines, issued by TII in May 2014 require that *'Traffic and Transport Assessment should consider all committed developments within the vicinity of the site. This includes sites which have previously been granted planning permission but which are yet to become operational as well as any planning applications that have been submitted but have yet to be determined.'*

Cumulative traffic impacts may arise where there are a number of existing or proposed developments, which may affect the traffic at this development and the traffic flows in the surrounding area.

Scoping for TTA

The Scoping for TTA prepared by Waterman Moylan in September 2022 identified that, in addition to the trips that will be generated by the future development of Sites 4 and 5, the trips that would be generated by the approved Park West SHD development on Site 6 should be included in the traffic assessment for the subject site.

Approved Development on Site 6

Planning permission for a residential development of 750 units and 552 car parking spaces (Including 14 spaces for car sharing) on a 9.4 ha site at Park West, Dublin 12 was granted by An Bord Pleanala to Greenseed Ltd in June 2022 subject to 29 conditions (ABP Reg Ref 312290-21). The site included the Aspect Hotel which is located some 5 minutes' walk from Site 4 (400m).

Other Projects

No other significant construction projects have been identified in the area of the subject site which would result in a significant cumulative impact on Traffic and Transport either during the construction or operational stages.

However, measures currently being considered by NTA, TII and Dublin City Council for the intensification of public transport services and cycle facilities in the surrounding area are likely to have a cumulative long term significant impact.

Future Increase in Traffic Flow

The traffic growth factors described in Section 14.6.2 above are derived by the Transport Infrastructure Ireland (TII) II and make an allowance for traffic growth due to future This is in line with industry standards and best practice. The traffic modelling undertaken for the subject development includes the growth factors from the TII publication – *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections* and therefore the potential cumulative impacts have been considered as part of this proposal.

Other Future Developments – Park West and Cherry Orchard LAP.

Any future development in the area around Cherry Orchard Point is likely to increase the traffic volumes on the surrounding road and therefore a full Traffic and Transport Assessment will be prepared and appropriate mitigation measures implemented for any such future developments.

14.8 Mitigation Measures

14.8.1 Construction Stage

The primary mitigation and monitoring measures during the Construction Stage will be the implementation by the selected Contractor of the *Construction Management Plan* and the *Construction Traffic Management Plan*.

The assessment of predicted impacts concluded that the construction stage of the proposed development is not anticipated to impact on the operational performance of the local road network. However, good practice requires the preparation of a Construction Management Plan (CMP) and a Construction Traffic Management Plan (CTMP), both of which set out measures to manage construction traffic.

Due to the proximity of the subject site to bus and rail services together with existing cycle lanes, it is intended to limit parking for construction staff and to encourage the use of car sharing and public transport.

The main Contractor as part of their site set up arrangements, will appoint a Coordinator responsible for the implementation of the Construction Stage Mobility Management and Travel Plan and shall carry out the following tasks as part of their role:

- Provide an extensive information service for public transport options and routes at a public location(s) within the development for construction workers.
- Update the public transport information adjacent to the development on an ongoing basis; and
- Advise company staff of tax incentives for public transport and bicycles.

For those wishing to cycle to and from the development, dedicated cycle parking will be provided for the duration of the works within the site. Shower facilities and lockers will also be provided.

Adequate signposting will be located on-site to ensure the safety of all road users and construction workers.

Dedicated construction haul routes will be identified and agreed upon with Dublin City Council before the commencement of construction activities on site.

A dedicated “construction site”’ access/egress system will be implemented during the construction phases. Hoarding will be set up around the perimeter to prevent pedestrian access.

A material storage zone will also be provided in the construction compound area. This storage zone will include material recycling areas and facilities.

A detailed Construction and Traffic Management Plan (CTMP) will be prepared by the contractor and agreed with Dublin City Council before commencing works on site.

The contractor will be obliged to ensure that any sub-contractors engaged on the site are made fully aware of the required mitigation measures and that they are properly implemented as part of any works that they undertake.

14.8.2 Operational Stage

The primary mitigation and monitoring measure during the Operational Stage will be the implementation of the *Mobility Management and Travel Plan.*

To reduce traffic impact, mitigate against possible overspill car parking and to promote more sustainable modes of transport, a Mobility Management and Travel Plan has been prepared for the development and will be updated on an ongoing basis.

The proposed development will include car parking for residents at less than the maximum rate set out in the Dublin City Development plan 2022 – 2028. The level of car parking proposed has been informed

by national standards for transport strategy and car parking for new apartments. The implementation of the measures set out in the Mobility Management and Travel Plan are designed inter alia to promote non-car modes of travel thereby discouraging high levels of car ownership and demand for car parking from residents.

A management company will be appointed by the developer to manage the overall development. A senior member of staff from the management company who supports the philosophy of the Plan will be appointed as the Coordinator. The Coordinator will be responsible for:

- Implementation and maintenance of the Plan.
- Monitoring progress of the Plan
- Liaison with public transport operators and officers of the Planning and Roads Authority.
- Production of information reports for the developer, the occupier(s) and the Planning and Road Authorities; and
- Ongoing assessment of the objectives of the Plan.

Up to date, local bus and rail timetables will be maintained within the resident amenity areas and other fixed points within the buildings on the site. Residents will be advised of their location. In addition, internet access to travel information will be provided. The developer will provide all new residents with a travel pack showing alternative modes of travel to the development. Where possible, the developer will advise visitors to the site of alternative modes of travel to that of the car.

Adequate and secure bicycle parking facilities with a total provision of 2,768 spaces will be provided within the development for residents, visitors, Creche users and staff. Local cycle route information will also be provided in the resident amenity areas and at other fixed points within the development. Residents will be advised of these locations.

The Mobility Management and Travel Plan Co-ordinator will be responsible for the management of inappropriate parking within the development. This parking management will ensure that spaces are reserved for those who have been allocated the space and will be accessible only to those users.

14.9 Residual Impacts

14.9.1 Construction Stage

Development traffic during the construction stage is predicted to have a low-level impact on surrounding road network in comparison to the existing baseline traffic flows. The preparation and implementation of a detailed Construction Traffic Management Plan (CTMP) to manage construction traffic will further mitigate any residual impacts.

In line with their experience working on projects of this scale in similar locations, the developer will build a construction car park on the Phase 3 site at the start of works by laying a temporary surface for vehicles. Staff are likely to arrive to site before 8am, before the morning peak hour of 8am -9am. However, staff are likely to leave during the peak PM hour of 5-6pm. As the number of construction staff on site will be less than the number of people on site post development, the number of additional vehicles can be accommodated.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, which will be addressed by the Contractor as part of the Construction Traffic Management Plan (CTMP) and which will be approved by Dublin City Council (DCC). On this basis, construction will likely have a negligible impact on pedestrian and cyclists.

Due to the proposed mitigation measures outlined above, the residual impact of the proposed development will be temporary, slight, negative and short term for the duration of the construction stage of Cherry Orchard Point.

14.9.2 Operational Stage

During the Operational Stage, there will be an increase in the use of the surrounding road network by private vehicles. However, the Mobility Management and Travel Plan will promote more sustainable forms of transport to help reduce the use of private cars by the residents of the proposed development.

There is likely to be an increase in the number of pedestrians and cyclists in the surroundings of the development particularly on the approaches to the railway station. However, the existing footpaths and cycle paths, both internally and externally along the site frontage, will be upgraded as part of development, thus, the impact should be minimal.

The traffic modelling undertaken includes growth in background traffic flows which accounts for other developments in the area.

The increase in traffic volumes as a result of the proposed development will impact the adjacent existing developments as the traffic flows through access and egress from the site will increase. The transport assessment carried out indicates that six of the eight assessed junctions, operating with the improved junction layouts proposed as part of the subject development, would operate within the capacity of the junctions and the impact arising from the proposed development at these junctions would be considered negligible.

The existing roundabout at the intersection of Park West Avenue and Park West Road to the south of the railway (Junction 7) is likely to reach capacity about 2027 and exceed capacity by 2042 with or without the proposed development. It is expected that this junction which is remote from the subject site will be upgraded, probably to a signalised crossroads before 2042 by Dublin City Council as part of the ongoing implementation of the Park West – Cherry Orchard LAP.

Due to the proposed mitigation measures outlined above, the residual impact of the proposed development during the operational stage will be slight to moderate, negative and long term for the duration of the operation of Cherry Orchard Point.

14.10 Monitoring

14.10.1 Construction Stage

Traffic management and deliveries will be carefully monitored by the project team and the selected contractor during the Construction Stage as part of the Construction Management Plan (CMP) and Construction Traffic management Plan (CTMP).

Monitoring will include construction traffic routes and measures to minimise nuisance.

The appointed contractor will monitor their mobility management plan to ensure that is operating effectively. Staff will be encouraged to car share or use public transport.

14.10.2 Operational Stage

During the Operational Stage, the Mobility Management and Travel Plan will be monitored by the Travel Plan Co-ordinator. The travel survey will establish the initial modal split of travel by residents.

The Co-ordinator, in consultation with the management company, the occupiers, and Dublin City Council, will agree on annual targets, following completion and analysis of the travel survey, for increasing the percentage of residents travelling by non-car modes.

The Travel Plan Co-ordinator will:

- Meet with officers of Dublin City Council within 6 months following the occupation of the building(s) and thereafter every 12 months to assess and review the progress of the Plan and agree on objectives for the next 12 months, and
- Prepare and submit an Annual Monitoring Report to senior management of the developer, the occupier(s) and Dublin City Council.

The management team will monitor the operation of the Mobility Management and Travel Plan including public transport demand. Any issues arising will be advised to Dublin City Council and the public transport operators.

The management team will also monitor the operation of the access from Park West Avenue and advise Dublin City Council in relation to any operational or safety issues noted.

14.11 Difficulties Encountered

No particular difficulties were encountered during the preparation of this chapter of this Environmental Report.

14.11.1 Interactions

The main high-level interactions between Material Assets – Traffic & Transport and other environmental factors include Noise & Vibration, Air & Climate and Population & Human Health. Please refer to Chapter 17 Interactions for further information on interactions.

14.12 References

The following documents were reviewed by Waterman Moylan during the preparation of this chapter of the Environmental Report: -

- Park West – Cherry Orchard Local Area Plan (LAP), Dublin City Council, November 2019
- Dublin City Development Plan 2022 – 2028.
- Park and Ride Report, NTA, August 2015.
- National Rail Census Report 2019, NTA, July 2020.
- National Rail Census Report 2021, NTA, October 2022.
- Park & Ride Strategy; Greater Dublin Area, NTA Park and Ride Development Office, 2021.
- Preliminary Car Parking Review, Waterman Moylan, May 2022.
- SHD Planning Applications, An Bord Pleanala, 2019 – 2022.
- Greater Dublin Area Transport Strategy 2022 – 2042, NTA.
- Technical Note on Park and Ride, Waterman Moylan, June 2022.
- Design Manual for Urban Roads and Streets (DMURS).
- Traffic and Transport Assessment Guidelines, TII, May 2014
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, TII, May 2021.
- Traffic and Transport Assessment (TTA), Park West SHD, CS Consulting Group, November 2021.
- Traffic and Transport Assessment (TTA), Cherry Orchard Point – Proposed development at Sites 4 and 5, Park West Avenue, Dublin 10, Waterman Moylan, November 2024.
- Mobility Management and Travel Plan, Cherry Orchard Point – Proposed development at Sites 4 and 5, Park West Avenue, Dublin 10, Waterman Moylan, November 2024.

15 Material Assets – Waste Management

15.1 Introduction

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with material assets (waste management) during the construction and operational phases of the proposed development as described in Chapter 2 (Background to the Scheme).

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the excavation and construction phases of the proposed development and has been included as Appendix 15.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021).

A separate Operational Waste Management Plan (OWMP) has been prepared for the operational phase of the proposed Development and is included as Appendix 15.1 of this Chapter.

This Chapter has been prepared in accordance with European Commissions Guidelines, *Guidance on the preparation of the Environmental Impact Assessment Report* (2017) and the EPA *Guidelines on the Information to be contained in EIAR* (2022).

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

15.2 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 taking into account 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.

This Chapter is based on the proposed development, as described in Chapter 2 (Background to the Scheme) and considers the following aspects:

- Legislative context;
- Construction phase (including site excavations); and
- Operational phase;

A desktop 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; and
- 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 construction and operational phases of the proposed development have been calculated and are included in Section 15.4 of this chapter. 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, 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 construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.6 of this Environmental Report Chapter.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 11 of this Environmental Report (Land, Soils & Geology) which also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the proposed Development.

15.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, 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). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 15.1).

Figure 15.1 Waste Hierarchy (Source: European Commission).

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 15.2).

Figure 15.2 Circular Economy (Source: Repak).

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The 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.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction (2006)* and *Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002)*, were also consulted in the preparation of this assessment.

There are currently no national Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *National Waste Management Plan for a Circular Economy (NWMPCE)* 2024, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, the *Dublin City Council (DCC) Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018*, the *EPA National Waste Database Reports*

1998 – 2020, the Circular Economy and National Waste Database Report 2021 - 2022 (2024) and the EPA National Waste Statistics Web Resource.

15.2.2 Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

15.3 Baseline Environment

In terms of waste management, the receiving environment is largely defined by 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 NWMPCE (2024) which superseded the three previous regional waste management plans in Ireland.

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The Dublin City Development Plan 2022 – 2028 (2022) sets out the policies and objectives for the DCC area which reflect those sets 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 EMR 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, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

15.4 Characteristics of the proposed development

A full description of the proposed development can be found in Chapter 2 (Background to the Scheme). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

15.4.1 Demolition Phase

There will be no demolition associated with this application.

15.4.2 Construction Phase

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 appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be soil and stone excavated to facilitate construction of new foundations, and installation of underground services. The project Engineers (Waterman Moylan Consulting Engineers) have estimated c. 13,400 m^3 of material will need to be excavated to facilitate the proposed development. It is currently envisaged that up to c. 1,200 m^3 of excavated material will be removed off site for appropriate offsite reuse, recovery, recycling and / or disposal. It is envisaged that the remainder of the excavated material will be reused on site and across the masterplan.

If any material that requires removal from the 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 Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended. For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 15.1).

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* (2018). 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. Any surplus excavated material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the 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 phase 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 on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 15.1). The RWMP provides an estimate of the main waste types likely to be generated during the construction phase of the proposed development. These are summarised in Table 15.1.

Table 15.1 Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Total Waste	Reuse		Recycle/Recovery		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	255.5	10	25.6	80	204.4	10	25.6
Timber	216.8	40	86.7	55	119.3	5	10.8
Plasterboard	77.4	30	23.2	60	46.5	10	7.7
Metals	62.0	5	3.1	90	55.8	5	3.1
Concrete	23.2	30	7.0	65	15.1	5	1.2
Other	116.2	20	23.2	60	69.7	20	23.2
Total	**751.2**		**168.8**		**510.7**		**71.6**

15.4.3 Operational Phase

As noted in Section 15.1, an OWMP has been prepared for the proposed development and is included as Appendix 15.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), cardboard, plastic as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, confidential paper, waste cooking oil and furniture.

The total estimated waste generation for the proposed development for the main waste types, based on the AWN waste generation model (WGM), is presented in Table 15.2, below, and is based on the uses and areas as advised by the Project Architects, along with the EPA National Waste Database Reports 1998 – 2020, the Circular Economy and National Waste Database Report 2021 - 2022 (2024) and the EPA National Waste Statistics Web Resource. Further unit breakdowns can be found in Appendix 15.2.

Table 15.2 Estimated Waste Generation for the Proposed Development for the Operational Phase

Waste Type	Waste Volume (m^3/week)
	Residential Waste (Combined)
Organic	2.58

Waste Type	Waste Volume (m^3/week)
	Residential Waste (Combined)
DMR	18.26
MNR	0.50
Glass	9.60
Total	**30.95**

The residents 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. As required, the residents will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). The locations of all WSAs can be viewed on the plans submitted with the planning application under separate cover.

The OWMP seeks to ensure that the proposed Development contributes to the targets outlined in the *NWMPCE (2024). Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland* and the *DCC Waste Bye-Laws.*

15.5 Predicted Impacts

15.5.1 Construction Phase

The proposed development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction as outlined in section 15.4 (see Appendix.15.1 for further detail). 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 in the construction site compound or adjacent to it, 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 site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect from waste material not being managed and stored correctly on the local and regional environment is likely to be ***indirect, short-term, significant*** and ***negative***.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including 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. In the absence of mitigation, the effect from the use of non-permitted waste contractors or unauthorised waste facilities on the local and regional environment is likely to be ***indirect, 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 EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the development site 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 construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect from not taking material to suitably registered /

permitted / licenced waste facilities on the local and regional environment is likely to be ***indirect, 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 11. It is anticipated that up to 1,200 m^3 of excavated material will need to be removed off-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 from not correctly classifying and segregating excavated material on the local and regional environment is likely to be ***indirect, short-term, significant*** and ***negative***.

15.5.2 Operational Phase

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. In the absence of mitigation, the effect on the local and regional environment is likely to be ***indirect, long-term, 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 can be sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into 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 site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***indirect, short-term, significant*** and ***negative***.

Waste contractors will be required to service the proposed development on a scheduled basis to remove waste, further details can be found in Appendix 15.2. 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 and regional environment is likely to be ***indirect, long-term, significant*** and ***negative***.

15.6 Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the ‘waste hierarchy’ is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

15.6.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA, *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* and is included as Appendix 15.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site and are listed in summary below. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 15.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of soil and stone will need to be excavated to facilitate the proposed development. The Project engineers have estimated up to 1,200 m^3 of excavated material will need to be removed off-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.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
    - Concrete rubble (including ceramics, tiles and bricks);
    - Plasterboard;
    - Metals;
    - Glass; and
    - 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; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- 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 Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation 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 suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- 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, where possible. 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 Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed 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 and the NWMPCE 2024 It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

15.6.2 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included as Appendix 15.2 and are listed in summary below. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site. 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 NWMPCE (2024), Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC waste bye-laws.

- The operator of the proposed development during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.
- The operator of the proposed development will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

- The residents / operator of the proposed development will ensure 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;
    - Cardboard;
    - Plastic;
    - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;
    - Waste Electrical and Electronic Equipment
    - Cooking oil;
    - Cleaning chemicals (paints, adhesives, resins, detergents, etc.);
    - Furniture (and from time-to-time other bulky waste); and
    - Abandoned bicycles
- The residents / operator of the proposed development will ensure that 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;
- The residents / operator of the proposed development will ensure that all waste collected from the site of the proposed development will be reused, recycled, or

recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

- The residents / operator of the proposed development will ensure that 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 Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the NWMPCE (2024) and the DCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.7 Residual Impacts

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.1) there will be no significant residual impact in relation to Material Assets - Waste Management. The implementation of the mitigation measures outlined in Section 15.6 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that European, national and regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

15.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 15.6.1 and adherence to the RWMP (which includes mitigation) (Appendix 15.1) during the construction phase will ensure that the predicted effect on the environment will be ***short-term***, ***imperceptible*** and ***neutral***.

15.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.6.2 and adherence to the OWMP (Appendix 15.1) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, imperceptible*** and ***neutral.***

15.8 Cumulative Impacts

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.1) there will be no significant cumulative residual impact in the receiving environment section, which includes cumulative developments that are already built and in operation in relation to Material Assets - Waste Management.

As has been identified in the receiving environment section (section 15.3) all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

A review of the permitted and proposed developments, as set out in Chapter 18 of this Environmental Report, has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of land soils geology and hydrogeology.

This review identified the permitted developments outlined in Section 15.8.1, below, which are capable of combining with the proposed development and have the potential to result in significant cumulative effects due to their scale and close proximity to the proposed development site.

15.8.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase, including the following:

Table 15.3 Development Planning permissions that can potentially overlap with the development

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022
	Key Development Site 7	None	

	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018
Reg. Ref.	Address	Summary Development Description	Decision and Date
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the	Granted 16/06/2022

		north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	Granted 31 Jul 2019
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024

SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

Due to the high number of waste contractors in the Dublin region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency 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 mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be ***short-term, imperceptible*** and ***neutral.***

15.8.2 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, and the remaining phases of the Cherry Orchard Point masterplan development, 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***.

15.9 Monitoring or Reinstatement

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the operator of the proposed development to ensure effective implementation of the mitigation measures outlined in Section 15.6, Appendix 15.1 and 15.2 internally and by the nominated waste contractor(s).

Table 15.4. Monitoring Proposals

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits

Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to DCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the waste contractor / operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the waste contractor / operator / facilities management company

15.9.1 Construction Phase

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 excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data will be maintained to advise on future developments.

15.9.2 Operational Phase

During the operational phase, waste generation volumes will be monitored by the waste contractor and or the operator of the proposed development. There may be opportunities to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

15.10 Difficulties Encountered

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) process provides spot samples, and further testing is required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There are a number of licensed, permitted and registered waste facilities in Dublin, the EMR and across Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria, including proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

15.11 Interactions

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.2) there will be no significant residual impact caused by the below interactions in relation to Material Assets - Waste Management.

This section discusses interactions between this Chapter and other specialist environmental topics considered in this Environmental Report.

15.11.1 Land & Soils

During the construction phase, excavated soil and stone (c. 13,200 m^3) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that up to 1,200 m^3 of excavated material will be removed off site for appropriate offsite reuse, recovery, recycling and / or disposal. It is envisaged that the remainder of the excavated material will be reused on site.

If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11, Chapter 15 and the requirements of the RWMP (Appendix 15.1), will ensure the effect is ***long-term, imperceptible*** and ***neutral***.

15.11.2 Traffic & Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by the removal of waste from the site during the construction and operational phases of the proposed 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. Traffic related impacts during the construction and operational phases are addressed in Chapter 14 (Traffic and Transportation). Provided the mitigation measures detailed in Chapter 14 and Chapter 15 are adhered to, the predicted effects are ***short to long-term, imperceptible*** and ***neutral***.

15.11.3 Population & Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 13 and Chapter 15, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible*** and ***neutral***.

15.12 Conclusion

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.2) there will be no significant residual impact in the receiving environment section in relation to material assets- waste management.

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development, cumulative developments and interactions with regards to Material Assets - Waste Management. These potential impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments has also been considered.

Provided all mitigation measures as set out in this chapter (section 15.6) and the attached RWMP (appendix 15.1) and the OWMP (appendix 15.2), the overall predicted impact of the proposed development is ***long-term***, ***imperceptible*** and ***neutral***.

15.13 References

- Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended.
- Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
- The Circular Economy and Miscellaneous Provisions Act 2022
- Regional Waste Management Planning Offices, National Waste Management Plan (2024).
- Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021)
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)
- Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Dublin City Council (DCC), *Dublin City Development Plan* (2022-2028)
- DCC, Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018).
- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Planning and Development Act 2000 (No. 30 of 2000) as amended
- Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018)
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

- Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 - 2022.
- US EPA, Characterisation of Building Uses (1998);
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)

16 Material Assets – Utilities

16.1 Introduction

This chapter of the Environmental Report - Addendum to Approved Phase 1 Parent EIAR has been prepared by Waterman Moylan on behalf of Dublin City Council, In Partnership with The Land Development Agency and examines the material assets serving the proposed development at Cherry Orchard Point – Phase 2, Park West Avenue, Dublin 10 relating to the surface water drainage, foul drainage, water supply, electricity, gas, and telecommunications.

16.2 Methodology

The assessment follows a phased approach for the Proposed Cherry Orchard Point - Phase 2 development as outlined in the EPA and IGI guidelines.

The first phase of this assessment determined the type, scale, and location of the Proposed Cherry Orchard Point - Phase 2 development as well as establishing the baseline conditions via a Desktop study to classify the built services related to the site was undertaken. The following information sources were used in the assessment of the existing networks in the vicinity of the proposed development site:

- A desktop review of Uisce Éireann Utility Plans, ESB Networks Utility Plans, Gas Networks Ireland Service Plans, Eir E-Maps and Virgin Media Maps;
- Consultation with Uisce Éireann and Dublin County Council;
- Submission of a Pre-Connection Enquiry Application to Uisce Éireann for the subject site;
- Review of ESB Network Utility Plans
- Review of Gas Networks Ireland existing network maps;
- Review of EIR and Virgin Telecommunications existing network maps;
- Site Inspection / Walkover;

The second phase of this assessment was the incorporation of direct and indirect investigations and studies. This information was primarily provided by a GPR Survey (Ground Penetrating Radar) and a basic hydrological monitoring undertaken as part of geotechnical site investigations carried out by Ground Investigations Ireland in November 2022 for both sites, Site 4 to the west of Park West Avenue and Site 5 to the east. A further report, Waste Analysis Classification Report, which would help determine the properties of any potential leachate to groundwater tables, was also produced by GII and referred to in this Chapter. These are both included as appendices to this document.

Phase 2(a) of the assessment was the refinement of the design layout to mitigate by elimination and replacement, any items that would have the potential to negatively impact the environment by their design, material components, or method of construction/installation. It should be noted that in certain circumstances, alternative designs may have been available however, in order to meet the requirements of the Local Authority or Responsible Bodies, these alternatives were not accepted. An example of this would be the preliminary design of the foul drainage for Site 4 which had 2 potential outfall locations. However, Uisce Éireann have precisely instructed the location for the foul water outfall from Sites 4 & 5, so as to align the drainage design for the proposed development with their strategic infrastructural plans for the locality.

Phase 2(b) of the assessment was a detailed review of the proposed design and a study to determine the potential risks and impacts of the design and strategies.

Phase 2(c) is a continuation of the Phase 2(b) works whereby the identified risks and impacts where then further assessed against mitigation measures which provided a residual risk. Where a residual risk

was determined to be high, the item was isolated and returned to Phase 2(a) to repeat the process of identifying alternatives methods and measures to reduce the risk further.

The third phase was the completion of this Environmental Report chapter based on a full understanding of the baseline, proposed development design layout, and construction strategies, incorporation of the mitigation and monitoring measures, and inclusion of residual effects and conclusions.

As part of the above phases the following items were also undertaken:

- Consultations with Uisce Éireann to agree the foul drainage strategy (for masterplan development and subject site).
- Uisce Éireann Confirmation of Feasibility letter (for masterplan development and subject site).
- Uisce Éireann Statement of Design Acceptance (for masterplan development).
- Calculation of surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:
    - Greater Dublin Strategic Drainage Study (GDSDS);
    - IS EN752, “Drain and Sewer Systems Outside Buildings”;
    - Uisce Eireann’s Code of Practice (water demand and foul water loading);
- Consulting the Water Framework Directive (WFD) main objectives

16.3 Baseline Environment

The overall Cherry Orchard Development, referred here within as the masterplan lands, is comprised of 2 No. Sites identified in the Park West – Cherry Orchard LAP. Site 4 & Site 5 are bisected by Park West Avenue and lie to the west and east of this roadway respectively, as per Figure 16.1. Phase 2 of the masterplan development is located on the northern portion of Site 4.

The 2022 and 2024 Site Investigation Reports undertaken by Ground Investigations Ireland (GII) for the overall/masterplan development, which is included as an appendix to the Preliminary Construction Environmental Management Plan submitted as part of this Phase 2 application, determined that Site 4 is a combination of Greenfield and Brownfield, with evidence of fill material in the area of the site previously used as a construction compound. Site 5 is predominantly a brownfield site, with fill material found for the same reason.

Site 4 is bound to the west by the M50, to the south by the Dublin-Kildare rail line and the Park West & Cherry Orchard station, and to the east and north by Park West Avenue. Site 5 is bound to the west by Park West Avenue, the northwest by Cedar Brook Way, the northeast and east by Barnville Park, and to the south by the Dublin-Kildare rail line and the residential unit of 62 Barnville Park.

Site 4 is currently access via a secured gate from Park West Avenue. Site 5 is accessed via a similar arrangement from Cedar Brook Way.

The area of the subject application, Phase 2 of the development, is indicated by the red boundary line, also shown on Figure 16.1.

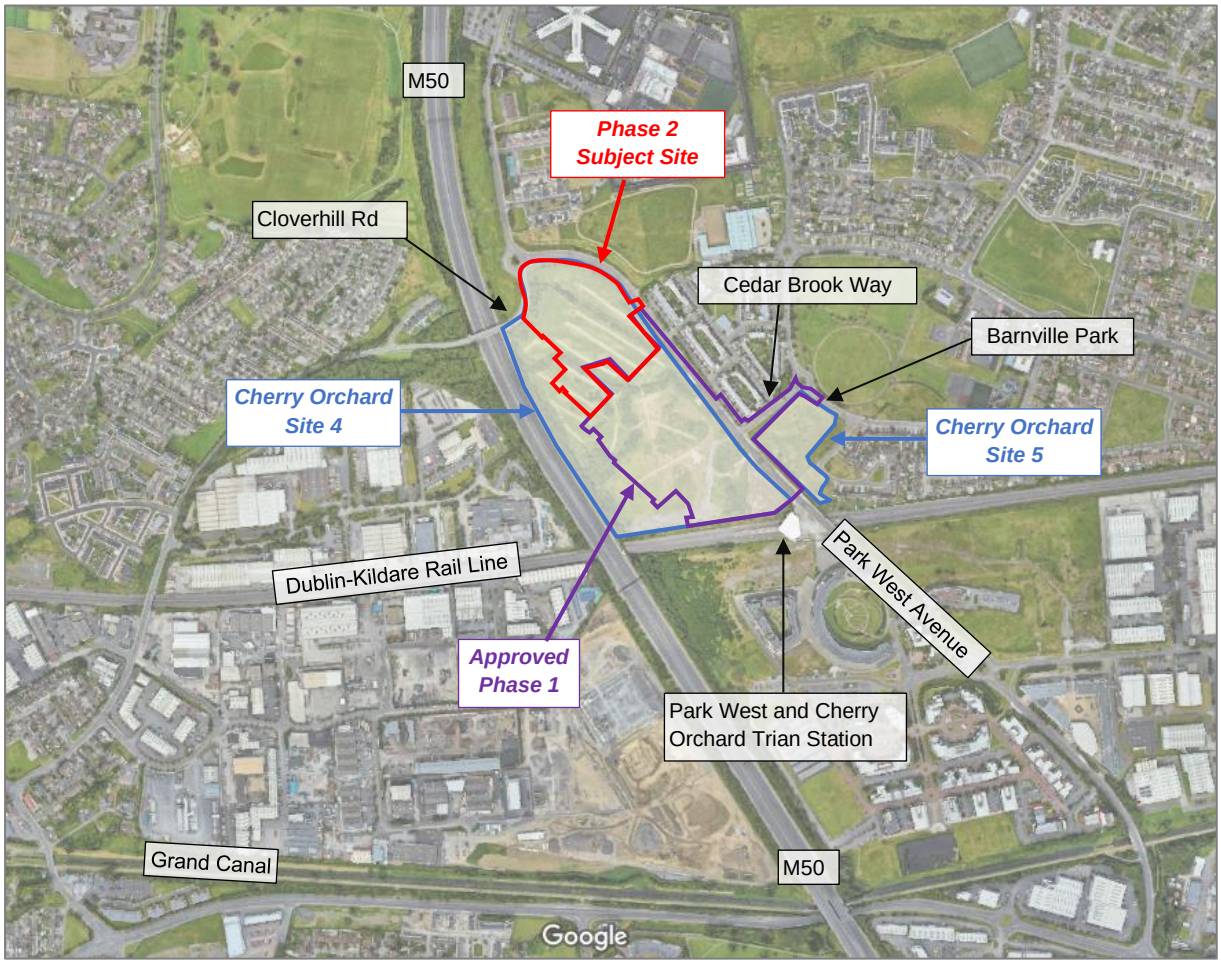


Figure 16.1: Site Location Map (Source: Google Maps)

The overall Cherry Orchard Development area as per the blue line boundaries is c. 13.02ha, with Site 4 being c. 11.41 ha and Site 5 being c. 1.61ha. The area of the Phase 2 proposed development as indicated by the redline boundary, including for works in the public domain, is 3.185ha (31,850m²).

For Site 4, the topographic survey of the area indicates that the low point of the site has a level of 55.72m OD. This is located on the eastern site boundary approximately 140m north of the junction of Park West Avenue and Cedar Brook Way. The remainder of the site generally slopes to this location owing to the embankments and subsequent site grading from the Dublin-Kildare Rail line to the south, M50 to the west, and approach road to the overpass on the M50 to the north.

Site 5 has a central high point with a level of 58.05m OD, and slopes outwards to all boundaries. The boundaries of Site 5 typically have levels between 54.80m and 56.00m, with the higher of these levels being located to the south of the site, adjacent to the retaining wall of the Park West Avenue Bridge over the rail lines.

Ordnance survey and topographic survey mapping indicates that Site 4 contains static ditches with no outfall. These ditches previously had hydrological connectivity and flow, which has been cut-off by the construction of the M50 to the west and the Cedar Brook housing development to the east, as discussed later in this Chapter. These ditches normally remain dry except in heavy rainfall events where water that is not percolated via the site's naturally grassed landscaping, would collect locally in these static ditches for infiltration to the groundwater table. Site 5 does not have any form of surface drainage network and conveys rainfall directly to the soils via its grassed landscape. There is potential during heavy rainfall events, that the ground may become saturated and unable to further infiltrate rainfall, which would then run from the surface, over the boundary and to the adjacent road networks to outfall to the storm drainage networks serving these roads. The sites are located in the catchment of the

Blackditch stream, a tributary of the Camac River which has an ultimate outfall to the River Liffey at Heuston Station.

EPA mapping advises that the River Waterbody WFD status 2016-2021 for the Camac_040 (River Camac), European Code: IE-EA_09C020500 has a status of “poor”, and a risk status of “at-risk”. The status of the Camac River is based on monitoring stations, with the nearest of these stations, downstream of the Blackditch Stream discharging to the River Camac, being National Water Monitoring Station Ref: RS09G080100.

16.3.1 Phasing

Sites 4 and 5 are being developed in four phases as shown on Figure 16.2.

Figure 16.2: Masterplan Development – Indicative Project Phasing

16.3.2 Site Development

Currently, the sites are primarily greenfield in nature (scrubland) however, it is known that more recently the sites have both been used as construction compounds and are a mix of greenfield and infill material. The 2022 and 2024 GII Site Investigation Reports confirm this.

16.3.3 Hydrology (Surface Water)

Historic maps for the locality have been reviewed. As noted above in respect to the static ditch system, a detailed review of historic maps for the locality, from the national historic maps dashboard produced by Ordnance Survey Ireland (OSI), indicates that the ditch system noted as present in Site 4 previously had hydrological connectivity from the east, merging on the site and flowing to the west. It is clear that

this hydrologically connectivity has been cut-off on the west by development of the M50, and to the east by residential development. Refer to Figure 16.3 below for an extract of this historic map.

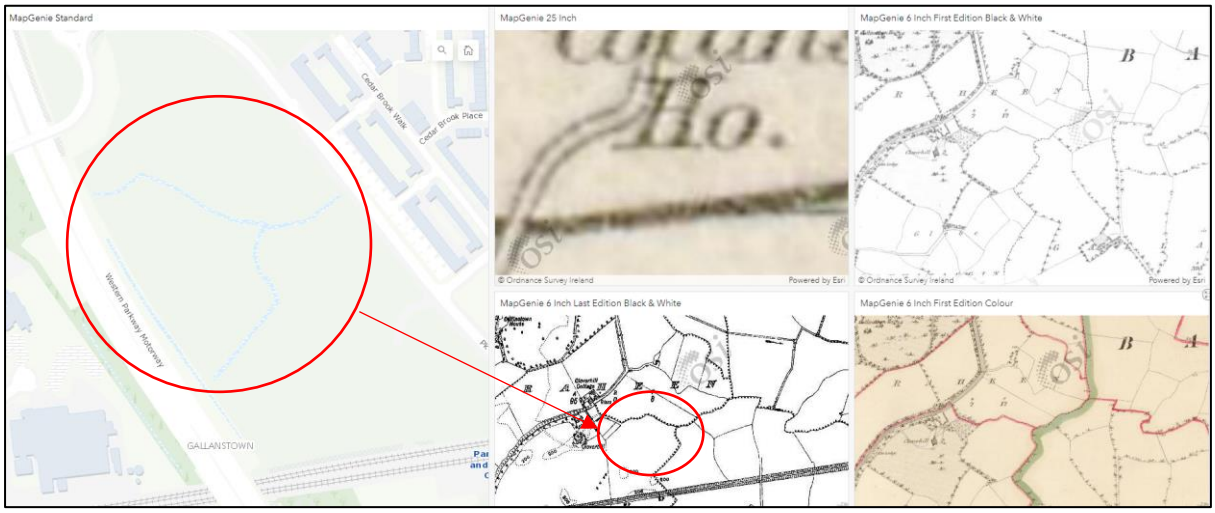


Figure 16.3: Site Location (Source: OSI Viewer Historic Maps)

Due to the topography, as discussed previously, and geological conditions discussed in following sections, it is likely that rainfall from lesser events are percolated on-site, while heavy storm events likely flow off the surface to the adjacent road networks and ultimately the surface water drainage network associated with these roads.

16.3.4 Characteristics of the Proposed Development

16.3.4.1 Approved Phase 1 Development

A planning application for Phase 1 of the proposed development on Site 4 at Cherry Orchard was lodged by The Land Development Agency (LDA) with An Bord Pleanála on 1st December 2023. (ABP-318607-23). A decision regarding the Phase 1 development from ABP was received on 09 July 2024, with approval granted for the proposed development under ABP-318607-23.

The application, which is illustrated in Figure 16.4, was for a residential led mixed use scheme comprising:

- A total of 708 residential apartments in a number of blocks.
- A total of 4,790 sqm non-residential development comprising
  - Supermarket (2,523 sqm).
  - Retail Units (373 sqm)
  - Creche with accommodation for 25 staff and 104 children (672 sqm)
  - Community Facilities (1,222 sqm)

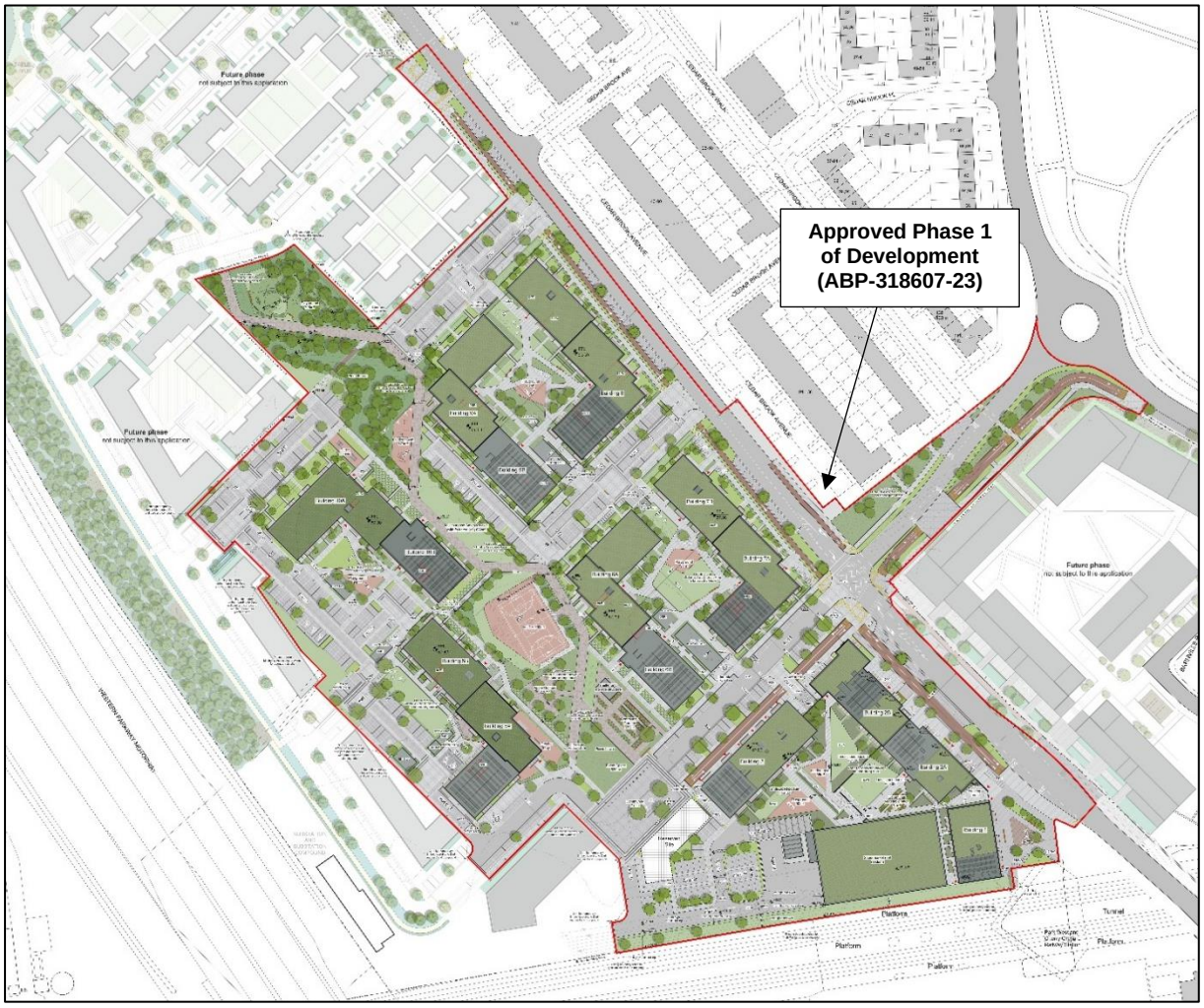


Figure 16.4: Approved Phase 1 Site Layout

16.3.4.2 Proposed Development – Phase 2

The subject site, Phase 2, is located on the northern portion of Site 4 directly north of the Approved Phase 1 development. Phase 2 is bound to the northwest by Cloverhill Road, the northeast and east by Park West Avenue, to the south by the Approved Phase 1 of the development, and the west by the future proposed Phase 4 of the development.

The area of the subject application indicated by the redline boundary is 3.185 ha (31,850m²).

The subject application is for Phase 2 of the 4-Phase masterplan development as per Figure 16.5. Phase 2 is located north of the Approved Phase 1 site (ABP-318607-23) and east of the future Phase 4 development. The proposed access to the subject development is from the east of the development via. Park West Avenue.

The proposed development of Phase 2 on Site 4 at Cherry Orchard Point will comprise:

- 137 residential units comprising
  - 101 x 2 / 3 bed houses
  - 18 x 2-bed apartments
  - 18 x 3-bed duplex

A breakdown of the schedule of accommodation for the subject application is provided below.

Table 16.1: Phase 2 Schedule of Accommodation

Unit Type		Area sqm	No. of Units	Total Floor Area
2 Bed/ 4 Person House	HT A	81	13	1053
3 Bed/ 5 Person House - 2 storey	HT B	96	56	5376
3 Bed/ 5 Person House - 2 storey (end terrace)	HT B1	96	19	1824
3 Bed/ 5 Person House - 2 storey	HT C	106	13	1378
2 Bed/ 4P Own-Door Apt - mid terrace	Duplex A	73	6	438
2 Bed/ 3P Own-Door Apt (UD) - mid terrace	Duplex A (UD)	73	4	292
2 Bed/ 4P Own-Door Apt - end terrace/ corner	Duplex A1	73	3	219
2 Bed/ 3P Own-Door Apt (UD) - end terrace/ corner	Duplex A1 (UD)	73	5	365
3 Bed/5P Own-Door Duplex - end terrace/ corner	Duplex A2	115	8	920
3 Bed/5P Own-Door Duplex - mid terrace	Duplex A3	115	10	1150
Total			**137**	**13015**

The proposed development includes all associated site works, undergrounding of overhead lines, boundary treatments, drainage, and service connections.

Figure 16.5: Proposed Subject Site - Phase 2 Layout

16.3.4.3 Future Development – Phase 3

The future development of Phase 3 on Site 5 at Cherry Orchard Point is expected to comprise: -

- A total of 254 residential apartments in 6 blocks.
- A total of 1,200 sqm non-residential development comprising
  - Retail (800 sqm).
  - Community (400 sqm)

16.3.4.4 Future Development – Phase 4

The future development of Phase 4 on Site 4 at Cherry Orchard Point is expected to comprise: -

- Commercial units in 4 blocks (16,310 sqm).

16.3.4.5 Overall Development

The overall development of Phases 1, 2, 3 and 4 on Sites 4 and 5 at Cherry Orchard Point is expected to comprise: -

- 1,099 residential units comprising: -
  - 101 Houses.
  - 18 Duplex
  - 980 Apartments (708 + 18 + 254).
- Total non-residential development of 22,300 sqm comprising:
  - 1 Supermarket (2,523 sqm).
  - 3 Retail (222 sqm + 151 sqm + 800 sqm).
  - 1 Creche (672 sqm).
  - 4 Commercial (16,310 sqm).
  - 2 Community (1,222 sqm + 400 sqm).

16.3.4.6 Design Population

The Approved Phase 1 development comprises a total of 708 apartments with 1,174 bedrooms and a design population of 2,247 persons.

The Proposed Cherry Orchard Point - Phase 2 development will comprise a total of 137 residential units (101 x houses, 18 x apartments and 18 x duplex) with a total of 360 bedrooms and a design population of 645 persons.

16.3.4.7 Existing Water Supply

The site is greenfield in nature and has no internal watermain networks. The road networks and footpaths immediately adjacent to the sites contain public watermain networks as per the Uisce Éireann network Map records extracted to Figure 16.6.

Figure 16.6: Existing Water Supply Infrastructure Map - Uisce Éireann

As per the Approved Phase 1 Parent EIAR, a pre-connection enquiry was submitted to Uisce Eireann, and the subsequent Confirmation of Feasibility letter received from Uisce Éireann on 21 October 2022, with ref. no. CDS22004824, advised that no upgrade works are required to facilitate the water supply required by the masterplan development (including the subject site's water supply demands).

An updated pre-connection enquiry related to Phase 2, the subject site, was sent to Uisce Éireann in February 2024. The enquiry included an over-provision for 160 no. units. A Confirmation of Feasibility for this enquiry was received from Uisce Éireann on 26 March 2024, with ref. CDS24001410, and stated that the water supply for the Proposed Cherry Orchard Point - Phase 2 development would be feasible without upgrades.

16.3.4.8 Existing Foul Water Network

The site is greenfield in nature and has no internal foul water networks. There are foul networks in the immediate vicinity of the sites as per the Uisce Éireann network Map records extracted to Figure 16.7.

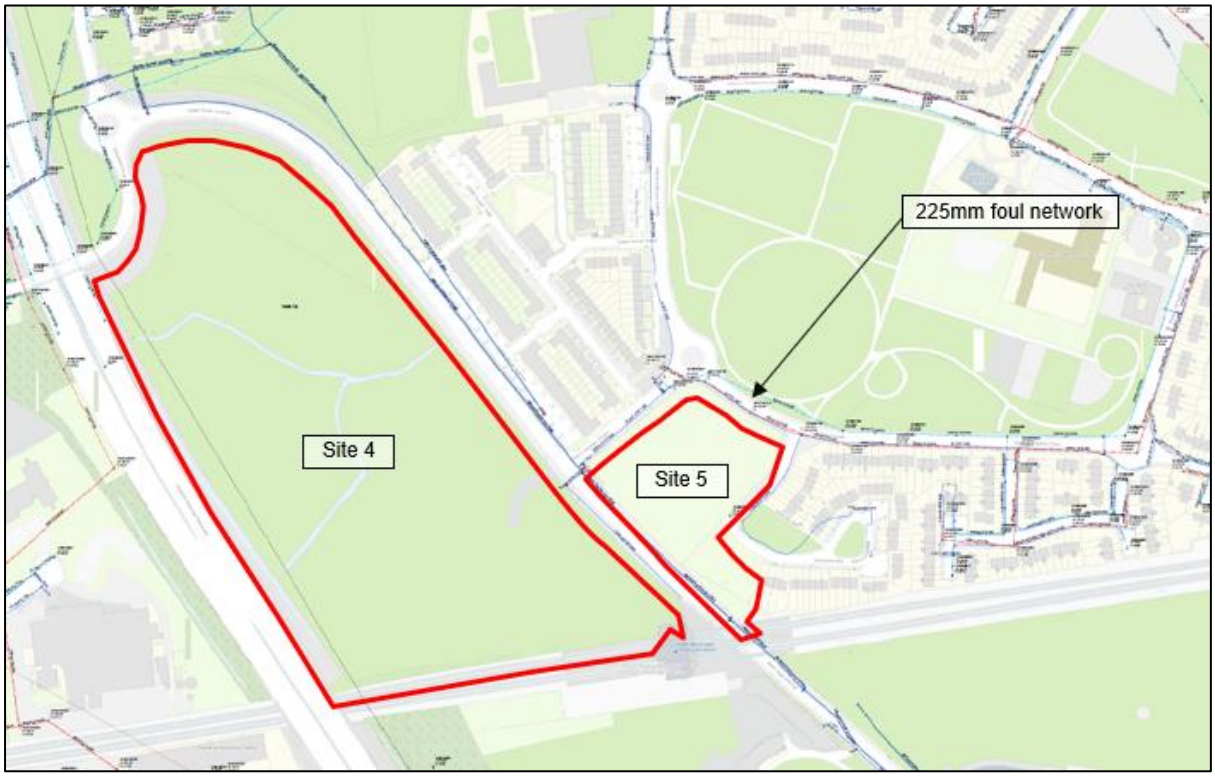


Figure 16.7: Existing Foul Water Infrastructure - Uisce Éireann

The Approved Phase 1 Parent EIAR stated that the Confirmation of Feasibility letter received from Uisce Éireann on 21 October 2022 advised it has a project underway which will provide the necessary upgrades and capacity. A part of this is to upsize the existing 225mm Ø on Barnville Park to a 1050mm Ø tank sewer, in order to act as a storage tank during peak flow periods. At the time of writing the Approved Phase 1 Parent EIAR it was expected that the upgrade project would be completed by Q1 2026.

As discussed under the previous section – *Existing Water Supply*, an updated pre-connection enquiry related to Proposed Cherry Orchard Point - Phase 2, the subject site, was sent to Uisce Éireann in February 2024. The enquiry included an over-provision for 160 no. units to act as a factor of safety in the case the unit numbers where to increase during the design phase. A Confirmation of Feasibility for this enquiry was received from Uisce Éireann on 26 March 2024, with ref. CDS24001410, and stated that the foul water demand for the Proposed Cherry Orchard Point - Phase 2 development would be feasible subject to upgrades (the same upgrades mentioned in the masterplan COF discussed above). However, the upgrade project date of completion was updated to Q3 of 2028. This timeline for delivery of upgrades should not impact connection for the Proposed Cherry Orchard Point - Phase 2 development to the Uisce Éireann network.

This existing network, instructed to be the connection point for the masterplan development, has an ultimate outfall to Dublin Bay post treatment at the Ringsend Wastewater Treatment Plant (WWTP).

The Ringsend WWTP is required to operate under an EPA License (D0034-02) and meet environmental legislative requirements as set out in such licence. It is noted that a planning permission for a new upgrade to this facility was received in 2019 and is currently in the process of construction/implementation. The upgrade works commenced in 2018 and are expected to be fully completed by 2025. When all the proposed works are complete in 2025, the Ringsend WWTP will be able to treat wastewater for up to 2.4 million population equivalent (PE) while meeting the required standards. The current capacity of the WWTP is 1.65 million PE. Though the WWTP is currently over capacity, currently serving a PE of 1.9 million, water quality assessments undertaken in Dublin Bay

(published by the EPA), confirm that Dublin Bay is classified as “unpolluted”, indicating that the capacity issues at the WWTP are not having any impacts on water quality in Dublin Bay.

The loading from the proposed masterplan development is imperceptible in the context of the PE currently served by the WWTP. Therefore, there is adequate capacity in the public foul sewer network available to serve the proposed masterplan development.

16.3.4.9 Existing Surface Water Network

The Masterplan Development site is greenfield in nature and is not served by any surface water network**.** Topographically, Site 4 slopes down to the centre of its eastern boundary from the north (Cloverhill Road roundabout), the west (M50) and the south (rail lines). There is no evidence that drainage networks from any of the roads or rail lines enters the site. The site itself contains a static ditch system which has no natural or constructed outfall, and percolates rain from heavy rainfall events locally. Drainage records show that drainage from the M50 does not enter Sites 4 and 5. The Penetrating Radar (GPR) survey undertaken by CSS Land Surveys in August of 2022 for the masterplan lands (Sites 4 and 5) further confirmed there are no surface water networks entering or exiting the site. Site 5 slopes outwards from a central high point. Similar to Site 4, there are no natural or artificial watercourses exiting the site. It is believed that in extreme rainfall events, where the volume of rainfall exceeds the infiltration capacity of Sites 4 and 5, that water flows off the surface of the Sites to enter the existing surface water networks via the road gullies located on Park West Avenue, Barnville Walk, and Barnville Park Roads.

Sustainable Urban Drainage Systems (SUDS) proposed for the Proposed Cherry Orchard Point - Phase 2 development include public and private rain gardens, roadside swales, bio-retention tree pits, and permeable paving below parking spaces. The surface water runoff from the Proposed Cherry Orchard Point - Phase 2 development will be limited to the appropriate greenfield runoff rate calculated in accordance with the Institute of Hydrology report No 154 “Flood Estimation for Small Catchments”.

Site investigations for both sites were undertaken in 2022 by Ground Investigations Ireland (GII), the technical Ground Investigation report was completed in November 2022, and the Waste Analysis Classification report was completed in October 2022. An updated site investigation report was undertaken by GII in July 2024 with an updated Waste Analysis Classification Report completed in August 2024. The details of the 2022 and 2024 site investigation reports are included under Chapter 11: Lands, Soils, and Geology of this Environmental Report. The current 2024 reports will be referenced here within and are appended to the Phase 2 Preliminary Construction Environmental Management Plan, submitted as part of this planning application.

Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1 of the 2022 and 2024 Site Investigation Reports undertaken by GII. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising’s upon completion. The soakaway test results are provided in Appendix 4 of the Site Investigation Report.

Soakaway Design

The 2024 GII Site Investigation Report stated the following:

“*At the locations of SA A, SA B, SA C, SA D, and SA E the water level dropped too slowly to allow calculation of ‘f’ the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction.”*

It is noted that the above referenced soakaway test locations refer to all 5 no. tests undertaken within the Masterplan Lands, 2 no. of which are located within the Proposed Cherry Orchard Point - Phase 2 development, SA A and SA B.

Furthermore, the GII Site Investigation Report undertaken in 2022 contained similar findings regarding the infiltration rates of the Cherry Orchard Point Masterplan Lands, and for which were included in the Approved Phase 1 Parent EIAR, stating the following:

"Infiltration rates of f = 7.303 x 10^{-6} m/s, 6.95 x 10^{-6} m/s and 7.262 x 10^{-6} m/s respectively were calculated for the soakaway locations ST06, ST10, and ST11. At the locations of ST01, ST02, ST03, ST04, ST05, ST07, ST08, & ST09, the water level dropped too slowly to allow calculation of "f", the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction."

16.3.4.10 Existing Electricity

ESB Networks have been contacted and an existing ESB network map for the area surrounding the proposed Masterplan development has been obtained, refer to Figure 16.8. ESB infrastructure, both under and overground, exists on and in the immediate vicinity of both sites. It is intended that the existing overground infrastructure internal to the sites be undergrounded, and furthermore, existing underground networks may also need to be rerouted. Detailed design of such will be undertaken at the appropriate stage as ESB networks will only engage in this regard on projects that have received a grant of planning permission.

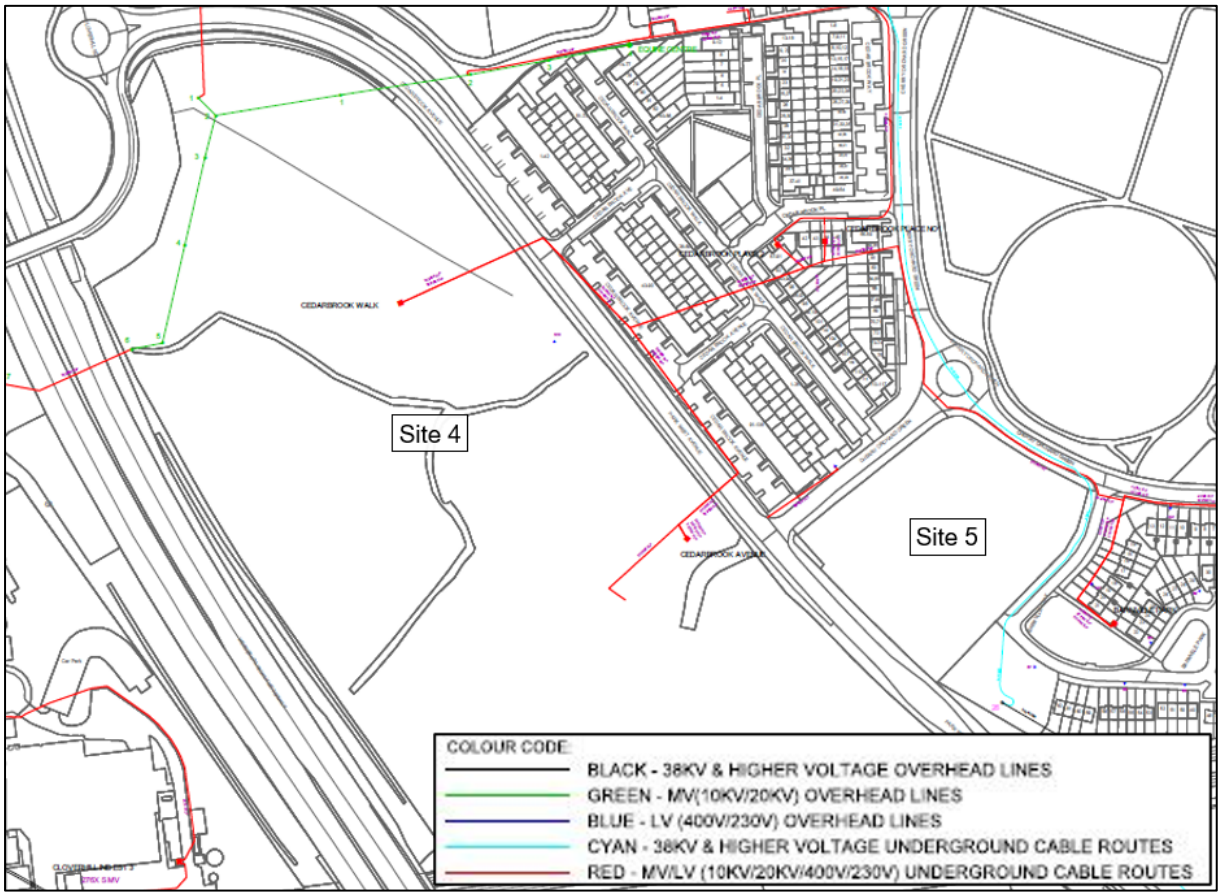


Figure 16.8: ESB Network Map

16.3.4.11 Existing Gas Networks Map

Gas Networks Ireland have been contacted and an existing gas network map for the area surrounding the proposed Masterplan development has been obtained, refer to Figure 16.9, overleaf. There are existing gas pipes adjacent Site 5 on Barnville Park. A medium pressure distribution Main is also indicated as partially being located inside the northern part of Site 4. No development is planned at this

location in Site 4, and the relevant body will be contacted by the main contractor upon appointment to discuss and agree the measures required to be implemented during construction of the Proposed Cherry Orchard Point - Phase 2 development to ensure the area remains undisturbed.

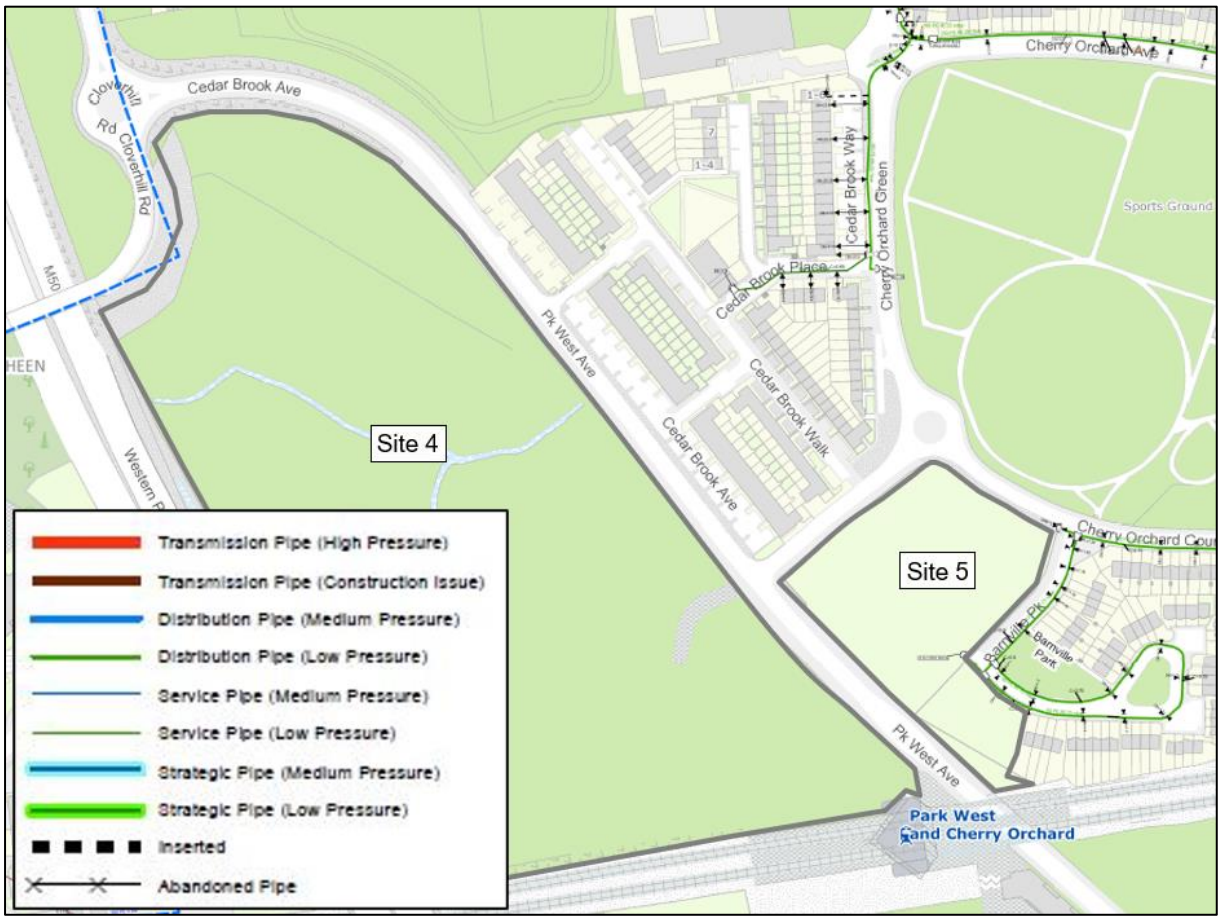


Figure 16.9: Gas Network Map

16.3.4.12 Telecommunications

Eir & Virgin have been contacted and their existing network maps for the area surrounding the proposed development has been obtained. Figure 16.10 below & Figure 16.11 below show these networks respectively. There are existing Eir and virgin services adjacent to the Masterplan development.

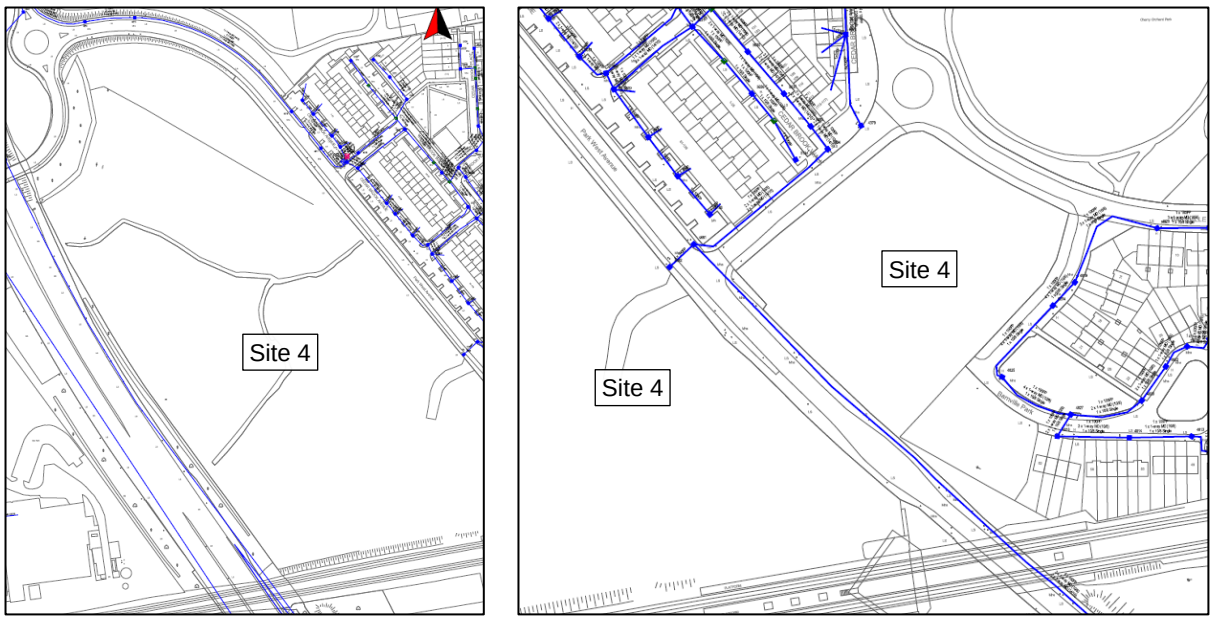


Figure 16.10: Eir Network Maps

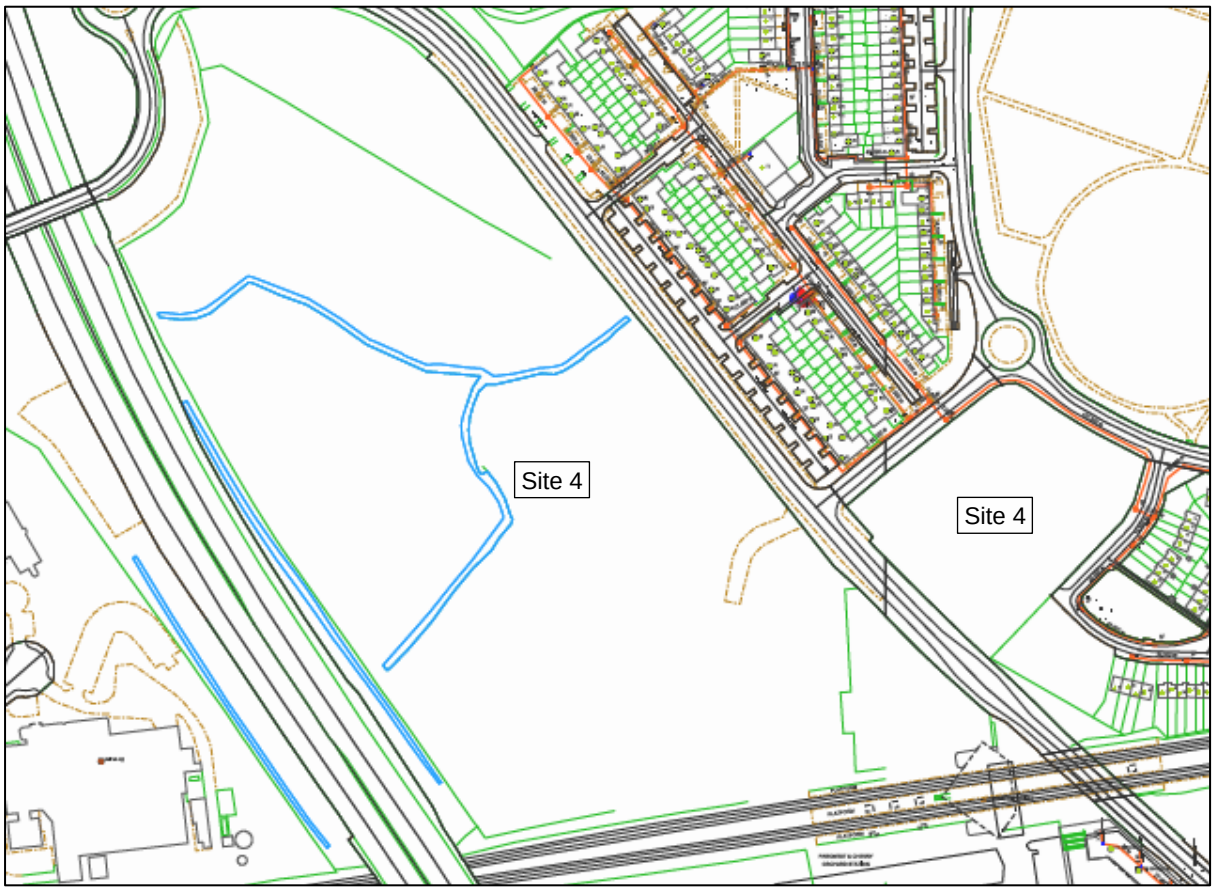


Figure 16.11: Virgin Network Map

16.4 Predicted Impacts

16.4.1 Proposed Water Supply

Site 4 is proposed to be served by 2-no. 200mm connections to the existing 300mm Ductile Iron watermain as instructed by Uisce Éireann. The proposed 200mm watermain will follow the main vehicular circulation route of the site and will be further supplemented by 150mm and 100mm loops and branches.

Site 5 is proposed to be connected via a 100mm watermain to the existing 200mm uPVC network as instructed by Uisce Éireann.

An updated pre-connection enquiry related to Phase 2, the subject site, was sent to Uisce Éireann in February 2024. The enquiry included an over-provision for 160 no. units. A Confirmation of Feasibility for this enquiry was received from Uisce Éireann on 26 March 2024, with ref. CDS24001410, and stated that the water supply for the Phase 2 development would be feasible without upgrades. The updated COF is appended to the Phase 2 Engineering Assessment Report, submitted as part of this planning application.

The Proposed Cherry Orchard Point - Phase 2 development is proposed to connect into the Approved Phase 1 development at 3 no. locations as indicated in Figure 16.12. Meters will be installed at connection points in line with Uisce Éireann requirements. The proposed water supply network within the subject site will comprise of 100mm diameter loops connected to a 150mm and 200mm diameter bulk water supply main to the south of the development. The proposed 150mm and 200mm diameter mains are proposed to connect into the Approved Phase 1 development.

The preliminary water supply network design for the Proposed Cherry Orchard Point - Phase 2 development can be seen in Waterman Moylan Drawing No. COP-WMC-PH2-00-DR-P-0300 – Proposed Water Supply Layout.

The calculation of the water supply demand as per Section 3.7.2 of the Uisce Éireann Code of Practice for Water Infrastructure (July 2020 Revision 2), for the masterplan development (including the Proposed Cherry Orchard Point - Phase 2 development), as per the Approved Phase 1 Parent EIAR, is shown below:

Table 16.2: Calculation of Total Water Demand (Masterplan Development)

	Description	**Total Population**	**Water demand**	**Average Demand**	**Average Peak Demand**	**Peak Demand**
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
Approved Phase 1	708 Apartments	1,912	315,480	3.651	4.564	22.820
	Supermarket (2,523m²)	101	9,999	0.116	0.145	0.725
	Retail (373m²)	8	792	0.009	0.011	0.055
	Community space (1,222m²)	300	3,960	0.046	0.058	0.290
	Creche (672m²)	129	12,771	0.148	0.185	0.925
Phase 2	153 units	413	68,145	0.789	0.986	4.930
P h as	254 units	686	113,190	1.310	1.638	8.190

	Description	Total Population	Water demand	Average Demand	Average Peak Demand	Peak Demand
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
	Retail (1,200m²)	24	2,376	0.028	0.035	0.175
Phase 4	Office/Commercial (c. 16,310m²)	1,087	119,570	1.384	1.730	8.650
	Total	**4,660**	**638,283**	**7.481**	**9.352**	**46.760**

As per the Approved Phase 1 Parent EIAR, the average demand for the Masterplan development is 7.481 l/s, with a peak demand of 46.760 l/s.

The total quantum of units within the Proposed Cherry Orchard Point - Phase 2 development has since been updated to 137 no. units, as noted in this application. The below table shows the updated water supply demand required for the Phase 2 development.

Table 16.3: Calculation of Phase 2 Water Demand

	Description	Total Population	Water demand	Average Demand	Average Peak Demand	Peak Demand
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
Phase 2	137 units	370	55,485	0.642	0.803	4.014

The average demand for water supply from the Phase 2 development is 0.64 l/s, with a peak demand of 4.01 l/s.

The average demand for the masterplan development is thus decreased to 7.33 l/s (from 7.48 l/s), with a peak demand of 45.84 l/s (from 46.76 l/s).

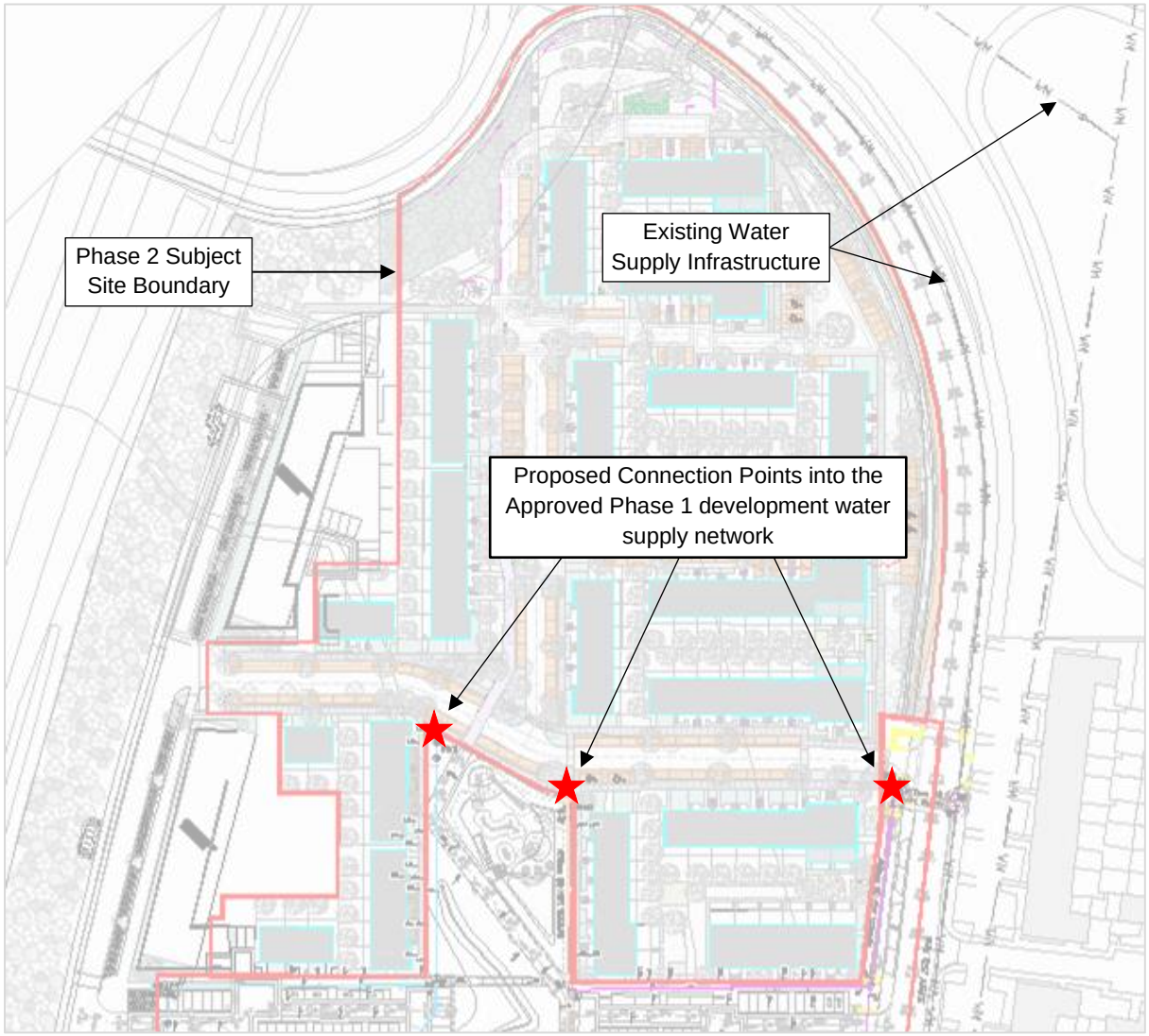


Figure 16.12: Proposed Cherry Orchard Point - Phase 2 Water Supply Connections

Construction Phase

- There is a risk of contamination of the existing water supply during construction of the Phase 2 development when connection of the proposed development watermain to the public water supply is being made.
- There is a risk of damage to watermain fittings due to high pressure in the existing watermain.
- There is a possibility of a temporary increase in traffic due to deliveries of materials and other construction related traffic.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There may be temporary interruptions to the local water supply during the connection works to the public network. Local residents that may be affected will be notified in advance of the works taking place.
- There will be some minor water demand for site offices. There is a risk of contamination to the existing water supply during connection of the development's watermains to the public water supply.

The construction of the Proposed Cherry Orchard Point - Phase 2 development will not give rise to any significant long term adverse impacts. Negative impacts during the construction phase will be slight (not significant) and short term only, as per the Approved Phase 1 Parent EIAR and masterplan lands impacts.

Operational Phase

There is a potential for watermain leaks which would increase the volume of water permeating through the underground soil strata. This has potential to cause a negative, moderate (significant) and permanent impact on the water supply network should no mitigation measures be implemented.

As per the Approved Phase 1 Parent EIAR, during the operational phase of the Proposed Cherry Orchard Point - Phase 2 development, there will be an increase in demand for water from the public water supply. This has potential to cause a negative, moderate (significant) and permanent impact on the water supply network should no mitigation measures be implemented. Uisce Éireann have however confirmed that capacity is available within the public water supply network to facilitate the masterplan lands, including the Proposed Cherry Orchard Point - Phase 2 development.

16.4.2 Proposed Foul Network

As previously noted under the existing foul water section, Uisce Éireann have advise it has a project underway which will provide the necessary upgrades and capacity and is scheduled for completion in Q3 2028. This is the upsizing of the existing 225mm Ø on Barnville Park to a 1050mm Ø pipe. The Phase 1A development (first construction phase of the Approved Phase 1 development) has been permitted by Uisce Éireann to proceed in advance of these upgrades works and will connect into the existing foul water network.

At the time of writing this document in January 2025, the construction programme for the Proposed Cherry Orchard Point - Phase 2 development is envisioned to start after Q3 2028. This timeline for delivery of upgrades (Q3 2028) should not impact connection for the proposed development to the Uisce Éireann network. However, further discussions are underway between DCC, The LDA, and Uisce Éireann to discuss and agree alternative measures to accommodate future phases via the use of a balancing tank to be constructed on Site 5, in advance of the proposed Uisce Éireann upgrades, if necessary.

In order to meet the above strategy, Uisce Éireann have confirmed that it is acceptable for Site 4 (for which includes Phase 2) to be served by a 300mm Ø trunk sewer at a gradient of 1/300. Uisce Éireann have confirmed that it is acceptable for Site 4 to be served by a 300mm Ø trunk sewer at a gradient of 1/300. This trunk sewer will reduce the depth that the existing site levels will have to be raised at the north of Site 4, to provide depth of cover to the foul network.

It is proposed, as per the Approved Phase 1 Parent EIAR, that Site 4 be drained via a series of 150mm and 225mm Ø sewers which will connect to the aforementioned 300mm Ø trunk sewer. This trunk sewer will leave Site 4 at the junction of Park West Avenue and Barnville Walk. It will proceed along Barnville Walk to connect to the existing foul network. The south of site 4 (high-density), will be served by a network of 225mm and 300mm Ø pipes. This network will exit Site 4 at the proposed southern access road and proceed north to connect to the 300mmØ trunk sewer. Site 5 will be drained via a network of 150mm and 225mm Ø pipes and will connect to the existing foul network at the connection point as specified by Uisce Eireann. All networks are proposed to drain by gravity and there is no requirement for pumping on the proposed foul networks.

It is proposed that the Proposed Cherry Orchard Point - Phase 2 development be drained via. gravity by 150mm Ø and 225mm Ø foul water pipes before connecting into the Approved Phase 1 development's foul water network. The preliminary foul water network design for the Proposed Cherry Orchard Point - Phase 2 development can be seen in Waterman Moylan Drawing No. COP-WMC-PH2-00-DR-P-0200 – Proposed Drainage General Layout Arrangement.

The Proposed Cherry Orchard Point - Phase 2 development is proposed to connect into the Approved Phase 1 development at 1 no. location as indicated in Figure 16.13.

The proposed foul water network layout arrangement for the Proposed Cherry Orchard Point - Phase 2 development is shown on Waterman Moylan Drawing No. COP-WMC-PH2-00-DR-P-0200 – Proposed Drainage General Arrangement.

The proposed internal foul drainage network has been designed and sized in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure and Standard Details.

The calculation of the foul water demand as per Section 3.6 of the Uisce Éireann Code of Practice for Wastewater Infrastructure (July 2020 Revision 2) for the masterplan development (including the Proposed Cherry Orchard Point - Phase 2 development) as per the Approved Phase 1 Parent EIAR is shown below:

Table 16.4: Calculation of Foul Water Flow (Masterplan Development)

	Description	Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
		No. People	*l/day*	*l/day*	*l/s*	*l/s*
Subject Application	708 Apartments	1,912	150	315,480	3.651	10.953
	Supermarket (2,523m²)	101	90	9,999	0.116	0.348
	Retail (373m²)	8	90	792	0.009	0.027
	Community space (1,222m²)	300	12	3,960	0.046	0.138
	Creche (672m²)	129	90	12,771	0.148	0.444
Phase 2	153 units	413	150	68,145	0.789	2.367
Phase 3	254 units	686	150	113,190	1.310	3.930
	Retail (1,200m²)	24	90	2,376	0.028	0.084
Phase 4	Office/Commercial (c. 16,310m²)	1,087	100	119,570	1.384	4.152
	Total	**4,660**		**646,283**	**7.481**	**22.443**

As per the Approved Phase 1 Parent EIAR, the total Dry Weather Flow for the masterplan lands is 7.48 l/s with a peak flow of 22.44 l/s.

The total quantum of units within the proposed subject site, Cherry Orchard Point - Phase 2, has since been updated to 137 no. units. The below table shows the updated foul water flow for the Proposed Cherry Orchard Point - Phase 2 development.

Table 16.5: Calculation of Proposed Cherry Orchard Point - Phase 2 Foul Water Flow

	Description	Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
		No. People	*l/day*	*l/day*	*l/s*	*l/s*
Phase 2	137 units	370	150	55,485	0,706	2,119

The total dry weather flow from the Proposed Cherry Orchard Point - Phase 2 development has been calculated as 0,706 l/s, with a peak flow of 2,119 l/s.

The total dry weather flow for the masterplan development is thus decreased to 7.39 l/s (from 7.48 l/s), with a peak demand of 22.19 l/s (from 22.44 l/s).

For the purpose of construction stage foul water discharge, the contractor will need to apply to Uisce Éireann for a temporary connection agreement at the appropriate time.

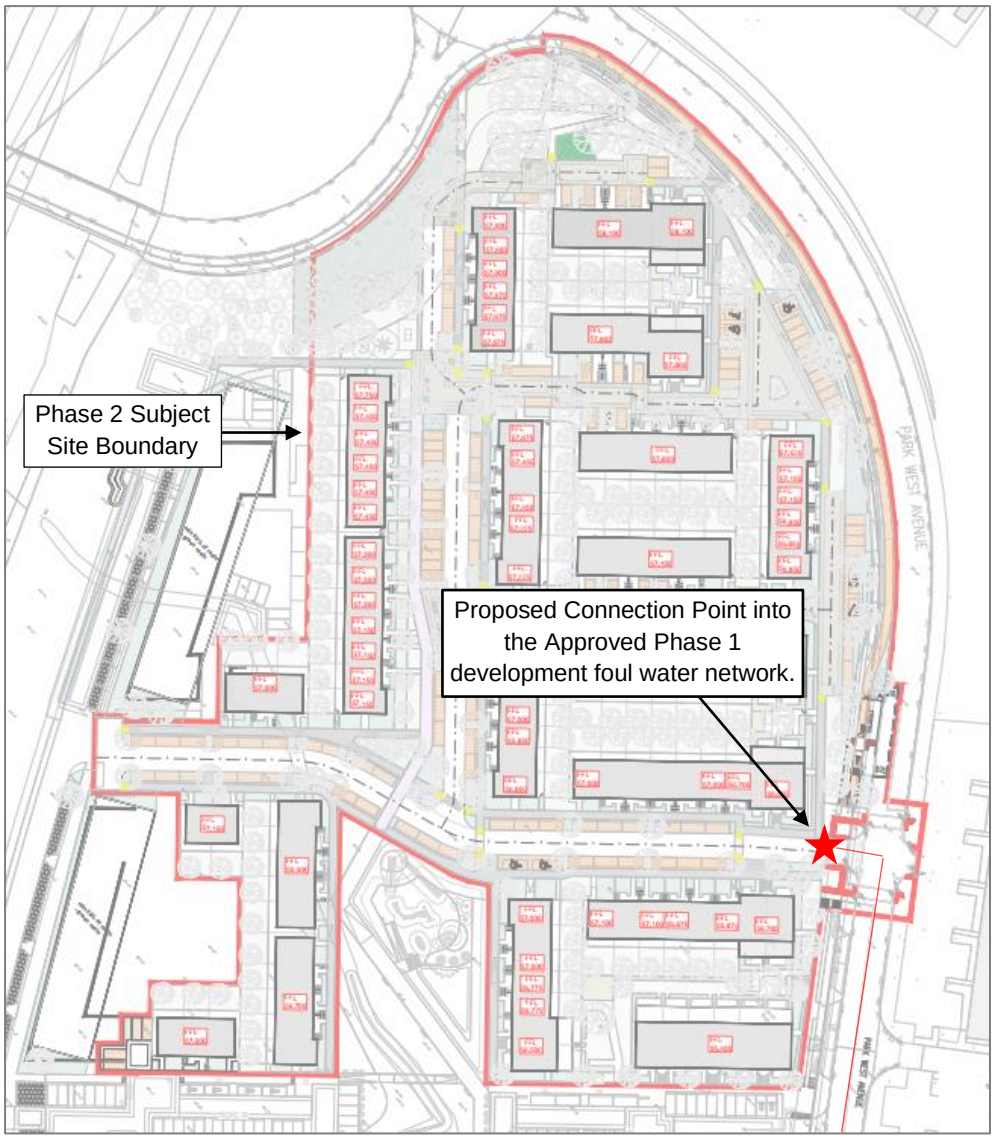


Figure 16.13: Proposed Cherry Orchard Point - Phase 2 Foul Water Network Connection Point

Foul water sewers will be constructed strictly in accordance with Uisce Éireann requirements. No private drainage will be located within public areas.

Drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document H of the Building Regulations.

Construction Phase

For the purpose of construction stage foul water discharge, the contractor will need to apply to Uisce Éireann for a temporary connection agreement at the appropriate time.

- There is a risk of the ingress of ground/surface water to the foul water network.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- Cross connection between foul and surface water pipes.
- There will be a temporary increase in the volume of foul water generated on-site by construction staff.

In-line with the parent EIAR, this has potential to cause a negative, moderate (significant) and permanent impact on the foul sewer network should no mitigation measures be implemented during the construction stage for the Proposed Cherry Orchard Point - Phase 2 development.

Operational Phase

- Blockages may occur within the pipe network and the wastewater could become septic.
- Foul water could be connected to the surface water drainage network.
- In the absence of mitigation measures these potential impacts are considered to be negative, significant and permanent.
- There is potential for leaks in the foul network to result in contamination of the groundwater.
- Accidental spills of fuels/hydrocarbons and washing down into the drainage pipe network has the potential to impact on the receiving hydrogeology.
- During the operational phase of the development, there will be an increase in demand for water from the public water supply, and increased loading to the foul water network.

In-line with the Approved Phase 1 Parent EIAR, this has potential to cause a negative, moderate (significant) and permanent impact on the foul sewer network should no mitigation measures be implemented for the Proposed Cherry Orchard Point - Phase 2 development.

16.4.3 Proposed Surface Water Network

It is proposed to construct a surface water drainage network that will service and attenuate the development internally before discharging at the current greenfield (or allowable) rates to the local Surface Water network. It is proposed that Site 4 (which includes the Proposed Phase 2 development) will connect to the existing 1,050mm Ø network in Cedar Brook Way, as per the Approved Phase 1 development. Site 5 will outfall to the 900mm Ø Network in Barnville Park.

Meetings were held with the Surface Water Department of Dublin City Council in 2022 & 2023 in order to agree the principles of the surface water and SuDS strategy of the masterplan lands. These meetings outlined the preliminary surface water strategy, SuDS strategy, and connection points. The overall preliminary proposal was deemed acceptable and suitable for further detailed design progression. It was agreed that the outflow rate be set at a maximum of 2 l/s/ha as per Dublin City Council requirements. This is in accordance with Dublin City Council's "SuDS Design and Evaluation Guide",

which instructs in their Flow Control Discharge Limits Table (page 43), that the 1-in-100-year maximum outflow rate shall be limited to 2 l/s/ha.

Discussions were held with the Surface Water Department of Dublin City Council on the preliminary design strategy of the Proposed Cherry Orchard Point - Phase 2 development on 4 November 2024. DCC confirmed that the surface drainage strategy presented, which includes the connection of the Proposed Cherry Orchard Point - Phase 2 site to the Approved Phase 1 developments surface water network that ultimately discharges into the existing network in Cedar Brook Way, was acceptable. They further confirmed that the internal drainage strategy was acceptable in principle and expressed a desire for maximum SuDS features within the subject site. It was also noted that the outflow rate is limited to 2 l/s/ha as per Dublin City Council policy, which is lower than the current greenfield runoff rate for the site, thus when the Proposed Cherry Orchard Point - Phase 2 development becomes developed, the runoff rate for the site will actually be reduced from its current rate.

For storm water management purposes, it is proposed to divide Sites 4 and 5 into four separate sub-catchments. Storm water from each catchment will be attenuated and discharge at a controlled rate, limited to a maximum of 2.0 l/s/ha, to ultimately outfall to the existing surface water networks at Cedar Brook Way and Barnville Walk.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS), Dublin City Council's SuDS Design and Evaluation Guide, and in the SuDS Manual. Based on four key elements – Water Quantity, Water Quality, Amenity and Biodiversity – the targets of the SuDS train concept have been implemented in the design, providing SuDS devices for each of the following:

- Source Control
- Site Control
- Regional Control

The Proposed Cherry Orchard Point - Phase 2 development incorporates a Storm Water Management Plan 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.

The SuDS devices proposed within the Approved Phase 1 development include permeable paving, filter drains, green/sedum roofing, bio-retention systems/raingardens, roadside trees, swales, attenuation tanks, flow control devices and petrol interceptors. These features will slow down and improve the quality of water flows discharging from the proposed development. The Proposed Cherry Orchard Point - Phase 2 development's surface water network will connect into the Approved Phase 1 development's network.

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 below the greenfield equivalent runoff rate for each catchment. As per the Masterplan Lands surface water management strategy, provision for attenuation storage for the Proposed Cherry Orchard Point - Phase 2 development has been made for within the Approved Phase 1 development via. an above ground detention basin and below ground pluvial cube storage system. The attenuation area is located on the boundary of the Proposed Cherry Orchard Point - Phase 2 development and Approved Phase 1 development, within the approved park area under the Approved Phase 1 development.

The sustainable urban drainage systems proposed for the Proposed Cherry Orchard Point - Phase 2 development are as follows:

- Private rain gardens located in rear gardens of units;
- Public rain gardens located adjacent to the internal roads network;
- Bio-retention tree pits located adjacent to the internal roads network;
- Permeable paving below all parking spaces;
- Strategically located swales.

The proposed drainage and SUDS strategies can be seen on drawing the following Waterman Moylan Drawing No.'s:

- COP-WMC-PH2-00-DR-P-0200 – Proposed Drainage General Arrangement.
- COP-WMC-PH2-00-DR-P-0205 – Proposed SUDS Layout
- COP-WMC-PH2-00-DR-P-0210 – Proposed SUDS Details

Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Fingal County Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to Dublin City Council for taking in charge.

All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.

Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.

A site-specific Flood Risk Assessment has been carried out for the Proposed Cherry Orchard Point - Phase 2 development and accompanies this submission under separate cover.

Construction Phase

- There is a risk that once topsoil has been stripped from the Phase 2 site there will be higher runoff rates from the lands with increased amount of silt to existing surface water networks on the adjacent roads in the runoff.
- There is a risk of pollution of groundwater / surface water networks / soils by accidental spillage of oils / diesel from temporary storage areas or where maintaining construction equipment.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- Cross Connection between surface water and foul pipes.

In-line with the Approved Phase 1 Parent EIAR, this has potential to cause a negative, moderate (significant) and permanent impact on the surface water sewer network / groundwater should no mitigation measures be implemented for the Proposed Cherry Orchard Point - Phase 2 development.

Operational Phase

- There is a potential impact for the discharge of contaminants from the Proposed Cherry Orchard Point - Phase 2 development and road surfaces to the surrounding drainage sewers. These would include particulates, oil, soluble extracts from the bitumen binder etc. The quality of runoff from the site would be dependent on the time of year, weather, particulate deposition from the

atmosphere and any gritting or salting carried out by the Local Authority. The time of year has a major bearing on the quality of storm water run-off - in particular the first rains after a prolonged dry period where accumulated deposits of rubber, particulates, oils, etc. are, washed away.

- Stagnation of the water and siltation within the attenuation areas may occur.
- DCC policy restricts the designed outflow rate to a maximum of 2.0 l/s/ha. This is below the current greenfield runoff rate. This limitation reduces the flow rate of surface water entering the surface water network that may contribute to downstream flooding when compared to the current, undeveloped site conditions.

In-line with the Approved Phase 1 Parent EIAR, this has potential to cause a negative, moderate (significant) and permanent impact on the surface water sewer network / groundwater should no mitigation measures be implemented for the Proposed Cherry Orchard Point - Phase 2 development.

16.4.4 Proposed Electricity, Gas and Telecommunications

Construction Phase

ESB Network

The installation of the ESB utilities for the Phase 2 development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

The relocation or diversions of the existing overhead and underground ESB lines may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

The site compound within the Proposed Cherry Orchard Point - Phase 2 development will require a power connection. This likely negative impact will be temporary and negligible.

Gas

It is not proposed to bring gas services to any buildings within the site and therefore any proposed works would be limited to a localised diversion that may be required at or near the site boundary to allow permanent works to progress.

The potential loss of connection to the Gas Networks Ireland infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, regionally short term, moderate (significant) impact.

Telecommunications – Eir & Virgin

The installation of the telecommunications utilities for the Phase 2 development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

The potential loss of connection to the telecommunications infrastructure while carrying out works to provide service connections. This likely negative impact may be characterised as a temporary, regionally short term, moderate (significant) impact.

The site compound will require a telecommunications connection. This likely negative impact will be temporary and negligible.

Operational Phase

ESB Network

There will be an increased demand for power once the Proposed Cherry Orchard Point - Phase 2 development is occupied however this will have no impact on existing consumers.

Gas

There will be no increase in demand for gas as a result of the Proposed Cherry Orchard Point - Phase 2 development and there will be no impact on existing consumers.

Telecommunications – Eir & Virgin

The impact of the operational phase of the proposed development on the telecommunications network would be to increase the demand on the existing network to accommodate the Proposed Cherry Orchard Point - Phase 2 development however this will have no impact on existing consumers.

16.5 Mitigation Measures

16.5.1 Water Supply

Construction Phase

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the Proposed Cherry Orchard Point - Phase 2 development. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application.

- All existing services will be located using service records, GPR surveys, and slit trenches to ensure that their position is accurately identified before excavation works commence.
- All water mains will be cleaned, sterilised, and tested to the satisfaction of the Uisce Eireann/Local Authority prior to connection to the public water main.
- All connections to the public water main will be carried out under the supervision of the Uisce Eireann/Local Authority.

No additional mitigation measures at the construction phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report

Operational Phase

- Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

No additional mitigation measures at the operational phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

16.5.2 Foul Water

Construction Phase

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.

All existing services will be located using service records, GPR surveys, and slit trenches to ensure that their position is accurately identified before excavation works commence.

In order to reduce the risk of defective or leaking foul sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.
- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.
- Public networks are proposed to be taken in charge by Uisce Eireann, and as such will be subject to post construction review and inspection as part of this process.

No additional mitigation measures at the construction phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

Operational Phase

It is not envisaged that any further remedial or reductive measures will be necessary upon completion. No additional mitigation measures at the operational phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

16.5.3 Surface Water

Construction Stage

Sites 4 and 5 have no direct hydrological connectivity to natural watercourses or surface water networks. There may be an indirect link from surface water runoff which may have the potential to run off the site boundary to the surface water gullies on the adjacent road networks. These networks outfall to the Blackditch Stream.

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Blackditch Stream, and the Camac River which has an ultimate outfall to the River Liffey at Heuston. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001);
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines;
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- CIRIA 697, The SUDS Manual, 2007; and
- UK pollution Prevention Guidelines (PPG) UK Environment Agency, 2004

The schedule of mitigation presented within the following table summarises measures that will be undertaken for the Proposed Cherry Orchard Point - Phase 2 development in order to reduce impacts on ecological receptors within the zone of influence which would include surrounding soils, the public water supply network, groundwater aquifers, and the public surface water network.

Table 16.6: Schedule of Surface Water Mitigation Measures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from carparking area entering the drainage network.	Water quality impacts.	Petrol interceptor to be installed on drainage network prior to outfall to public surface water network.	Prevents hydrocarbons from entering the public surface water network.
2	Pollutants from site compound areas entering the drainage network or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Materials to be stored appropriately in designated areas (discussed below). Temporary foul water connection to be obtained from Uisce Éireann to serve site compound welfare facilities.	Prevents contamination of public surface water network, soil, and groundwater.

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
3	Pollutants from material storage areas entering the watercourse or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Fuels, oils, greases, and other potentially polluting chemicals will be stored in roofed and bunded compounds at the Contractor's compound. Storage area to be located over 50m away to ensure no direct pathway to the surface water network. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided the Contractor for review by the Employer's Representative.	Prevents contamination of public surface water network, soil, and groundwater.
4	Concrete/ cementitious materials entering the drainage network.	Water quality impacts	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of public surface water network. Ensures invasive species material is not transported off site as muck.
5	Leaching of contaminated soil into groundwater.	Groundwater quality impacts	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water.	Prevents contamination of groundwater.
6	Pollutants from equipment storage/ refuelling area entering the drainage network.	Water quality impacts	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas. Discharge licence (where required) pollutant limits to be monitored and adhered to. The site is located at least 50m from any direct pathway to the surface water drainage network.	Prevents contamination of public surface water network.
7	Runoff from exposed work areas and excavated material storage areas entering the drainage network.	Water quality impacts due to silt entering the network.	Provision of silt entrapment facilities such as; straw bales, silt fencing, silt barriers, diversion drains, settlement tank(s), & settlement pond(s), as appropriate and as outlined below.	Prevents contamination of public surface water network.

As mentioned previously, there is no direct hydrological connectivity from the Proposed Cherry Orchard Point - Phase 2 development (nor the masterplan lands) to natural watercourses or surface water networks. There is potential for an indirect hydrological connectivity to the local surface water drainage network, whereby during heavy rainfall events, surface water from Sites 4 and 5 flows over the site boundary to the road gullies on the adjacent streets.

The most likely potential sources of contamination to the local surface water network are from silt and suspended particles, and from chemical compounds entering these networks as surface water runoff.

Silt and suspended particles may arise from surface runoff from stockpiled materials or from the pumping of water volumes in excavations.

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream.

Site stripping will be minimised as far as practicable. The proposed sediment entrapment facilities are as follows:

Straw Bales:

Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

Silt Fencing

A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing can be placed as a temporary barrier along the contour at the base of a disturbed area but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter should be considered.

Silt Barriers

Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff should be collected in diversion drains and routed through temporary sediment basins.

Diversion Drains

Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded, they can be lined with geotextile fabric or large stones or boulders.

Settlement tank

Commercially available settlement tanks, also known as sediment tanks, have compartments that allow suspended solid contents such as sand and silts to precipitate and sink to the bottom, falling out of suspension. The settlement tank has an inlet for the runoff which enters a chamber where it is held before flowing to the next compartment or tank for further treatment, prior to outfall.

Spoil heap/stockpiles

Spoil heap/stockpiles will not be located within 20m of the existing surface water networks. Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons. Drainage diversion ditches will be constructed between the stockpile area and local surface water networks. This drainage ditch will flow to a sedimentation/settlement pond prior to outfalling to the surface water network. A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Further mitigation measures include:

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the

contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application. The main contractor will be required to schedule delivery of materials daily. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Chemical contamination during construction stage can result due to fuel/chemical leaks and spills. Spills and leaks may contaminate soil, groundwater, and surface water networks via surface run-off. Method statements and mitigation measures reduce the potential for leaks and spills and limit their impact should they occur.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and surrounding watercourses from oil and petrol leakages and significant siltation. Suitable bunded and roofed 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. Spill kits will be provided by the Contractor to cater for any other spills.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.

On-site treatment measures will be installed to treat surface water run-off from the site prior to discharge to the receiving surface water sewer as noted above. This treatment will be achieved by the construction of settlement tanks/ponds, in conjunction with the installation of proprietary surface water treatment systems including class 1 full retention petrol interceptors, and spill protection control measures. Settlement tanks/ponds will be sized to deal with surface run-off and any groundwater encountered.

A sampling chamber with shut down valve will be installed downstream of the settlement pond/tank and water quality monitoring will be carried out here prior to discharge to the surface water sewer.

Regular testing of surface water discharges will be undertaken at the outfall from the subject lands in accordance with the requirements of the discharge licence to be obtained. The location(s) for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman or appointed, suitably qualified site staff member at the commencement of works.

Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.

It is likely that the surface water run-off from the site will be discharged to the existing public surface water network, post treatment. This will need to be confirmed between the Contractor and Local Authority, as well as any further conditions such as the permitted levels of contamination as well as frequency for testing, as part of the Contractor's application for a discharge licence.

All water pumped from the excavations will require to be treated for silt and deleterious matter. During any discharge of surface water from the excavations, the quality of the water will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in the table below must be followed during construction in order to ensure maintenance of water quality protection. This is in line with Transport Infrastructure Ireland (TII)'s 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'. It is considered that the parameter limit values (Guide/Mandatory) defined in the Fresh Water Quality Regulations (EU Directive 2006/44/EEC) should act as a trigger value for the monitoring of Surface Water.

Table 16.7: Monitoring Guidelines (Fresh Water Quality Regulations)

Parameter	Limit		Frequency and Manner of Samplings
	Limit Value	Guide/Mandatory	
Temperature	1.5°C	Mandatory Limit	Weekly, and at appropriate intervals where the works activities associated with the scheme have the potential to alter the temperature of the waters.
Dissolved oxygen	50% of Samples ≥ 9 (mg/l O2) 100% of Samples ≥ 7 (mg/l O2)	Guide Limit	Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH	6 to 9	Mandatory Limit	Weekly
Nitrites	≤0.01 (mg/l N02)	Guide Limit	Monthly
Suspended Solids	≤25 (mg/l)	Guide Limit	Monthly
BOD5	≤3 (mg/l)	Guide Limit	Monthly
Phenolic Compounds	-	-	Monthly where the presence of phenolic compounds is presumed (An examination by test)
Petroleum Hydrocarbons	5 (mg/l)	Guide Limit	Monthly (visual)
Non-Ionized Ammonia	≤ 0.005 (mg/l NH3)	Guide Limit	Monthly
Total Ammonium	≤ 0.004 (mg/l NH4)	Guide Limit	Monthly
Total Residual Chlorine	≤ 0.005 (mg/l HOCl)	Mandatory Limit	At appropriate intervals where works activities associated with the scheme have the potential to alter the Total residual Chlorine of the waters
Electrical Conductivity	-	-	Weekly

The Main Contractor will have overall responsibility for the implementation of the Proposed Cherry Orchard Point – Phase 2 project Construction Surface Water Management Plan (CSWMP) during the construction phase. The appointed person from the Main Contractors team will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CSWMP. At the operational level, a designated person from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CSWMP are performed on an on-going basis.

Copies of the Construction Surface Water Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the CSWMP and informed of the responsibilities which fall upon them because of its provisions.

The responsibilities of the appointed person will be as follows;

- Updating the CSWMP as necessary to reflect activities on site.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.

- Ensure pre-construction checks for protected species, are undertaken.
- Review method statement of the sub-contractors to ensure that it incorporates all aspects of CSWMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required.
- Ensure adherence to the specific measures listed in the Planning Conditions.
- Advise upon the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential, or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental related documentation.
- Ensure plant suggested is environmentally suited to the task in hand.
- Co-ordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists.
- To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site.

Where possible, precast concrete units are to be used to avoid on-site "wet" mix concrete usage. In-situ concrete pours are to be managed in accordance with best practice to avoid overspills.

Wheel wash and wash down facilities are to be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds/silt traps.

A method statement setting out in detail the procedure 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 and or services crossing watermains.

All watermains will be cleaned and tested in accordance with Uisce Éireann guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out and tested by or under the supervision of Uisce Eireann.

In order to reduce the risk of defective or leaking foul and surface sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.

- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.

Operational Stage

The implementation of the following operation stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the Proposed Cherry Orchard Point - Phase 2 development lands:

The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.

Surface water outflow will be restricted to below the equivalent greenfield runoff rate from the proposed attenuation tanks and basins as per the catchment design, in accordance with Dublin City Council requirements.

Sustainable urban drainage measures, including green roofs, permeable paving, and filter strips/swales will be provided to improve water quality.

A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.

A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections. The table overleaf is an extract from Section 12.3 of the SuDS Design & Evaluation Guide and generally describes the regular maintenance aspect for the SuDS.

Table 16.8: Regular Maintenance Requirements for SuDS for the Proposed Cherry Orchard Point – Phase 2 Development

Type	Activity	Normal site care (Site) or SuDS-specific maintenance (SuDS)	Suggested frequency
Regular Maintenance			
Litter	Pick up all litter in SUDS Landscape areas along with remainder of the site – remove from site	Site	1 visit monthly
Grass	Mow all grass verges, paths and amenity grass at 35-50mm with 75mm max. Leaving cuttings in situ	Site	As required or 1 visit monthly
Grass	Mow all dry swales, dry SUDS basins and margins to low flow channels and other SUDS features at 100mm with 150mm max. Cut wet swales or basins annually as wildflower areas – 1st and last cuts to be collected	Site	4-8 visits per year or as required
Grass	Wildflower areas strimmed to 100mm in Sept or at end of school holidays – all cuttings removed Or Wildflower areas strimmed to 100mm on 3 year rotation – 30% each year – all cuttings removed	Site	1 visit annually 1 visit annually
Inlets & outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	SuDS	1 visit monthly
Permeable paving	Sweep all paving regularly to keep surface tidy	Site	1 visit annually or as required

There will still be a remaining requirement for more intensive maintenance tasks to be undertaken however, the severity of these tasks can be reduced by regular inspections and proactive responses being incorporated as a part of the regular maintenance regime discussed above. A table showing the typical requirements for the occasional maintenance tasks and remedial works is extracted from the SuDS Design & Evaluation Guide to overleaf.

Table 16.9: Further Maintenance Requirements for SuDS for the Proposed Cherry Orchard – Phase 2 Development

Occasional Tasks			
Permeable paving	Sweep and suction brush permeable paving when ponding occurs	SuDS	As required - estimate 10-15 year intervals
Flow controls	Annual inspection of control chambers - remove silt and check free flow	SuDS	1 visit annually
Wetland & pond	Wetland vegetation to be cut at 100mm on 3 – 5 year rotation or 30% each year. All cuttings to be removed to wildlife piles or from site.	Site	As required
Silt	Inspect swales, ponds, wetlands annually for silt accumulation	Site & SuDS	1 visit annually
Silt	Excavate silt, stack and dry within 10m of the SUDS feature, but outside the design profile where water flows. Spread, rake and overseed.	Site & SuDS	As required
Native planting	Remove lower branches where necessary to ensure good ground cover to protect soil profile from erosion.	SuDS	1 visit annually
Remedial Work			
General SuDS	Inspect SuDS system to check for damage or failure when carrying out other tasks. Undertake remedial work as required.	SuDS	Monthly As required

Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Dublin City Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to Dublin City Council for taking in charge.

All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.

Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.

All SuDS and surface water drainage networks proposed in the public domain will be constructed to the standards required for Taking in Charge.

Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

16.5.4 Electricity

Construction Phase

All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.

The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

All connections to the existing ESB Network will be completed directly by ESB Networks and any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

Operational Phase

All works will be completed in accordance with ESB details and standards and will be deemed to be safe for use with no impact on the receiving environment once installed.

16.5.5 Gas

Construction Phase

All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.

The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

Any works required on existing gas mains will be completed directly by the Gas Networks Ireland or by the specialist sub-contractors appointed on their behalf and any loss of supply will be managed by Gas Networks Ireland.

Operational Phase

All works will be completed in accordance with GNI details and standards and will be deemed to be safe for use with no impact the receiving environment once installed.

16.5.6 Telecommunications

Construction Phase

All connections to the existing telecoms infrastructure will be completed directly by the telecoms providers or by the specialist sub-contractors appointed on their behalf and any loss of supply will be managed by the respective telecoms providers to minimise impact on neighbouring properties.

Operational Phase

All works will be completed in accordance with the relevant details and standards and will be deemed to be safe for use with no impact the receiving environment once installed.

16.6 Residual Impacts

16.6.1 Water Supply

Construction Phase

Due to the proposed mitigation measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in water demand and foul water outflow during the period of construction. This increase in water demand will be ***negative***, ***slight (not significant), likely, and short-term*** in nature.

Operational Phase

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts during the operational phase of the Phase 2 development will not arise due to the above-mentioned mitigation measures.

There will be an increased water demand generated for the proposed development. Uisce Éireann have confirmed in their Confirmation of Feasibility Letter that the existing network has sufficient capacity to cater for the development. The impact will be ***slight (not significant), negative, & permanent.***

It is not envisaged that any other remedial or reductive measures will be necessary upon the completion of the development.

16.6.2 Foul Water

Construction Phase

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in foul water outflow during the period of construction. This increase in foul flows generated with be ***slightly negative, slight (not significant), likely, and short-term*** in nature.

Operational Phase

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts will not arise during the operational phase of the proposed development.

There will be an increased foul flow volume generated for the proposed development. Uisce Éireann have confirmed that upgrades to the public network are scheduled for completion in Q3 2028 and for which will facilitate the Proposed Cherry Orchard Point - Phase 2 development and remaining phases of the masterplan lands. The current programme of works for the Proposed Cherry Orchard Point - Phase 2 development is expected to start after Q3 2028 and thus it is assumed that Uisce Éireann will have the required capacity for the Subject Site.

16.6.3 Surface Water

Construction Phase

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in surface water outflow during the period of construction. This increase generated with be ***negative, slight (not significant), likely, and short-term*** in nature.

Operational Phase

There is no potential for adverse or minor temporary, or localised effects on the Dublin groundwater body as a result of the proposed development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration on its water body status or prevent attainment or potential to achieve the WFD objectives.

There are appropriately designed mitigation and design measures which will be implemented during the construction phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases however, these are temporary, short-lived events that will not impact on the water status of the underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessments.

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts will not arise during the operational phase of the proposed development on surface water and groundwater quality.

Surface water discharge from the site will be restricted by means of attenuation to below the current greenfield runoff rate, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development. The impact will be positive, slight, & permanent.

The installation of a Sustainable Urban Drainage System will ensure surface water runoff will be of high quality before discharge to the local surface water network and will not have an impact on the receiving waters downstream of the development. The impact will be ***positive, slight (not significant), & permanent.***

16.6.4 Electricity

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on ESB infrastructure.

Operational Phase

There will be an increased demand on the ESB Network as a result of the development however it is not expected that this will have any impact on the operation of the network.

16.6.5 Gas

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on gas infrastructure.

Operational Phase

There will be no increase in demand for gas as a result of the Phase 2 development and there will be no impact on existing consumers.

16.6.6 Telecommunications

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on telecommunications infrastructure.

Operational Phase

There will be an increased demand on the telecommunications network as a result of the development however it is not expected that this will have any impact on the operation of the network.

16.7 Cumulative Impacts

The main interactions relating to this Environmental Report Chapter are Land & Soils, Biodiversity, and Utilities.

During construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants leaking into the underlying geology.

In respect of Biodiversity, there is interaction between hydrology and the downstream habitats present as the public surface water network outfalls volume and water quality to the natural watercourse. The mitigation measures ensure that surface water runoff is treated to the required standards so that downstream habitats are not negatively impacted.

16.7.1 Electricity

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services for foul, water supply and surface water drainage, provided that the other developments implement appropriate mitigation measures.

16.7.2 Gas

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

16.7.3 Telecommunications

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

16.8 Monitoring

Implementation of the Construction Management Plan is required to protect the hydrology and groundwater elements of the subject lands during construction stage. Maintenance of the mitigation measures and monitoring of the management processed is required to ensure best practice.

The monitoring measures to be implemented include:

- Monitoring of the management and storage of dangerous chemicals and fuel.

- Monitoring and maintenance of the wash and wheel wash facilities.
- Regular maintenance and monitoring of the sediment control measures.
- Monitoring and maintenance of the SUDS features, road gullies and, attenuation ponds and or sedimentation facilities during the construction phase of the development. (this will become the responsibility of the Local Authority when Taken in Charge).

Monitoring to be undertaken by others upon handover of utility networks includes:

- The water usage within the proposed development will be monitored via the bulk water meters. Records will be maintained by Uisce Eireann to ensure any excess usage is identified and investigated as necessary.
- Uisce Eireann will monitor the operation of the foul drainage network including the receiving environment.
- The construction and waste management plans will be adhered to.
- The provision of utility services including electricity, gas and broadband will be monitored by the relevant utility provider.

16.9 Difficulties Encountered

There were no particular difficulties encountered compiling the Material Assets – Utilities Chapter of this Environmental Report.

16.10 Reinstatement

No reinstatement is anticipated on site with respect to the Water environment.

16.11 References

- Approved Cherry Orchard Point Phase 1 Parent EIAR
- Environmental Impact Assessment Reports – Guidelines, (2022), Environmental Protection Agency
- Environmental Protection Agency mapping available at http://gis.epa.ie/EPAMaps/
- An Bord Pleanála bord order ABP-318607-23
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Ground Investigation Report, July 2024 (Document ref: 13687-03-24)
- Ground Investigations Ireland Cherry Orchard Site 4 and 5 Phase 2 – Waste Classification Report, August 2024 (Document ref: 13687-03-24)
- Uisce Éireann's Code of Practice for Wastewater Infrastructure
- Uisce Éireann's Code of Practice for Water Infrastructure
- Conroy Crowe Kelly Architects – Schedule of Accommodation (05.11.2024)
- Geological datasets available at www.gsi.ie
- Greater Dublin Strategic Drainage Study (GDSDS), (2015), Dublin Drainage
- OPW Eastern CFRAM study
- OPW Flood Hazard Mapping
- EIAR Chapter 10 for a Proposed Residential Development at Church Fields East, Mulhuddart, Dublin 15, Produced by Brady Shipman Martin.
- www.water.ie/projects/local-projects/ringsend/

17 Interactions

17.1 Introduction

This chapter deals with the likely interactions between effects predicted as a result of the proposed development. This chapter has been prepared in accordance with the requirements set out within the Planning and Development Regulations 2001 (as amended) and Directive 2011/92/EU (as amended by Directive 2014/52/EU) (the **"EIA Directive"**).

17.2 Definitions

Article 3(1) of the EIA Directive requires environmental impact assessments to include interactions of key effects assessed. The environmental impact assessment must 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.

Accordingly, this Environmental Addendum Report seeks has identified the potential impacts of the proposed development, and this chapter summarises all of the interactions identified in the assessment of impacts set out in Chapters 5 to 16.

Impact interactions and inter-relationships have been considered as part of the preparation of the individual, topic specific, chapters so that each assessment takes into account the broader picture of how the proposed scheme may affect the various environmental media. All environmental topics are interlinked to a degree such that interrelationships exist on numerous levels. As outlined in the *Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022)* prepared by the EPA, it is standard practice to evaluate the interaction of effects as a matrix between effects and key factors addressed, accompanied by brief text describing the interactions identified.

Table 17.1 presents a matrix of the potential interactions across each of the various Chapters of the Environmental Addendum Report for both the construction and operational phases of the development.

17.3 Interactions of Effects

Table 17.1 Interaction between key factors assessed.

Some interaction ✓ No Interaction x	Air Quality		Climate Factors		Noise and Vibration		Biodiversity		Landscape and Visual		Land, Soils and Geology		Water		Population and Human Health		Traffic and Transport		Waste Management		Utilities	
	Con	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*	*Con*	*Ope*
Air Quality			✓	✓	x	x	x	x	x	x	✓	x	x	x	✓	✓	✓	✓	x	x	x	x
Climate Factors	x	x			x	x	x	x	x	x	x	x	x	✓	x	x	x	x	✓	✓	x	x
Noise and Vibration	x	x	x	x			x	x	x	x	x	x	x	x	x	x	✓	x	x	x	x	x
Biodiversity	x	✓	x	x	✓	✓			✓	✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x
Landscape and Visual	x	✓	x	✓	x	x	✓	✓			x	x	x	✓	x	✓	x	✓	x	x	x	✓
Land and Soils	✓	x	x	x	x	X	x	x	x	x			✓	x	x	x	✓	x	x	x	x	x
Water	x	x	x	x	x	x	x	✓	x	x	✓	✓			✓	x	✓	x	x	x	✓	✓
Population and Human Health	✓	x	✓	x	✓	x	x	x	✓	✓	✓	x	✓	x			✓	✓	✓	x	x	x
Traffic and Transport	✓	✓	x	x	✓	x	x	x	x	x	✓	x	x	x	✓	✓			✓	✓	x	x
Waste Management	x	x	x	x	x	x	x	x	x	x	✓	x	x	x	✓	✓	✓	✓			x	x
Utilities	x	x	x	x	x	x	x	x	x	x	x	✓	✓	✓	✓	x	✓	✓	x	x		

'Con' = Construction Phase Interactions
'Ope' = Operations Phase Interactions

17.3.1 Air Quality

The main interactions with air quality and climate and other topics/media are set out below.

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health, Traffic, Climate, Land and Soils and Biodiversity.

Population and Human Health

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. Therefore, the predicted impact is ***short-term, imperceptible, negative and non-significant*** with respect to population and human health during construction, and ***long-term, imperceptible, neutral and non-significant*** during the operational phase.

Traffic

Interactions between air quality and traffic (Chapter 14) can be significant, in particular in light of Directive (EU) 2024/2881 which significantly reduces the ambient air quality limit values. 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 roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be ***long-term, imperceptible, and neutral*** for the opening year which is prior to the reduction in legal limit values as per Directive (EU) 2024/2881.

These interactions have the potential to impact both human health (Chapter 13) and biodiversity (Chapter 8). Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

This may include measures which impact traffic and reduce private vehicle usage in favour of active travel or public transport.

Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the climate chapter (Chapter 6) to inform the climate assessment.

There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

Land and Soils

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.

As set out in Chapter 11 (land, soils, geology, and hydrogeology), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g., dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air

quality in the locality. The impact of the interactions between air quality, land, soils, and geology are considered to be ***short-term, imperceptible, and neutral.***

Biodiversity

There is the potential for interactions between air quality and biodiversity. During the construction phase dust will be generated which may impact vegetation. There are no sensitive ecological sites within 250m of the proposed development and therefore the potential for dust impacts is ***imperceptible.***

Additionally, a high-level of mitigation will be in place throughout the construction phase to mitigate dust emissions from site activities. Therefore, dust emissions will not have a significant impact on biodiversity. Impacts to the sensitive ecological species within the Grand Canal pNHA as a result of changes in air quality due to traffic emissions during the operational phase are predicted to be ***long-term, negative, and slight,*** which is overall not significant in EIA terms.

No other significant interactions with air quality have been identified.

17.3.2 Climate Factors

The main interactions with Climate Factors and other topics/media are set out below. Climate has the potential to interact with a couple of other environmental attributes.

Water

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for run-off from the building and the surrounding hardscaped areas in accordance with a minimum 1 in 100-year event plus 20% climate change allowance. Interactions between climate and hydrology are ***not considered significant.***

Material Assets: Waste

Interactions between climate and Material Assets – Waste can occur. Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. Therefore, ***no significant interactions*** between climate and waste are predicted.

No other significant interactions between climate and other environmental topics have been identified.

17.3.3 Noise and Vibration

The main interaction with noise and vibration and other / topics media are set out below.

Traffic and Transportation

This chapter has used information from chapter 14 Material Assets – Traffic and Transport and the architectural drawings to inform the assessment of noise and vibration impacts. With increased traffic movements, the noise levels in the surrounding area have the potential to increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site. In this assessment, the impact of the interactions between traffic and noise are considered to be imperceptible to not significant on all junctions.

While chapter 7 has not outlined the interactions with Population and Human Health, Chapter 13 has outlined the impacts during the construction stage of development in relation to noise and disturbance experienced by neighbouring residents.

The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from and around the site. The closest Category A receptors from the area of construction works are residential properties at St Oliver's Park at distances of greater than 60m. The construction noise predictions indicate that noise levels from construction works will be below the CNT set out within BS5228 and above the baseline noise levels. As such, the predicted impact on the population and human health in respect of noise is considered ***negative, slight to moderate and brief to short-term.***

The overall impact is deemed to be ***not significant.***

17.3.4 Biodiversity

All environmental factors are interlinked to a degree such that interrelationships exist on numerous levels. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions which can be influenced by the proposed development. The purpose of examining these interactions is to draw attention to significant interaction and interrelationships in the existing environment. In preparing and co-ordinating this Environmental Report, each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development, ensuring that appropriate mitigation measures were incorporated into the design process.

The main interaction with biodiversity and other / topics media are set out below.

Land, Soils and Geology

When soil is exposed after vegetative clearance there may be increased run-off and evaporation. Mitigation measures will be implemented during construction to prevent this run-off water from discharging directly to watercourses. Potential construction stage effects arising from the general loss and fragmentation of some habitats and reduction of associated opportunities for biodiversity are considered neutral to slight negative during the construction phase, while potential operational stage effects are considered imperceptible neutral as new planting/landscaping matures. Residual soils arising as a result of excavation at the development site will be used in landscaping works in the proposed public open space as much as possible rather than transporting off-site.

Water

When land surfaces are exposed after vegetative clearance there may be increased run-off and evaporation. Mitigation measures will be implemented during construction to prevent this run-off water from discharging directly to watercourses. As concluded in the Appropriate Assessment Screening Statement submitted with the application there are no elements of the proposed development that are likely to give rise to significant effects on the local Natura 2000 sites. The implementation of construction and operational phase soils and water management proposals, together with the site drainage design will adequately reduce such potential impacts arising from the proposed development site on these aquatic habitats in the wider area. Potential construction and operational phase effects on biodiversity associated with aquatic habitats in the wider area are considered ***imperceptible*** neutral with the implementation of soils and water management proposals.

Landscape and Visual

The landscape masterplan proposed as part of the proposed development will retain and enhance the remaining hedgerows features with native planting, tree cluster/treelines, small areas of wildflower meadow and parkland/garden habitat. Potential construction stage effects arising from the general loss and fragmentation of some habitats and reduction of associated opportunities for biodiversity are considered neutral to slight negative during the construction phase, while potential operational stage effects are considered ***imperceptible*** neutral as new planting/landscaping matures. Due to the existing degraded nature of the habitats on site the loss of these will have little residual negative impact on this

locality and no residual impact in the national or international context. Otherwise, the successful implementation of the mitigation measures as outlined in this Environmental Report and accompanying documents, together with the landscape masterplan will minimise the potential impacts of the proposed development on local biodiversity such that its residual impact on other habitats, flora and fauna will be imperceptible neutral overall. There will be an increase in ecological niche availability associated with the post construction phase of this proposed development. The removal of some vegetation within the development footprint and surrounding areas is likely to result in a change to the visual landscape during the construction phase, which will become part of the normal landscape of the wider area for the duration of the operational phase. The visual effect of this change is considered to be ***long-term, localised and slight.***

Noise

Increased noise levels during the construction phase will only be temporary and are not expected to have a long-term significant adverse effect upon remaining fauna within the wider landscape. Operational noise will be audible at a low level in the ambient noise and the impact is predicted to be minor.

Air Quality

Exposed soil during the construction phase of the proposed scheme may give rise to increased dust emissions. However, the implementation of dust management and dust control measures will ensure that the proposed development will not give rise to the generation of any significant quantities of dust.

17.3.5 Landscape and Visual

The landscape and visual aspects of the development invariably intertwine in relation to the social qualities of passive and active amenities and civic qualities in the public realm, transport, natural heritage particularly relating to enhancing biodiversity and creating resilience to climate change.

17.3.6 Land and Soil

There will be an interaction between this chapter and the following chapters:

Material Assets - Traffic.

There will likely be a requirement for surplus excavated soil volumes to be transported by road for disposal or re-use. Haulage details are discussed in the Traffic and Transport Chapter of this Environmental Report Addendum.

Water

Site preparation works can potentially lead to elevated silt/sediment or other contaminant loading due to construction site runoff. Dewatering of excavations during the construction phase can result in water with elevated silt and possible chemical contaminants requiring discharge to the local drainage system.

Construction stage works can potentially impact water due to the risk of accidental spills, cross-contamination due to incorrect waste soils management, use of contaminated material as fill, etc.

Air Quality

Dust generated during site clearance, reprofiling, excavation, and soil reinstatement works can lead to temporarily diminished air quality.

17.3.7 Water

The main interactions relating to Water are the interactions with Land & Soils, Biodiversity, and Utilities.

Land and Soils

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants leaking into the underlying geology.

Biodiversity

In respect of Biodiversity, there is an interaction between hydrology and the downstream habitats present as the public surface water network outfalls volume and water quality to the natural watercourse. The mitigation measures ensure that surface water runoff will be treated to the required standards so that downstream habitats are ***not negatively impacted.***

Utilities

During construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are ***potential implications*** for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

No additional interactions which may cause cumulative impacts on the surrounding environs are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined within this Environmental Report and the approved Phase 1 Parent EIAR.

17.3.8 Population and Human Health

There are numerous inter-related environmental topics described in detail throughout this Environmental Report which are of relevance to population and human health. The main high-level interactions between Population and Human Health and other environmental factors include Air Quality and Climate Factors, Noise and Vibration, Landscape and Visual Impact, Water, Waste Management, and Traffic and Transportation.

Although these have been covered in detail in the respective Chapters of this Environmental Report, it was considered prudent to provide a robust description of the same within this section.

Air Quality and Climate Factors

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. Therefore, the predicted impact is short-term, imperceptible, negative, and non-significant with respect to population and human health during construction, and ***long-term, imperceptible, neutral, and non-significant*** during the operational phase.

Noise and Vibration

The interaction with Noise and Vibration can have an impact on Population and Human Health, mainly during the construction phase. Chapter 7 on Noise and Vibration notes that the largest noise and vibration impact will occur during the construction stage due to the operation of various plant machinery and HGV to, from and around the site, noise levels relating to site clearance, ground excavation and loading lorries etc. The Chapter also notes that the additional traffic introduced into the local road network due to the construction phase of the proposed development will not result in a significant noise impact.

The predicted impact assessment in Chapter 7 has concluded that, provided the proposed mitigation measures are implemented, there is ***no long-term significant*** impact from owing to noise and vibration from the proposed development.

As a result, there is no significant impact perceived from the same on population and human health.

Landscape and Visual Impact

Potential impacts during the construction phase are related to temporary works, site activity, and vehicular movement within and around the subject site. Vehicular movement may increase in the immediate area, and temporary vertical elements such as cranes, scaffolding, site fencing, gates, plant and machinery etc., will be required and put in place. Most of the construction impacts will be temporary, and may include the following:

- Site preparation works and operations (including tree protection measures as appropriate);
- Site excavations and earthworks;
- Site infrastructure and vehicular access;
- Materials storage, spoil heaps etc;
- Construction traffic, dust and other emissions;
- Temporary fencing/hoardings, site lighting and site buildings (including office accommodation);
- Cranes and scaffolding;

Where trees are to be felled, or hedgerows cleared, these impacts will be permanent, however any proposed new planting will offset such effects, increasingly so as the proposed development matures.

Water

The proposed development can impact the water quality within the local area as a result of contamination during any given phase of the development. Chapter 12 on Water identifies that there is a risk to Human Health should the ground water become contaminated during the construction or operational stages, and water is consumed.

Material Assets – Traffic and Transportation

As per Chapter 14 on 'Material Assets – Traffic and Transport', during the construction stage, some of the construction traffic movements will be undertaken by heavy goods vehicles (HGVs), including vehicles movements associated with appointed contractors and staff. The Chapter notes that the expected increase in the day-to-day traffic movements associated with construction activities is less than the benchmark of 10% set out in the TTA Guidelines published by TII.

The Chapter concluded as such ***no significant impact*** on roads and traffic will arise from the Construction Stage of the proposed development.

Material Assets – Waste Management

The inappropriate management of waste during the construction phase, including storage, handling and the use of insufficient segregation techniques has the potential to negatively impact the health of the construction workers. Likewise, during the operational phase the potential impacts on the environment and subsequently human health, from the proposed development would be caused by improper or the lack thereof of waste management.

According to Chapter 15 on Material Assets – Waste Management, a carefully planned approach to waste management and adherence to the site-specific Resource and Waste Management Plan during the construction phase, will ensure that the effect on the environment will be ***short-term, neutral, and imperceptible.*** With regard to the operational phase, the Chapter concludes – provided the mitigation measures in the development OWMP (Appendix 15.2) and in Chapter 15 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.***

As a result, it is considered that there is no subsequent significant impact on population and human health from the proposed development during the construction or operational phases.

Refer to Table 17.1 above for further context on the interactions set out in this Environmental Report.

17.3.9 Material Assets – Traffic and Transportation

The interactions between Material Assets – Traffic and Transport and other environmental factors include Noise and Vibration, Air and Climate and Population and Human Health.

17.3.10 Material Assets – Waste Management

It is predicted that with the implementation of the mitigation measures and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.2) there will be ***no significant residual impact*** caused by the below interactions in relation to material assets- waste management.

This section discusses interactions between material assets- waste management and other specialist environmental topics considered in this Environmental Report.

Land and soils

During the construction phase, excavated soil, and stone (c. 13,200 m3) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that up to 1,200 m3 of excavated material will be removed off site for appropriate offsite reuse, recovery, recycling and / or disposal. It is envisaged that the remainder of the excavated material will be reused on site.

If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 11, Chapter 15, and the requirements of the RWMP (Appendix 15.1), will ensure the effect is ***long-term, imperceptible, and neutral.***

Traffic and Transport

Local traffic and transportation will be impacted by the additional vehicle movements generated by the removal of waste from the site during the construction and operational phases of the proposed 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.

Traffic related impacts during the construction and operational phases are addressed in Chapter 14 (Traffic and Transportation). Provided the mitigation measures detailed in Chapter 14 and Chapter 15 are adhered to, the predicted effects are **short to long-term, imperceptible and neutral.**

Population and Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter

13 and Chapter 15, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible and neutral.***

17.3.11 Material Assets – Utilities

The main interactions relating to this Environmental Report Chapter are Land & Soils, Biodiversity, and Utilities

Land & Soils

In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants leaking into the underlying geology.

Biodiversity

In respect of Biodiversity, there are interactions between hydrology and the downstream habitats that are present, as the public surface water network outfalls volume and water quality to the natural watercourse. The proposed mitigation measures will ensure that surface water runoff is treated to the required standards so that downstream habitats are not negatively impacted.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

Utilities

During the construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

17.4 Other Effects

Schedule 6 Item 2(e) of the Planning and Development Regulations, 2001 as Amended requires that an EIAR contains a description of the likely significant effects (including direct, indirect, secondary, cumulative, transboundary, short, medium, and long-term, permanent, and temporary, positive, and negative) of the project on the environment resulting from the following:

- *the Use of Natural Resources*

As the proposed development will not require the use of natural resources that are in short supply no likely significant effects on the environment are expected to arise from the use of natural resources in the construction / operation of the project

- *the emission of pollutants, the creation of nuisances and the disposal and recovery of waste.*

No likely significant effects on the environment are expected to arise from the emission of pollutants, the creation of nuisances or the elimination of waste associated with this project, as the relevant assessments included in this Environmental Report set out.

- *the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters)*

The likely significant effects of risks due to major accidents or disasters are described in Section 1.5.4 of this Environmental Report and in the Assessment Chapters, where relevant.

- *The technologies and the substances used.*

This is an urban residential development and there are no technologies or substances associated with the project which would significantly or adversely affect the environment.

17.5 References

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency 2022)
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002)
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2002)

18 Summary of Mitigation Measures and Residual Impacts

18.1 Introduction

The preparation of the Parent EIAR and this Environmental Report for Phase 2 was an iterative process, linking into the design development process. The approach adopted in the impact assessment and preparation of the EIAR was based on the recommendations in the *Guidelines on information to be contained in Environmental Impact Assessment Reports (EPA, 2022).*

The proposed design was developed and the potential impacts of the proposed development on the receiving environment were identified.

18.2 Mitigation Measures

This Section of the Environmental Report provides a summary overview of the various mitigation measures proposed across the various environmental topics. The mitigation measures will be incorporated into the Preliminary Construction Environmental Management Plan (CEMP) prepared for the site. A Preliminary CEMP has been prepared and is included with this application.

The following chapters note some of the issues, actions, and mitigation measures to be undertaken by the Main Contractor as part of site preparation and during construction works.

A programme will be agreed between the Main Contractor, Project Ecologist and Project Arborist for undertaking the works specific to their expertise, and implementation of mitigation measure and arranging of supervision is required before commencement of any works on site.

Arborist Exclusion Zone & Site Preparation

A tree survey report has been produced which identified 8no. trees and 3no. hedgerows. The assessment advises that:

- Following completion of the development, a tree condition assessment will be carried out on all retained trees for health and safety purposes.
- No materials or equipment other than those required to install tree protection will be delivered to the site until fencing is in place.
- Details of the tree protection measures required during construction are shown on the Tree Protection plan (produced by the project arborist).
- Drainage and services will be located outside the RPA (Root Protection Area) of retained trees. If it is necessary to locate services within the tree's RPA, it is recommended that these works are carried out under Arboricultural supervision.
- Any working operation with the RPAs of retained trees must be carried out manually using hand tools only. Fencing posts must be positioned at least 50cm from the outer stems of each retained tree. The excavation for pits to install posts will be carried out using hand tools only. All roots above 25mm will be retained within the pits or alternative locations which do not contain roots above 25mm will be found. All fence post pits will be lined with 1,000-guage polythene to prevent phytotoxic effects of cement products impacting trees. The final location of the fences will be agreed by the Arboricultural consultant prior to works commencing.

Ecologist Exclusion Zone & Site Preparation

Invasive species have been identified on site, please refer to Chapter 8 of this Environmental Report for further details and the Ecological Assessment Report undertaken by the project ecologist Gerard Tobin, submitted as part of this planning application for full details.

The objectives and mitigation measures outlined in the Ecological Assessment Report include:

- Meeting the requirements of the Dublin City Council surface water policy
- The area demarcated by Grid Reference GR IO 07758 32794 will remain undeveloped post construction to protect the orchid rich soils. An area running the length of the motorway hedgerow boundary and 5 metres in depth shall form a green area post development and will receive no fertilizers or other artificial inputs. No Shrub flora will be planted in this area and mowing of the grassland will occur only after seed dispersal has occurred in late July/Early August annually.

A Bat Survey and Assessment of Associated Areas Report was also undertaken as part of the masterplan lands. In the Bat Survey and Assessment of Associated Areas Report for the Phase 2 subject site, submitted as part of this planning application under a separate cover, states the following:

"There is evidence that bats are foraging in the site under examination. Bats were seen and heard foraging over the side during field work, but mapping showed no roosting activity"

Mitigation measures proposed in the Phase 2 Bat Survey Report are as follows:

- Works can be undertaken after September 1st when bird nesting will have ceased. Nesting birds will have left (the nests must remain undisturbed until chicks have fledged).
- Where chemical treatment of roof timbers and construction timbers is necessary then only bat safe compounds may be used. (A suitable list of chemicals is given in the appendix to the Bat Survey Report).
- Hedgerows: All new plantings of screening and landscaping shrubs and trees will mimic the naturally occurring hedgerows with long, linear plantings being favoured. Native species will be planted and locally occurring species will be sourced.
- Lighting: Lighting can impact on bats' roosting sites, commuting routes, and foraging areas. Avoid lighting along important commuting routes. Avoid the use of mercury or metal halide lamps. Minimise light pills using shield, masking, and louvres. Keep light columns as low as possible. Restrict lights to ensure that there are dark areas. Restrict lights to ensure there are dark hours. Investigate the potential for sensor lights to reduce energy wastage.

Archaeological Environment

The project archaeologist Archer Heritage has recommended the following mitigation measures:

- The identified archaeology found on the subject sites be preserved by record, i.e., subject to full archaeological excavation in advance of construction.
- That the topsoil stripping for the development be subject to monitoring by a suitably qualified archaeologist. If any additional archaeology is identified, additional mitigation strategies will be required following consultation with the DHLGH.

Site Clearance & Preparation

Prior to construction work the site clearance groundworks will need to be undertaken. This will involve the scraping and stockpiling of topsoil. As per Section 5.3 of the CEMP, the project archaeologist has recommended that this be supervised by a suitably qualified archaeologist.

Topsoil

In the case of topsoil careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- Topsoil will be kept completely separate from all other construction waste as any cross-contamination of the topsoil can render it useless for reuse.
- Topsoil will be protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas, and site plant and vehicle storage areas.

Topsoil will be stored in stockpiles less than two metres in height as otherwise the soil matrix (internal structure) can be damaged beyond repair. It will also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

In the unlikely case of a topsoil surplus the Contractor will carry out appropriate environmental chemistry testing in order to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator, if not suitable for an Article 27 transfer, and the testing will be carried out by an accredited laboratory.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager. It is projected that all the topsoil will be reused on site for landscaping purposes in both private residential gardens and public green areas.

Subsoil and Excavations

With the implementation of practical design measures, the requirement for fill material during the course of construction of the development has been reduced as far as possible. In order to optimise the impact of the generation of excavated material the following principles have been considered during the detail design and construction phase:

- The quantity of excavated materials to be removed from or imported to the site has been greatly reduced, by establishing levels of the proposed buildings and roads which optimise the volume of cut and fill.
- Surplus subsoil excavated from the site will be reviewed for possible reuse as engineering fill.
- Surplus unsuitable sub-soils generated by excavations on site will be reviewed for possible reuse as landscaping or non-engineering fills on site.
- Careful separation of builder's rubble packaging and contaminated waste from re-usable surplus subsoil being used in areas requiring fill where appropriate. Any unsuitable and/or surplus subsoil is required to be disposed of appropriately.

All excavated materials will be stored on site in the spoil heap/stockpile area of the construction compound as per the Proposed Construction Compound Layout Plan. The Landscaping Plan has been optimised to ensure that cut materials will be incorporated to the site as part of the final reinstatement and regrading works including future phases to minimise the requirement for offsite disposal. Please refer to the Landscape Architects reports and drawings in this regard.

Management of Watercourse

There is no hydrological connectivity from the sites to natural watercourses or surface water networks. There is potential for an indirect hydrological connectivity to the local surface drainage network, whereby during heavy rainfall events, surface water from the sites flows over the site boundary to the road gullies on the adjacent streets.

The most likely potential sources of contamination to the local surface water network are from silt and suspended particles, and from chemical compounds entering these networks as surface water runoff.

Silt and suspended particles may arise from surface runoff from stockpiled materials or from the pumping of water volumes in excavations.

Chemical contamination can result due to fuel/chemical leaks and spills.

Spoil heap/stockpiles will not be located within 20m of the existing surface water networks. Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons. Drainage diversion ditches will be constructed between the stockpile area and local surface water networks. This drainage ditch will flow to a sedimentation/settlement pond prior to outfalling to the surface water network. A Discharge Licence will be obtained from the local authority by the Main Contractor. If topography doesn't allow for a gravity outfall form the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Earthworks and Dust Suppression

Nuisance dust emissions from construction activities are a common and well recognised problem. Fine particles from these sources are recognised as a potential significant cause of pollution. The main contractor will be required to demonstrate that both nuisance dust and fine particle emissions from the site are adequately controlled and are within acceptable limits.

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through carefully selected mitigation techniques and effective management. Once particles are airborne it is very difficult to prevent them from dispersing into the surrounding area. The most effective technique is to control dust at source and prevent it from becoming airborne, since suppression is virtually impossible once it has become airborne.

The following are techniques and methods which are widely used currently throughout the construction industry, and which will be used in the development.

1 The roads around the site are all surfaced, and no dust is anticipated arising from unsealed surfaces.
2 A regime of 'wet' road sweeping will be set up to ensure the roads around the immediate site are as clean and free from dirt / dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
3 Footpaths immediately around the site will be cleaned by hand regularly, with damping, as necessary.
4 High level walkways and surfaces such as scaffolding will be cleaned regularly using safe 'wet' methods, as opposed to dry methods.

5 Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
6 Vehicle and wheel washing facilities will be provided at the site exit(s). If necessary, vehicles will be washed down before exiting the site.
7 Netting will be provided to enclose scaffolding in order to mitigate escape of airborne dust from the new buildings.
8 Vehicles and equipment will not emit black smoke from exhaust system, except during ignition at start up.
9 Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
10 Servicing of vehicles and plant will be carried out regularly, rather than just following breakdowns.
11 Internal combustion plant will not be left running unnecessarily.
12 Exhaust direction and heights will be such as not to disturb dust on the ground and to ensure adequate local dispersal of emissions.
13 Fixed plant such as generators will be located away from residential areas.
14 The number of handling operations for materials will be kept to a minimum in order to ensure that dusty material is not moved or handled unnecessarily.
15 The transport of dusty materials and aggregates will be carried out using covered / sheeted lorries.
16 Material handling areas will be clean, tidy, and free from dust.
17 Vehicle loading will be dampened down and drop heights for material to be kept to a minimum.
18 Drop heights for chutes / skips will be kept to a minimum.
19 Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods, as necessary.
20 Stockpiles of materials will be kept to a minimum and if necessary, they will be kept away from sensitive receptors such as residential areas etc.
21 Stockpiles where necessary, will be sheeted or watered down.
22 Methods and equipment will be in place for immediate clean-up of spillages of dusty material.
23 No burning of materials will be permitted on site.
24 Earthworks excavations will be kept damp where necessary and where reasonably practicable.
25 Cutting on site will be avoided where possible by using pre-fabrication methods.
26 Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed.
27 Where scabbling is to be employed, tools will be fitted with dust bags, residual dust will be vacuumed up rather than swept away, and areas to be scabbled will be screened off.
28 Wet processes will be used to clean building facades if possible. If dry grit blasting is unavoidable, then areas of work will be sealed off and dust extraction systems used.
29 Where possible pre-mixed plasters and masonry compounds will be used to minimise, dust arising from on-site mixing.
30 Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes, which are envisaged.
31 The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
32 Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced road, the limit shall be 20 kph, and on surfaced roads as site management dictates.

Lighting During Construction (and Operational Phase)

Construction phase lighting will be controlled to minimise light pollution as a matter of good practice. Controls will include implementation of lights out hours when construction is not active on site.

Operational phase lighting at night will only be used when necessary and will be direction/cowled and at a low level where possible. Illumination of surrounding canopies will be avoided.

Noise/Vibration

The contractor will meet the requirements of the Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition, which has been produced with reference to the London Good Practice Guide: Noise and Vibration Control for Demolition and Construction produced by the London Authorities Noise Action Forum, July 2016.

Environmental Noise Mitigation Measures include:

General Considerations:

1 All site staff will be briefed on noise mitigation measures and the application of best practicable means to be employed to control noise.
2 Site hoarding will be erected to maximise the reduction in noise levels.
3 The contact details of the Main Contractor and site manager will be displayed to the public, together with the permitted operating hours, including any special permissions given for out of hours work.
4 In the event that the Main Contractor gets a complaint about noise from a neighbour they will act immediately to remedy the situation.
5 The site entrance will be located to minimise disturbance to noise sensitive receptors.
6 Internal haul routes will be maintained, and steep gradients will be avoided.
7 Material and plant loading and unloading will only take place during normal working hours unless the requirement for extended hours is for traffic management (i.e., road closure) or health and safety reasons (advance notification, or an application to the local council would be required if proposing to work outside non-typical hours).
8 Use rubber linings in chutes, dumpers, and hoppers to reduce impact noise.
9 Minimise opening and shutting of gates through good coordination of deliveries and vehicle movements.

Plant:

1 Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC.
2 Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.
3 Use all plant and equipment only for the tasks for which it has been designed.
4 Shut down all plant and equipment in intermittent use in the intervening periods between work or throttle down to a minimum.
5 Power all plant by mains electricity where possible rather than generators.
6 Maximise screening from existing features or structures and employ the use of partial or full enclosures for fixed plant.
7 Locate movable plant away from noise sensitive receptors where possible.
8 All plant operators will be qualified in their specific piece of plant.
9 Compressors and generators will be sited in areas least likely to give rise to nuisance where practicable.

Vehicle activity:

1 Ensure all vehicle movements (on site) occur within normal working hours. (Other than where extension of work requiring such movements has been granted in cases of required road closures or for health and safety reasons).

2 Plan deliveries and vehicle movements so that vehicles are not waiting or queuing on the public highway if unavoidable engines will be turned off where practicable.
3 Plan the site layout to ensure that reversing is kept to a minimum.
4 Where reversing is required use broadband reverse sirens or where it is safe to do so disengage all sirens and use banksmen.
5 Use rubber/neoprene or similar non-metal lining material matting to line the inside of material transportation vehicles to avoid first drop high noise levels.
6 Wheel washing of vehicles prior to exiting the site will take place to ensure that adjoining roads are kept clean of dirt and debris. Regular washing of adjoining streets will also take place as required by road sweepers.

Demolition Phase (not expected):

Demolition Is not expected on the Phase 2 subject site, however, if any demolition works are to be carried out, it will be subject to the following measures:

1 Employ the use of acoustic screening; this can include planning the demolition sequence to utilise screening afforded by buildings to be demolished.
2 If working out of hours for Health and Safety reasons (following approval by council) limit demolition activities to low level noise activity (unless absolutely unavoidable).
3 Use low impact demolition methods such as non-percussive plant where practicable.
4 Use rotary drills and 'bursters' activated by hydraulic or electrical power or chemically based expansion compounds to facilitate fragmentation and excavation of hard material.
5 Avoid the transfer of noise and vibration from demolition activities to adjoining occupied buildings through cutting any vibration transmission path or by structural separation of buildings.
6 Consider the removal of larger sections by lifting them out and breaking them down either in an area away from sensitive receptors or off site.

Ground Works and Piling Phase:

1 The following hierarchy of groundwork/piling methods will be used if ground conditions, design and safety allow.
   - Pressed in methods, e.g., hydraulic jacking.
   - Auger/bored piling
   - Diaphragm walling
   - Vibratory piling or vibro-replacement
   - Driven Piling or dynamic consolidation
2. The location and layout of the piling plant will be designed to minimise potential noise impact of generators and motors.
3. Where impact piling is the only option, utilise a non-metallic dolly between the hammer and driving helmet or enclose the hammer and helmet with an acoustic shroud.
4. Consider concrete pour sizes and pump locations. Plan the start of concrete pours as early as possible to avoid overruns.
5. Where obstructions are encountered, work will be stopped, and a review undertaken to ensure that work methods that minimise noise are used.
6. When using an auger piling rig do not dislodge material from the auger by rotating it back and forth. Use alternate methods where safe to do so.
7. Prepare pile caps using methods which minimise the use of breakers, e.g., use hydraulic splitters to crack the top of the pile.

Monitoring:

1 Carry out regular on-site observation monitoring and checks/audits to ensure that BPM is being used at all times. Such checks will include.
   - Hours of work
   - Presence of mitigation measures
   - Number and type of plant
   - Construction methods
2. In the event that the Main Contractor gets a complaint about noise from a neighbour they will act immediately to remedy the situation.
3. A sound level digital meter will be employed as necessary to monitor noise, with results recorded to inform the contractor of noise level.
4. Site reviews will be recorded and made available for inspection.
5. Appraise and review working methods, processes, and procedures on a regular basis to ensure continuous development of BPM.

Communication and Liaison:

1 A Community Liaison Strategy will be developed by the developer in consultation with local residents/businesses and a single point of contact nominated to engage with Dublin City Council and the residents/businesses and to handle complaints and communication of site information.
2 All site staff will be briefed on the complaint's procedure and mitigation requirements and their responsibilities to register and escalate complaints received.

Where appropriate, a resident monitoring committee will be established for the duration of the project in order to promote best construction management and considered construction practices to protect the amenities of adjacent properties as provided in Section 15.18.1 of the Development Plan.

18.2.1 Air Quality

Construction Stage

The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation, and ongoing monitoring of the Dust Management Plan. The mitigation measures for controlling dust are listed below and can also be found in the Dust Management Plan in Appendix 5.1 of the Parent EIAR. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. An outline CEMP has been prepared and is enclosed separately.

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following measures draw on best practice guidance from Ireland, the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. As the prevailing wind is predominantly westerly to south-westerly, locating construction

compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2024; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year.

Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent will monitor the contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised.
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.
- Community engagement shall be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein.
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem.

Specific dust control measures to be employed are described below.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.

- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed, or fence stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 20 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).
- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. 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.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues.
- The development of a documented system for managing site practices with regard to dust control.
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed.
- The specification of effective measures to deal with any complaints received.

Operational Stage

No site-specific mitigation measures are proposed for the operational phase. The significance of the impact of traffic emissions on air quality is assessed for the opening year only according to the TII guidance (2022) which results in only 'neutral' increases in pollutant concentrations and an imperceptible impact. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. These measures must be set at a national level. In relation to the proposed development, the inclusion of bike parking facilities and electric vehicle charging infrastructure as well as it's close proximity/accessibility to train, Luas and bus routes will all help in promoting more sustainable modes of transportation and reducing private vehicle trips which will have the benefit of reducing air emissions from traffic.

18.2.2 Climate Factors

Construction Stage

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.
- Target embodied carbon rates for detailed design (LETI 2020):
  - Housing units: Reduce embodied carbon to <500 $kgCO^2/m^2$
  - Commercial units: Reduce embodied carbon or to <600 $kgCO^2/m^2$

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed. For example, The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest IPCC report.

Operational Stage

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been

incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change. Landscaping planting elements shall be chosen with consideration for extreme cold temperatures as a result of climate change in future years.
The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. The Climate Action Energy Statement prepared by Waterman Moylan and submitted under separate cover with this planning application details a number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are:

- Achieve air tightness standards of 3 $m^3/m^2/hr$.
- Achieve a BER Rating in line with the *Part L 2022 Dwellings* requirements.
- Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.15W/m^2K or less.
- Meet or exceed minimum U-Value standards identified in *Part L 2022 Dwellings*
- Provide an appropriate combination of technologies to ensure energy consumption is in line with *Part L 2022 Dwellings* requirements; and
- Approximately 50% of the total parking space provided in the proposed development shall be provided with functioning charging facilities for electric vehicles (EVs) and the remaining spaces designed to facilitate the relevant infrastructure to accommodate future EV charging.

These above identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals and relevant policies including the Climate Action Plan and objectives of the Dublin City Council Development Plan 2022-2028, including climate mitigation measures.

In addition to the above identified sustainability measures for the proposed development, the Land Development Agency Sustainable Development Strategy 2024 – 2028 was reviewed as the policies outlined within are of relevance to the proposed development as The LDA are partnering with DCC on this project. Where possible the sustainability objectives outlined by The LDA will be reviewed in the context of the proposed development and incorporated in so far as feasible. The Land Development Agency Sustainable Development Strategy 2024 – 2028 outlines how The LDA aims to provide affordable, climate adaptive, low carbon homes. The LDA have identified six ‘Sustainability Strategic Objectives’ which are: Reduce Carbon; Promote Water Stewardship; Optimise Sustainable Land use and Stewardship; Enhance Biodiversity and Climate Resilience; Promote Circularity; and Support the Creation of Social Value. The below figure includes the key aims under each of the strategic objective categories.

Figure 18.1 LDA Strategic Objectives and Aims for Sustainable Development

Strategic Objective	Aim
Reduce Carbon (Embodied & Operational Carbon)	Develop an LDA Climate Action Roadmap
	Develop capability for carbon accounting
	Pursue a design-led approach to embodied carbon reduction
	Design for energy efficiency and operational carbon reduction
	Minimise the performance gap for improved tenant comfort and affordability
Promote Water Stewardship	Develop LDA approach to water stewardship
	Ensure LDA sites are resilient to surface water and tidal flooding
	Reduce potable water usage and optimise supply
	Prevent water pollution and maintain water quality
Optimise Sustainable Land-Use & Mobility	Support compact growth
	Champion modal shift and sustainable mobility
Enhance Biodiversity & Climate Resilience	Measurably increase biodiversity
	Prioritise the use of Nature Based Solutions (NBS) to support climate resilience
	Develop LDA approach to climate adaptation
Promote Circularity	Maximise resource efficiency and circularity
	Design for changes in future use
	Treat waste as a resource
Support the Creation of Social Value	Develop a social value framework
	Promote community integration and betterment
	Support tenant well-being
	Champion universal access and life-long homes

Source: Land Development Agency Sustainable Development Strategy 2024 – 2028

The LDA have adopted the Irish Green Building Council's (IGBC) Home Performance Index (HPI) as its primary sustainability assessment methodology since November 2021. All LDA led projects are targeting certification with the HPI. Additionally, The LDA are an IGBC Gold member since 2023 and have been part of committees and steering groups regarding the establishment of best practice approaches to decarbonising the built environment in Ireland.

In relation to reducing embodied carbon The LDA have, in their Sustainable Development Strategy, outlined a number of actions to achieve this goal. These include development of a Climate Action Plan to determine LDA specific carbon reduction targets for 2030 and 2050 and minimising upfront carbon through the specification of lower carbon and bio-based materials and building systems. Additionally, in relation to operational carbon The LDA aims to adopt the ZEB standard in advance of the 2027 deadline. ZEB or 'Zero Energy Buildings' is included in the revision of the EU Energy Performance of Buildings Directive of March 2024 and is the new energy standard for buildings from 2027, replacing 'Nearly Zero Energy Buildings' (NZEB). A zero-emission building is defined as building with very high energy performance, requiring zero or a very low amount of energy, producing zero on-site carbon emissions from fossil fuels and producing zero or a very low amount of operational GHG emissions.
As the proposed development will be under the remit of The LDA, the policies and actions outlined with The Land Development Agency Sustainable Development Strategy 2024 – 2028 shall apply to the proposed development where relevant.

18.2.3 Noise and Vibration

Construction Noise

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. Predictions indicate that moderate construction noise impacts are expected to occur when work is ongoing at boundary locations adjacent to noise sensitive locations, hence the contractor will ensure that all best practice noise and vibration control methods will be used. In this regard, various mitigation measures will be applied during the construction of the proposed development, including:

- limiting the hours during which site activities likely to create high levels of noise or vibration are undertaken.
- establishing channels of communication between the contractor/developer, Local Authority, and residents.
- appointing a site representative responsible for matters relating to noise and vibration.
- monitoring typical levels of noise and vibration during critical periods and at sensitive locations.
- all site access roads will be kept even so as to mitigate the potential for vibration from lorries.

Furthermore, a variety of practicable noise and vibration control measures will be employed. These will include as standard:

- selection of plant with low inherent potential for generation of noise and/ or vibration.
- erection of barriers as necessary around noisy processes and items such as generators heavy mechanical plant or high duty compressors.
- placing of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

Mechanical Plant and Services

At the detailed design stage, best practice measures relating to building services plant will be taken to ensure there is no significant noise impact on noise-sensitive locations within the development. Due to the relative proximity of the NSLs within the development, this will also prevent a negative impact on NSLs in the surrounding area. The over-riding requirement is that the criteria set out in Chapter 7 is adhered to through implementation of best practice measures at the design stage including the following:

- 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 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.
- 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 by 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

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e., block work or concrete and spandrel elements) offer a high degree of sound insulation, much greater than that offered by the glazing systems. Therefore, noise intrusion via the wall construction will be minimal.

Any passive ventilation units will have to be carefully selected at the design stage to ensure that the composite sound reduction index of the façade is not compromised, for instance with a 42 dB $D_{n,e,w}$ vent for the Red facades and a 37 dB $D_{n,e,w}$ vent for the Orange facades.

Table 18.1 Sound Insulation Performance Requirements for Glazing, SRI (dB)

Façade Ref	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1k	2k	4k	
Red	27	26	33	39	39	47	37
Orange	24	22	29	39	33	38	33
Green							

The overall R_w outlined above is 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 or greater.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. In the context of the acoustic performance specification the ‘glazing system’ is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e., glass, frames, seals, openable elements etc.

The assessment has demonstrated that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses.

18.2.4 Biodiversity

Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

There are no Key Ecological Receptors on site and as such mitigation measures are unnecessary to protect these.

Bats currently commute/forage along the southern boundary with the railway at a height of c. 30 m (Bat surveys G, Tobin). The current proposed development will not negatively impact on this activity.

18.2.5 Landscape and Visual

Construction Stage

The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. The perimeter site hoarding will screen from view much of the construction activity and materials at ground level. Other mitigation measures proposed during this delivery stage of the development, revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures, etc. Such mitigation will be set out in the Construction Management Plan prepared for the scheme. This will be a working document which will be continually reviewed and amended through the construction phase to ensure effective mitigation throughout.

The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

- Daily and weekly working hours.
- Agreed haul routes for incoming materials.
- Licensed hauliers to be used.
- Disposal sites.
- Travel arrangements for construction personnel.
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network.
- Temporary construction entrances to be provided.
- Wheel wash facilities if required.
- Road cleaning and sweeping measures to be put in place if required.

- Temporary construction signage to be put in place and maintained.

The planning application includes an Outline Construction Management Plan, prepared by Waterman Moylan Consulting Engineers, which outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. This Outline Construction Management Plan forms the basis for the required measures to be included in the appointed Contractor's Construction Management Plan. As such it references construction phase mitigation measures which are relevant to the assessment of Landscape and Visual Impact.

Operational Stage

The design rationale and detail employed seeks to mitigate potential negative effects on the landscape character and visual amenity of the area by:

- Establishing an integrated relationship between the proposed development and surrounding buildings, infrastructure and the broader urban landscape beyond, incorporating aspects of current and emerging trends in built-form, scale, texturing, colour and materials.
- The insertion, positioning and detailed modelling of the buildings, in order to assist in the appropriate visual assimilation of their mass.
- Appropriate architectural detailing to assist in the integration of the external building facades – including the modulation of openings and fenestration.
- Rationalisation of all services elements and any other potential visual clutter and its incorporation internally within building envelopes (as far as practically possible).
- Simplification and rationalisation of the proposed roof lines, including green roofs.
- Use of appropriate materials in the architectural expression of the buildings. In this instance, brick is used in the facades across the scheme, with variation in colour, pattern, texture and tone occurring in the individual character areas or emphasising specific parts of facades. This approach reinforces the articulation of the massing of the blocks, as well as lending importance and interest to specific areas.
- The provision of community uses within the development, including public open space and associated amenities, in turn combining with internal cultural spaces.
- The provision of secure communal spaces with each residential block.
- Sustainable approach to nature-based drainage and to enhance biodiversity.
- Detailing in the architectural and landscape design to mitigate wind and shadow effects to create good microclimates.

18.2.6 Lands and Soils

Construction Stage

The Site Investigation Reports have shown that the sites are composed of stratified layers of topsoil, cohesive deposits (brown sandy gravelly clays), and bedrock. Made ground has also been identified on the sites and these deposits are typically composed of brown slightly sandy slightly gravelly clay with occasional cobbles and contained occasional fragments of concrete, red brick, glass, rope, timber, ceramic, metal, and plastic.

Excavated soils to be disposed of will be referenced against the Waste Classification Report also included as part of the Site Investigation reports. Environmental Laboratory chemical analysis has indicated that the in-fill constituents are non-hazardous. Excavated material from this location will be

continuously monitored/inspected for signs of hazardous material contamination during excavation. Should there be any indication of hazardous material contamination, it may be required to be further sampled and analysed to confirm its chemical properties and waste category classification as per the waste landfill facility requirements.

Practical measures have been implemented during the design process to ensure that cut and fill volumes generated have been kept to a minimum by ensure proposed road and building levels match existing ground levels. Furthermore, surplus subsoil and rock may be relocated to other approved areas of the site that may require in-fill, or if required to be removed from site, will be deposited in approved fill areas off-site (Article 27 notification to the EPA required), or to an approved waste disposal facility.

In the case of topsoil careful planning and on-site storage will ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- Topsoil will be kept completely separate from all other construction waste as any cross-contamination of the topsoil can render it useless for reuse.
- Topsoil will be protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas, and site plant and vehicle storage areas.
- Careful separation of builder's rubble packaging and contaminated waste from re-usable material will result in the minimisation of the disposal of material to landfill.
- Spoil heap/stockpiles will not be located within 20m of the existing surface water networks.
- Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons.
- Topsoil will be stored in stockpiles less than two metres in height as otherwise the soil matrix (internal structure) can be damaged beyond repair. It will also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

In the unlikely case of a topsoil surplus the Contractor will carry out appropriate environmental chemistry testing in order to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator, if not suitable for an Article 27 transfer, and the testing will be carried out by an accredited laboratory.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager. It is projected that all the topsoil will be reused on-site for landscaping purposes in both private residential gardens and public green areas.

A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Silt traps, silt fences and tailing ponds will be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction phase. All surface water will be treated for silts and sediment prior to disposal to the surface water network. Any and all other conditions, restrictions, or limits associated with the discharge license shall be adhered to.

The provision of wheel wash areas at the exit to the development as necessary will minimise the amount of soil deposited on the surrounding road network. The adjoining road network will be cleaned on a

regular basis. All trucks carrying soils on the public road will be covered and carry a maximum of 10 cubic metres of material to prevent spillage and damage to the surrounding road network.

Appropriate storage and bunding measures will be implemented throughout the construction stage to prevent contamination of the soil and groundwater from oil and petrol leakage from site plant. Refuelling will be restricted to allocated re-fuelling areas. This storage is to be an impermeable, roofed, bunded area, designed to contain 110% of the volume of fuel stored. Emergency fuel spill kits are to be stored on-site with designated staff familiar with their usage. Spill kit facilities will be provided for across the site.

If groundwater is encountered during excavations, mechanical pumps will be required to remove that groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

Nuisance dust emissions from construction activities are a common and well recognised problem. Fine particles from these sources are recognised as a potential significant cause of pollution.

The main contractor will be required to demonstrate that both nuisance dust and fine particle emissions from the site are adequately controlled and are within acceptable limits.

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through carefully selected mitigation techniques and effective management. Once particles are airborne it is very difficult to prevent them from dispersing into the surrounding area. The most effective technique is to control dust at source and prevent it from becoming airborne, since suppression is virtually impossible once it has become airborne.

The following are techniques and methods which are widely used currently throughout the construction industry, and which will be used in the development.

1 The roads around the site are all surfaced, and no dust is anticipated arising from unsealed surfaces.
2 A regime of ‘wet’ road sweeping will be set up to ensure the roads around the immediate site are as clean and free from dirt / dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
3 Footpaths immediately around the site will be cleaned by hand regularly, with damping, as necessary.
4 High level walkways and surfaces such as scaffolding will be cleaned regularly using safe ‘wet’ methods, as opposed to dry methods.
5 Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
6 Vehicle and wheel washing facilities will be provided at the site exit(s). If necessary, vehicles will be washed down before exiting the site.
7 Netting will be provided to enclose scaffolding in order to mitigate escape of airborne dust from the new buildings.
8 Vehicles and equipment will not emit black smoke from exhaust system, except during ignition at start up.
9 Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
10 Servicing of vehicles and plant will be carried out regularly, rather than just following breakdowns.

11 Internal combustion plant will not be left running unnecessarily.
12 Exhaust direction and heights will be such as not to disturb dust on the ground and to ensure adequate local dispersal of emissions.
13 Fixed plant such as generators will be located away from residential areas.
14 The number of handling operations for materials will be kept to a minimum in order to ensure that dusty material is not moved or handled unnecessarily.
15 The transport of dusty materials and aggregates will be carried out using covered / sheeted lorries.
16 Material handling areas will be clean, tidy, and free from dust.
17 Vehicle loading will be dampened down and drop heights for material to be kept to a minimum.
18 Drop heights for chutes / skips will be kept to a minimum.
19 Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods, as necessary.
20 Stockpiles of materials will be kept to a minimum and if necessary, they will be kept away from sensitive receptors such as residential areas etc.
21 Stockpiles where necessary, will be sheeted or watered down.
22 Methods and equipment will be in place for immediate clean-up of spillages of dusty material.
23 No burning of materials will be permitted on site.
24 Earthworks excavations will be kept damp where necessary and where reasonably practicable.
25 Cutting on site will be avoided where possible by using pre-fabrication methods.
26 Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed.
27 Where scabbling is to be employed, tools will be fitted with dust bags, residual dust will be vacuumed up rather than swept away, and areas to be scabbled will be screened off.
28 Wet processes will be used to clean building facades if possible. If dry grit blasting is unavoidable, then areas of work will be sealed off and dust extraction systems used.
29 Where possible pre-mixed plasters and masonry compounds will be used to minimise, dust arising from on-site mixing.
30 Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes, which are envisaged.
31 The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
32 Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced road, the limit shall be 20 kph, and on surfaced roads as site management dictates.

The construction of the proposed development has potential to cause a slight, adverse, temporary, residual impact on soils in the immediate vicinity of the site.

No additional mitigation measures at construction stage are anticipated to be required for the Phase 2 subject site beyond those outlined in the Parent EIAR.

Operational Stage

On completion of the construction phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion.

SuDS and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. They will require periodic inspection and maintenance as per their installation manuals. These have been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works Volume 6.0 (GDRCPDW) and the SuDS Manual CIRIA C753.

Foul drainage and watermains have been designed in accordance with their respective Codes of Practice by Uisce Eireann. A Statement of Design Acceptance has been issued by Uisce Eireann and is included as an appendix to the Engineering Assessment Report, submitted under a separate cover.

Therefore, the risk of accidental discharge has been adequately addressed and mitigated through design.

The operation of the proposed development is not considered to have an impact on soils in the immediate vicinity of the site.

No additional mitigation measures at operational stage are anticipated to be required for the Proposed Cherry Orchard Point - Phase 2 Subject Site beyond those outlined in the approved Phase 1 Parent EIAR.

18.2.7 Water

Construction Stage

The Proposed Cherry Orchard Point - Phase 2 Subject Site no direct hydrological connectivity to natural watercourses or surface water networks. There may be an indirect link from surface water runoff which may have the potential to run off the site boundary to the surface water gullies on the adjacent road networks. These networks outfall to the Blackditch Stream.

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Blackditch Stream, and the Camac River which has an ultimate outfall to the River Liffey at Heuston. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001).
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines.
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- CIRIA 697, The SUDS Manual, 2007; and
- UK pollution Prevention Guidelines (PPG) UK Environment Agency, 2004

The schedule of mitigation presented within the following table summarises measures that will be undertaken for the Proposed Cherry Orchard Point - Phase 2 Subject Site in order to reduce impacts on ecological receptors within the zone of influence which would include surrounding soils, the public water supply network, groundwater aquifers, and the public surface water network.

Table 18.2 Schedule of Surface Water Mitigation Measures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation

1	Hydrocarbons from carparking area entering the drainage network.	Water quality impacts.	Petrol interceptor to be installed on drainage network prior to outfall to public surface water network.	Prevents hydrocarbons from entering the public surface water network.
2	Pollutants from site compound areas entering the drainage network or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Materials to be stored appropriately in designated areas (discussed below). Temporary foul water connection to be obtained from Uisce Éireann to serve site compound welfare facilities.	Prevents contamination of public surface water network, soil, and groundwater.
3	Pollutants from material storage areas entering the watercourse or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Fuels, oils, greases, and other potentially polluting chemicals will be stored in roofed and bunded compounds at the Contractor's compound. Storage area to be located over 50m away to ensure no direct pathway to the surface water network. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided the Contractor for review by the Employer's Representative.	Prevents contamination of public surface water network, soil, and groundwater.
4	Concrete/ cementitious materials entering the drainage network.	Water quality impacts	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of public surface water network. Ensures invasive species material is not transported off site as muck.
5	Leaching of contaminated soil into groundwater.	Groundwater quality impacts	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water.	Prevents contamination of groundwater.
6	Pollutants from equipment storage/ refuelling area entering the drainage network.	Water quality impacts	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas. Discharge licence (where required) pollutant limits to be monitored and adhered to. The site is located at least 50m from any direct pathway to the surface water drainage network.	Prevents contamination of public surface water network.
7	Runoff from exposed work areas and excavated material storage areas entering the drainage network.	Water quality impacts due to silt entering the network.	Provision of silt entrapment facilities such as; straw bales, silt fencing, silt barriers, diversion drains, settlement tank(s), & settlement pond(s), as appropriate and as outlined below.	Prevents contamination of public surface water network.

As mentioned previously, there is no direct hydrological connectivity from the Proposed Cherry Orchard Point - Phase 2 Subject Site (nor the masterplan lands) to natural watercourses or surface water networks. There is potential for an indirect hydrological connectivity to the local surface water drainage network, whereby during heavy rainfall events, surface water from Sites 4 and 5 flows over the site boundary to the road gullies on the adjacent streets.

The most likely potential sources of contamination to the local surface water network are from silt and suspended particles, and from chemical compounds entering these networks as surface water runoff.

Silt and suspended particles may arise from surface runoff from stockpiled materials or from the pumping of water volumes in excavations.

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream.

Site stripping will be minimised as far as practicable. The proposed sediment entrapment facilities are as follows:

Straw Bales:
Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

Silt Fencing
A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing can be placed as a temporary barrier along the contour at the base of a disturbed area but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter should be considered.

Silt Barriers
Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff should be collected in diversion drains and routed through temporary sediment basins.

Diversion Drains
Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded, they can be lined with geotextile fabric or large stones or boulders.

Settlement tank
Commercially available settlement tanks, also known as sediment tanks, have compartments that allow suspended solid contents such as sand and silts to precipitate and sink to the bottom, falling out of suspension. The settlement tank has an inlet for the runoff which enters a chamber where it is held before flowing to the next compartment or tank for further treatment, prior to outfall.

Spoil heap/stockpiles
Spoil heap/stockpiles will not be located within 20m of the existing surface water networks. Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons. Drainage diversion ditches will be constructed between the stockpile area and local surface water networks. This drainage ditch will flow to a sedimentation/settlement pond prior to outfalling to the surface water network. A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Further mitigation measures include:

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application. The main contractor will be required to schedule delivery of materials daily. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Chemical contamination during construction stage can result due to fuel/chemical leaks and spills. Spills and leaks may contaminate soil, groundwater, and surface water networks via surface run-off. Method statements and mitigation measures reduce the potential for leaks and spills and limit their impact should they occur.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and surrounding watercourses from oil and petrol leakages and significant siltation. Suitable bunded

and roofed 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. Spill kits will be provided by the Contractor to cater for any other spills.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.

On-site treatment measures will be installed to treat surface water run-off from the site prior to discharge to the receiving surface water sewer as noted above. This treatment will be achieved by the construction of settlement tanks/ponds, in conjunction with the installation of proprietary surface water treatment systems including class 1 full retention petrol interceptors, and spill protection control measures. Settlement tanks/ponds will be sized to deal with surface run-off and any groundwater encountered.

A sampling chamber with shut down valve will be installed downstream of the settlement pond/tank and water quality monitoring will be carried out here prior to discharge to the surface water sewer.

Regular testing of surface water discharges will be undertaken at the outfall from the subject lands in accordance with the requirements of the discharge licence to be obtained. The location(s) for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman or appointed, suitably qualified site staff member at the commencement of works.

Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.

It is likely that the surface water run-off from the site will be discharged to the existing public surface water network, post treatment. This will need to be confirmed between the Contractor and Local Authority, as well as any further conditions such as the permitted levels of contamination as well as frequency for testing, as part of the Contractor's application for a discharge licence.

All water pumped from the excavations will require to be treated for silt and deleterious matter. During any discharge of surface water from the excavations, the quality of the water will be regularly monitored

visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in the table below must be followed during construction in order to ensure maintenance of water quality protection. This is in line with Transport Infrastructure Ireland (TII)'s 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'. It is considered that the parameter limit values (Guide/Mandatory) defined in the Fresh Water Quality Regulations (EU Directive 2006/44/EEC) should act as a trigger value for the monitoring of Surface Water.

Table 18.3: Monitoring Guidelines (Fresh Water Quality Regulations)

Parameter	Limit		Frequency and Manner of Samplings
	Limit Value	Guide/Mandatory	
Temperature	1.5°C	Mandatory Limit	Weekly, and at appropriate intervals where the works activities associated with the scheme have the potential to alter the temperature of the waters.
Dissolved oxygen	50% of Samples ≥ 9 (mg/l O2) 100% of Samples ≥ 7 (mg/l O2)	Guide Limit	Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH	6 to 9	Mandatory Limit	Weekly
Nitrites	≤0.01 (mg/l N02)	Guide Limit	Monthly
Suspended Solids	≤25 (mg/l)	Guide Limit	Monthly
BOD5	≤3 (mg/l)	Guide Limit	Monthly
Phenolic Compounds	-	-	Monthly where the presence of phenolic compounds is presumed (An examination by test)
Petroleum Hydrocarbons	5 (mg/l)	Guide Limit	Monthly (visual)
Non-Ionized Ammonia	≤ 0.005 (mg/l NH3)	Guide Limit	Monthly
Total Ammonium	≤ 0.004 (mg/l NH4)	Guide Limit	Monthly
Total Residual Chlorine	≤ 0.005 (mg/l HOCl)	Mandatory Limit	At appropriate intervals where works activities associated with the scheme have the potential to alter the Total residual Chlorine of the waters
Electrical Conductivity	-	-	Weekly

The Main Contractor will have overall responsibility for the implementation of the project Construction Surface Water Management Plan (CSWMP) during the construction phase. The appointed person from the Main Contractors team will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CSWMP. At the operational level, a designated person from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CSWMP are performed on an on-going basis.

Copies of the Construction Surface Water Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the CSWMP and informed of the responsibilities which fall upon them because of its provisions.

The responsibilities of the appointed person will be as follows.

- Updating the CSWMP as necessary to reflect activities on site.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensure pre-construction checks for protected species, are undertaken.
- Review method statement of the sub-contractors to ensure that it incorporates all aspects of CSWMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required.
- Ensure adherence to the specific measures listed in the Planning Conditions.
- Advise upon the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential, or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental related documentation.
- Ensure plant suggested is environmentally suited to the task in hand.
- Co-ordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists.
- To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site.

Where possible, precast concrete units are to be used to avoid on-site "wet" mix concrete usage. In-situ concrete pours are to be managed in accordance with best practice to avoid overspills.

Wheel wash and wash down facilities are to be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds/silt traps.

A method statement setting out in detail the procedure 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 and or services crossing watermains.

All watermains will be cleaned and tested in accordance with Uisce Éireann guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out and tested by or under the supervision of Uisce Eireann.

In order to reduce the risk of defective or leaking foul and surface sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.
- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.

No additional mitigation measures at construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined in this Environmental Report.

Operational Stage

The implementation of the following operational stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the development lands:

- The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.
- Surface water outflow will be restricted to below the equivalent greenfield runoff rate from the proposed attenuation tanks and basins as per the catchment design, in accordance with Dublin City Council requirements.
- Sustainable urban drainage measures, including, permeable paving, and filter strips/swales will be provided to improve water quality.
- A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.
- A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections. The table overleaf is an extract from Section 12.3 of the SuDS Design & Evaluation Guide, and generally describes the regular maintenance aspect for the SuDS.

Table 18.4: Regular Maintenance Requirements for SuDS

Type	Activity	Normal site care (Site) or SuDS-specific maintenance (SuDS)	Suggested frequency
Regular Maintenance			
Litter	Pick up all litter in SUDS Landscape areas along with remainder of the site – remove from site	Site	1 visit monthly
Grass	Mow all grass verges, paths and amenity grass at 35-50mm with 75mm max. Leaving cuttings in situ	Site	As required or 1 visit monthly
Grass	Mow all dry swales, dry SUDS basins and margins to low flow channels and other SUDS features at 100mm with 150mm max. Cut wet swales or basins annually as wildflower areas – 1st and last cuts to be collected	Site	4-8 visits per year or as required
Grass	Wildflower areas strimmed to 100mm in Sept or at end of school holidays – all cuttings removed Or Wildflower areas strimmed to 100mm on 3 year rotation – 30% each year – all cuttings removed	Site	1 visit annually 1 visit annually
Inlets & outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	SuDS	1 visit monthly
Permeable paving	Sweep all paving regularly to keep surface tidy	Site	1 visit annually or as required

There will still be a remaining requirement for more intensive maintenance tasks to be undertaken however, the severity of these tasks can be reduced by regular inspections and proactive responses being incorporated as a part of the regular maintenance regime discussed above. A table showing the typical requirements for the occasional maintenance tasks and remedial works is extracted from the SuDS Design & Evaluation Guide to overleaf.

Table 18.5: Further Maintenance Requirements for SuDS

Occasional Tasks			
Permeable paving	Sweep and suction brush permeable paving when ponding occurs	SuDS	As required - estimate 10-15 year intervals
Flow controls	Annual inspection of control chambers - remove silt and check free flow	SuDS	1 visit annually
Wetland & pond	Wetland vegetation to be cut at 100mm on 3 – 5 year rotation or 30% each year. All cuttings to be removed to wildlife piles or from site.	Site	As required
Silt	Inspect swales, ponds, wetlands annually for silt accumulation	Site & SuDS	1 visit annually
Silt	Excavate silt, stack and dry within 10m of the SUDS feature, but outside the design profile where water flows. Spread, rake and overseed.	Site & SuDS	As required
Native planting	Remove lower branches where necessary to ensure good ground cover to protect soil profile from erosion.	SuDS	1 visit annually
Remedial Work			
General SuDS	Inspect SuDS system to check for damage or failure when carrying out other tasks. Undertake remedial work as required.	SuDS	Monthly As required

- Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Dublin City Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to Dublin City Council for taking in charge.
- All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.
- Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.
- All SuDS and surface water drainage networks proposed in the public domain will be constructed to the standards required for Taking in Charge.
- Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak

in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

No additional mitigation measures at operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 subject site beyond those outlined in this Environmental Report.

18.2.8 Population and Human Health

Construction Phase

A range of construction related remedial and mitigation measures are proposed throughout this Environmental Report with reference to the various environmental topics examined, and the inter-relationships between each topic. Through the provision of these remedial and mitigation measures, any negative impacts on Population and Human Health during the construction phase shall be appropriately mitigated. Chapter 18 '*Summary of Mitigation Measures and Residual Impacts'*, of this Environmental Report provides a summary of mitigation measures proposed.

Operational Phase

The Proposed Development has been designed to avoid negative impacts on population and human health through the design and provision of physical and social infrastructure as described in Chapter 2 of this Environmental Report. Compliance with the proposed design and layout will be a condition of any permitted development. Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission. Furthermore, measures outlined in the Chapters of this Environmental Report which address other environmental matters such as Water, Air Quality, Climate Factors, Landscape and Visual Impact and Noise sufficiently address monitoring requirements.

18.2.9 Material Assets – Traffic and Transportation

Construction Stage

The primary mitigation and monitoring measures during the Construction Stage will be the implementation by the selected Contractor of the Construction Management Plan and the Construction Traffic Management Plan.

The assessment of predicted impacts concluded that the construction stage of the proposed development is not anticipated to impact on the operational performance of the local road network. However, good practice requires the preparation of a Construction Management Plan (CMP) and a Construction Traffic Management Plan (CTMP), both of which set out measures to manage construction traffic.

Due to the proximity of the subject site to bus and rail services together with existing cycle lanes, it is intended to limit parking for construction staff and to encourage the use of car sharing and public transport.

The main Contractor as part of their site set up arrangements, will appoint a Coordinator responsible for the implementation of the Construction Stage Mobility Management and Travel Plan and shall carry out the following tasks as part of their role:

- Provide an extensive information service for public transport options and routes at a public location(s) within the development for construction workers.
- Update the public transport information adjacent to the development on an ongoing basis; and

- Advise company staff of tax incentives for public transport and bicycles.

For those wishing to cycle to and from the development, dedicated cycle parking will be provided for the duration of the works within the site. Shower facilities and lockers will also be provided.

Adequate signposting will be located on-site to ensure the safety of all road users and construction workers.

Dedicated construction haul routes will be identified and agreed upon with Dublin City Council before the commencement of construction activities on site.

A dedicated “construction site”’ access/egress system will be implemented during the construction phases. Hoarding will be set up around the perimeter to prevent pedestrian access.

A material storage zone will also be provided in the construction compound area. This storage zone will include material recycling areas and facilities.

A detailed Construction and Traffic Management Plan (CTMP) will be prepared by the contractor and agreed with Dublin City Council before commencing works on site.

The contractor will be obliged to ensure that any sub-contractors engaged on the site are made fully aware of the required mitigation measures and that they are properly implemented as part of any works that they undertake.

Operational Stage

The primary mitigation and monitoring measure during the Operational Stage will be the implementation of the Mobility Management and Travel Plan.

To reduce traffic impact, mitigate against possible overspill car parking and to promote more sustainable modes of transport, a Mobility Management and Travel Plan has been prepared for the development and will be updated on an ongoing basis.

The proposed development will include car parking for residents at less than the maximum rate set out in the Dublin City Development plan 2022 – 2028. The level of car parking proposed has been informed by national standards for transport strategy and car parking for new apartments. The implementation of the measures set out in the Mobility Management and Travel Plan are designed inter alia to promote non-car modes of travel thereby discouraging high levels of car ownership and demand for car parking from residents.

A management company will be appointed by the developer to manage the overall development. A senior member of staff from the management company who supports the philosophy of the Plan will be appointed as the Coordinator. The Coordinator will be responsible for:

- Implementation and maintenance of the Plan.
- Monitoring progress of the Plan
- Liaison with public transport operators and officers of the Planning and Roads Authority.
- Production of information reports for the developer, the occupier(s) and the Planning and Road Authorities; and
- Ongoing assessment of the objectives of the Plan.

The developer will provide all new residents with a travel pack showing alternative modes of travel to the development. Where possible, the developer will advise visitors to the site of alternative modes of travel to that of the car.

Adequate and secure bicycle parking facilities with a total provision of 2,768 spaces will be provided within the development for residents, visitors, Creche users and staff. Local cycle route information will also be provided in the resident amenity areas and at other fixed points within the development. Residents will be advised of these locations.

The Mobility Management and Travel Plan Co-ordinator will be responsible for the management of inappropriate parking within the development. This parking management will ensure that spaces are reserved for those who have been allocated the space and will be accessible only to those users.

18.2.10 Material Assets – Waste Management

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e., incineration) and, least favoured of all, disposal.

Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 15.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site and are listed in summary below. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery, and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 15.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of soil and stone will need to be excavated to facilitate the proposed development. The Project engineers have estimated up to 1,200 m3 of excavated material will need to be removed off-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.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling, and recovery. The following waste types, at a minimum, will be segregated:
  - Concrete rubble (including ceramics, tiles, and bricks).
  - Plasterboard.

  - Metals.
  - Glass; and
  - 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; (alternatively, the waste will be sorted for recycling, recovery, or disposal).
- 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 Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation 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 suitably permitted contractors and taken to suitably registered, permitted, or licenced facilities; and
- 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, where possible. 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 Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed 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 and the NWMPCE 2024 It will also ensure optimum levels of waste reduction, reuse, recycling, and recovery are achieved and will promote more sustainable consumption of resources.

Operational Phase

As previously stated, a project specific OWMP has been prepared and is included at Appendix 15.2 and is summarised below. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site. Implementation of the 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 NWMPCE (2023), Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC waste byelaws.

- The operator of the proposed development during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse, and recovery at the site of the proposed development.
- The operator of the proposed development will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

- The residents / operator of the proposed development will ensure 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.
  - Cardboard.
  - Plastic.
  - Waste electrical and electronic equipment (WEEE) including computers, printers, and other ICT equipment.
  - Waste Electrical and Electronic Equipment
  - Cooking oil.
  - Cleaning chemicals (paints, adhesives, resins, detergents, etc.).
  - Furniture (and from time-to-time other bulky waste); and
  - Abandoned bicycles
- The residents / operator of the proposed development will ensure that 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.
- The residents / operator of the proposed development will ensure that all waste collected from the site of the proposed development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The residents / operator of the proposed development will ensure that 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 Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the NWMPCE (2023) and the DCC Waste Byelaws. It will also ensure optimum levels of waste reduction, reuse, recycling, and recovery are achieved.

18.2.11 Material Assets – Utilities

Water Supply

Construction Phase

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the Proposed Cherry Orchard Point - Phase 2 development. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application.

- All existing services will be located using service records, GPR surveys, and slit trenches to ensure that their position is accurately identified before excavation works commence.
- All water mains will be cleaned, sterilised, and tested to the satisfaction of the Uisce Eireann/Local Authority prior to connection to the public water main.
- All connections to the public water main will be carried out under the supervision of the Uisce Eireann/Local Authority.

No additional mitigation measures at the construction phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

Operational Phase

- Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

No additional mitigation measures at the construction phase for the Proposed Cherry Orchard Point – Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

Foul Water

Construction Phase

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a Temporary Connection Application.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.

All existing services will be located using service records, GPR surveys, and slit trenches to ensure that their position is accurately identified before excavation works commence.

In order to reduce the risk of defective or leaking foul sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.
- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.
- Public networks are proposed to be taken in charge by Uisce Eireann, and as such will be subject to post construction review and inspection as part of this process.

No additional mitigation measures at the construction phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

Operational Phase

It is not envisaged that any further remedial or reductive measures will be necessary upon completion. No additional mitigation measures at the operational phase for the Proposed Cherry Orchard Point - Phase 2 development are envisaged beyond those mentioned in this Environmental Report.

Surface Water

Construction Stage

Sites 4 and 5 have no direct hydrological connectivity to natural watercourses or surface water networks. There may be an indirect link from surface water runoff which may have the potential to run off the site boundary to the surface water gullies on the adjacent road networks. These networks outfall to the Blackditch Stream.

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Blackditch Stream, and the Camac River which has an ultimate outfall to the River Liffey at Heuston. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001);
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines.
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- CIRIA 697, The SUDS Manual, 2007; and
- UK pollution Prevention Guidelines (PPG) UK Environment Agency, 2004

The schedule of mitigation presented within the following table summarises measures that will be undertaken for the Proposed Cherry Orchard Point - Phase 2 development in order to reduce impacts on ecological receptors within the zone of influence which would include surrounding soils, the public water supply network, groundwater aquifers, and the public surface water network.

Table 18.6 Schedule of Surface Water Mitigation Measures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from carparking area entering the drainage network.	Water quality impacts.	Petrol interceptor to be installed on drainage network prior to outfall to public surface water network.	Prevents hydrocarbons from entering the public surface water network.
2	Pollutants from site compound areas entering the drainage network or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Materials to be stored appropriately in designated areas (discussed below). Temporary foul water connection to be obtained from Uisce Éireann to serve site compound welfare facilities.	Prevents contamination of public surface water network, soil, and groundwater.

3	Pollutants from material storage areas entering the watercourse or contaminating soils.	Water quality impacts. Soil quality impacts. Groundwater impacts.	Fuels, oils, greases, and other potentially polluting chemicals will be stored in roofed and bunded compounds at the Contractor's compound. Storage area to be located over 50m away to ensure no direct pathway to the surface water network. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided the Contractor for review by the Employer's Representative.	Prevents contamination of public surface water network, soil, and groundwater.
4	Concrete/ cementitious materials entering the drainage network.	Water quality impacts	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of public surface water network. Ensures invasive species material is not transported off site as muck.
5	Leaching of contaminated soil into groundwater.	Groundwater quality impacts	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water.	Prevents contamination of groundwater.
6	Pollutants from equipment storage/ refuelling area entering the drainage network.	Water quality impacts	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas. Discharge licence (where required) pollutant limits to be monitored and adhered to. The site is located at least 50m from any direct pathway to the surface water drainage network.	Prevents contamination of public surface water network.
7	Runoff from exposed work areas and excavated material storage areas entering the drainage network.	Water quality impacts due to silt entering the network.	Provision of silt entrapment facilities such as straw bales, silt fencing, silt barriers, diversion drains, settlement tank(s), & settlement pond(s), as appropriate and as outlined below.	Prevents contamination of public surface water network.

As mentioned previously, there is no direct hydrological connectivity from the Proposed Cherry Orchard Point - Phase 2 development (nor the masterplan lands) to natural watercourses or surface water networks. There is potential for an indirect hydrological connectivity to the local surface water drainage network, whereby during heavy rainfall events, surface water from Sites 4 and 5 flows over the site boundary to the road gullies on the adjacent streets.

The most likely potential sources of contamination to the local surface water network are from silt and suspended particles, and from chemical compounds entering these networks as surface water runoff. Silt and suspended particles may arise from surface runoff from stockpiled materials or from the pumping of water volumes in excavations.

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream.

Site stripping will be minimised as far as practicable. The proposed sediment entrapment facilities are as follows:

Straw Bales:
Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

Silt Fencing
A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing can be placed as a temporary barrier along the contour at the base of a disturbed area but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter should be considered.

Silt Barriers
Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff should be collected in diversion drains and routed through temporary sediment basins.

Diversion Drains
Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded, they can be lined with geotextile fabric or large stones or boulders.

Settlement tank
Commercially available settlement tanks, also known as sediment tanks, have compartments that allow suspended solid contents such as sand and silts to precipitate and sink to the bottom, falling out of suspension. The settlement tank has an inlet for the runoff which enters a chamber where it is held before flowing to the next compartment or tank for further treatment, prior to outfall.

Spoil Heap/Stockpiles
Spoil heap/stockpiles will not be located within 20m of the existing surface water networks. Spoil heaps/stockpiles will be considered for seeding if their storage is likely to be longer than a few seasons. Drainage diversion ditches will be constructed between the stockpile area and local surface water networks. This drainage ditch will flow to a sedimentation/settlement pond prior to outfalling to the surface water network. A Discharge Licence will need to be obtained from the local Authority by the Main Contractor. If topography doesn't allow for a gravity outfall from the sedimentation/settlement pond, a commercially available modular settlement tank will be utilised for the project, or outfall volumes may instead be pumped. Untreated surface water will not be permitted to flow to any natural or piped surface water network.

Further Mitigation Measures Include:

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site. Sanitary connections will need to be arranged by the contractor with Uisce Éireann at the appropriate time via a main contractor will be required to schedule delivery of materials daily. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Chemical contamination during construction stage can result due to fuel/chemical leaks and spills. Spills and leaks may contaminate soil, groundwater, and surface water networks via surface run-off. Method statements and mitigation measures reduce the potential for leaks and spills and limit their impact should they occur.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and surrounding watercourses from oil and petrol leakages and significant siltation. Suitable bunded and roofed 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. Spill kits will be provided by the Contractor to cater for any other spills.

Where possible, and subject to licence, the permanent connection to the public foul sewer will be used temporarily for construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system. If this connection is not permitted, then wastewater generated will be required to be stored for collection and treatment off-site at a suitable waste disposal facility.
On-site treatment measures will be installed to treat surface water run-off from the site prior to discharge to the receiving surface water sewer as noted above. This treatment will be achieved by the construction of settlement tanks/ponds, in conjunction with the installation of proprietary surface water treatment systems including class 1 full retention petrol interceptors, and spill protection control measures. Settlement tanks/ponds will be sized to deal with surface run-off and any groundwater encountered.

A sampling chamber with shut down valve will be installed downstream of the settlement pond/tank and water quality monitoring will be carried out here prior to discharge to the surface water sewer.

Regular testing of surface water discharges will be undertaken at the outfall from the subject lands in accordance with the requirements of the discharge licence to be obtained. The location(s) for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman or appointed, suitably qualified site staff member at the commencement of works.

Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.

It is likely that the surface water run-off from the site will be discharged to the existing public surface water network, post treatment. This will need to be confirmed between the Contractor and Local Authority, as well as any further conditions such as the permitted levels of contamination as well as frequency for testing, as part of the Contractor's application for a discharge licence.

All water pumped from the excavations will require to be treated for silt and deleterious matter. During any discharge of surface water from the excavations, the quality of the water will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in the table below must be followed during construction in order to ensure maintenance of water quality protection. This is in line with Transport Infrastructure Ireland (TII)'s 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'. It is considered that the parameter limit values (Guide/Mandatory) defined in the Fresh Water Quality Regulations (EU Directive 2006/44/EEC) should act as a trigger value for the monitoring of Surface Water.

Table 18.7: Monitoring Guidelines (Fresh Water Quality Regulations)

Parameter	Limit		Frequency and Manner of Samplings
	Limit Value	Guide/Mandatory	
Temperature	1.5°C	Mandatory Limit	Weekly, and at appropriate intervals where the works activities associated with the scheme have the potential to alter the temperature of the waters.
Dissolved oxygen	50% of Samples ≥ 9 (mg/l O2) 100% of Samples ≥ 7 (mg/l O2)	Guide Limit	Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH	6 to 9	Mandatory Limit	Weekly
Nitrites	≤0.01 (mg/l N02)	Guide Limit	Monthly
Suspended Solids	≤25 (mg/l)	Guide Limit	Monthly
BOD5	≤3 (mg/l)	Guide Limit	Monthly
Phenolic Compounds	-	-	Monthly where the presence of phenolic compounds is presumed (An examination by test)
Petroleum Hydrocarbons	5 (mg/l)	Guide Limit	Monthly (visual)
Non-Ionized Ammonia	≤ 0.005 (mg/l NH3)	Guide Limit	Monthly
Total Ammonium	≤ 0.004 (mg/l NH4)	Guide Limit	Monthly
Total Residual Chlorine	≤ 0.005 (mg/l HOCl)	Mandatory Limit	At appropriate intervals where works activities associated with the scheme have the potential to alter the Total residual Chlorine of the waters
Electrical Conductivity	-	-	Weekly

The Main Contractor will have overall responsibility for the implementation of the project Construction Surface Water Management Plan (CSWMP) during the construction phase. The appointed person from the Main Contractors team will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CSWMP. At the operational level, a designated person from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CSWMP are performed on an on-going basis.

Copies of the Construction Surface Water Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the CSWMP and informed of the responsibilities which fall upon them because of its provisions.

The responsibilities of the appointed person will be as follows.

- Updating the CSWMP as necessary to reflect activities on site.

- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensure pre-construction checks for protected species, are undertaken.
- Review method statement of the sub-contractors to ensure that it incorporates all aspects of CSWMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required.
- Ensure adherence to the specific measures listed in the Planning Conditions.
- Advise upon the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential, or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental related documentation.
- Ensure plant suggested is environmentally suited to the task in hand.
- Co-ordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists.
- To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site.

Where possible, precast concrete units are to be used to avoid on-site "wet" mix concrete usage. In-situ concrete pours are to be managed in accordance with best practice to avoid overspills.

Wheel wash and wash down facilities are to be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds/silt traps.

A method statement setting out in detail the procedure 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 and or services crossing watermains.

All watermains will be cleaned and tested in accordance with Uisce Éireann guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out and tested by or under the supervision of Uisce Eireann.

In order to reduce the risk of defective or leaking foul and surface sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Uisce Eireann's 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.
- Prior to connection, 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 by or under the supervision of Uisce Éireann 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 phase.
- Surface water networks will be constructed and tested in line with the Local Authority's requirements for Taking in Charge.

Operational Stage

The implementation of the following operation stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the Proposed Cherry Orchard Point - Phase 2 development lands:

The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.

Surface water outflow will be restricted to below the equivalent greenfield runoff rate from the proposed attenuation tanks and basins as per the catchment design, in accordance with Dublin City Council requirements.

Sustainable urban drainage measures, including green roofs, permeable paving, and filter strips/swales will be provided to improve water quality.

A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.
A maintenance regime for the SuDS features will be incorporated to the Operation and Maintenance manual for the development. Surface SuDS features can typically be maintained as part of the regular maintenance of the landscape, incorporating litter picking, grass cutting, and inspections. The table is an extract from Section 12.3 of the SuDS Design & Evaluation Guide and generally describes the regular maintenance aspect for the SuDS.

Table 18.8: Regular Maintenance Requirements for SuDS for the Proposed Cherry Orchard Point – Phase 2 Development

Type	Activity	Normal site care (Site) or SuDS-specific maintenance (SuDS)	Suggested frequency
Regular Maintenance			
Litter	Pick up all litter in SUDS Landscape areas along with remainder of the site – remove from site	Site	1 visit monthly
Grass	Mow all grass verges, paths and amenity grass at 35-50mm with 75mm max. Leaving cuttings in situ	Site	As required or 1 visit monthly
Grass	Mow all dry swales, dry SUDS basins and margins to low flow channels and other SUDS features at 100mm with 150mm max. Cut wet swales or basins annually as wildflower areas – 1st and last cuts to be collected	Site	4-8 visits per year or as required
Grass	Wildflower areas strimmed to 100mm in Sept or at end of school holidays – all cuttings removed Or Wildflower areas strimmed to 100mm on 3 year rotation – 30% each year – all cuttings removed	Site	1 visit annually 1 visit annually
Inlets & outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	SuDS	1 visit monthly
Permeable paving	Sweep all paving regularly to keep surface tidy	Site	1 visit annually or as required

There will still be a remaining requirement for more intensive maintenance tasks to be undertaken however, the severity of these tasks can be reduced by regular inspections and proactive responses being incorporated as a part of the regular maintenance regime discussed above. A table showing the typical requirements for the occasional maintenance tasks and remedial works is extracted from the SuDS Design & Evaluation Guide to overleaf.

Table 18.9 Further Maintenance requirements for SuDs for the Proposed Cherry Orchard – Phase 2 Development

Occasional Tasks			
Permeable paving	Sweep and suction brush permeable paving when ponding occurs	SuDS	As required - estimate 10-15 year intervals
Flow controls	Annual inspection of control chambers - remove silt and check free flow	SuDS	1 visit annually
Wetland & pond	Wetland vegetation to be cut at 100mm on 3 – 5 year rotation or 30% each year. All cuttings to be removed to wildlife piles or from site.	Site	As required
Silt	Inspect swales, ponds, wetlands annually for silt accumulation	Site & SuDS	1 visit annually
Silt	Excavate silt, stack and dry within 10m of the SUDS feature, but outside the design profile where water flows. Spread, rake and overseed.	Site & SuDS	As required
Native planting	Remove lower branches where necessary to ensure good ground cover to protect soil profile from erosion.	SuDS	1 visit annually
Remedial Work			
General SuDS	Inspect SuDS system to check for damage or failure when carrying out other tasks. Undertake remedial work as required.	SuDS	Monthly As required

Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Dublin City Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to Dublin City Council for taking in charge.

All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.

Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.

All SuDS and surface water drainage networks proposed in the public domain will be constructed to the standards required for Taking in Charge.

Water metering via district meters will be installed to Uisce Éireann requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

Electricity

Construction Phase

All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.

The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

All connections to the existing ESB Network will be completed directly by ESB Networks and any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

Operational Phase

All works will be completed in accordance with ESB details and standards and will be deemed to be safe for use with no impact the receiving environment once installed.

Gas

Construction Phase

All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.

The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

Any works required on existing gas mains will be completed directly by the Gas Networks Ireland or by the specialist sub-contractors appointed on their behalf and any loss of supply will be managed by Gas Networks Ireland.

Operational Phase

All works will be completed in accordance with GNI details and standards and will be deemed to be safe for use with no impact the receiving environment once installed.

Telecommunications

Construction Phase

All connections to the existing telecoms infrastructure will be completed directly by the telecoms providers or by the specialist sub-contractors appointed on their behalf and any loss of supply will be managed by the respective telecoms providers to minimise impact on neighbouring properties.

Operational Phase

All works will be completed in accordance with the relevant details and standards and will be deemed to be safe for use with no impact the receiving environment once installed.

18.3 Residual Impacts

18.3.1 Air Quality

Construction Stage

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (Appendix 5.1 of Phase 1 Parent EIAR). Provided the dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality impacts during the construction phase are ***short-term, direct, negative, localised, and imperceptible.***

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive 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 will ensure that the impact complies with all EU ambient air quality legislative limit values (set out in Directive 2008/50/EC), which are based on the protection of human health (see Table 5.1). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is ***negative, direct, short-term, imperceptible, and non-significant.***

Operational Stage

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the TII assessment criteria which is based on the impacts in the opening year. Section 5.4 determined that the impact to air quality as a result of increased traffic volumes during the operational phase of the proposed development will be localised, direct, long-term, neutral, and imperceptible for the opening year, which is overall not significant in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

With respect to ecological impacts due to operational phase traffic, there is an overall ***negative, slight, and long-term effect*** which is not significant in EIA terms.

Worst Case Impact

Conservative assumptions have been made throughout this assessment including for background air quality and requirements for dust mitigation measures. Therefore, the impacts can be considered inherently worst-case.

18.3.2 Climate

The proposed development will result in some impacts to climate through the release of GHGs, however the projects Climate Action Energy Statement aims to minimise operational phase energy requirements. TII reference the IEMA guidance (2022) which states that the crux of assessing significance is “not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether

it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050". As per the assessment criteria in Table 6.3 the residual impact of the proposed development in relation to GHG emissions is considered **direct, long-term, *negative, and* slight**, which is overall not significant in EIA terms based on the information available at the time of compiling this assessment.

In relation to climate change vulnerability, it has been assessed that there is a low risk as a result of the majority of future climate change hazards with the exception of flooding and extreme cold associated with landscaping elements which have a medium risk. The design is currently in line with a low vulnerability to the moderate-risk future scenario (RCP4.5). Landscaping has a medium vulnerability to extreme cold temperatures. Available mitigation for this will be considered during detailed design. All other vulnerabilities to future climate change have been identified as low. The identified climate vulnerabilities are not considered a significant risk in relation to the proposed development based on the information available at the time of compiling this assessment.

Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including The EU Commission technical guidance on Adapting Buildings to Climate Change (European Commission (2021a), LETI emergency design guide (LETI 2020), and the latest available IPCC report. In addition, should the updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account.

Worst Case Impact

The GHG assessment conducted has been based on the best available information at the time of completing this assessment. Exact material types were not known when carrying out this assessment and a worst-case approach was applied when inputting materials which will potentially over-estimate associated GHG emissions. There is the potential for the development to have lower GHG emissions once constructed if lower carbon intensive materials are chosen as part of the detailed design. However, this assessment has been based on a conservative, worst-case approach.

With respect to the climate risk assessment, in accordance with TII's Guidance document PE-ENV-01104 (TII 2022c), the high risk (RCP8.5) future climate change scenario has been considered. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken. This is considered the worst case scenario.

18.3.3 Noise and Vibration

Construction Noise

Mitigation defined in Section 7.5.1 will provide a further reduction of approximately 5 dB to construction noise levels. Given the distance to local receptors and the mitigation applied the residual construction noise impacts are predicted to be ***negative, short-term, and slight to moderate***. Overall, the impact is ***predicted to be not significant***.

Construction Vibration

Given the distance to local receptors the residual vibration impacts are predicted to ***be negative, short-term, and not significant.***

Operational Stage – Inward Noise Impact

Following implementation of the sound insulation mitigation the residual impacts are predicted to be ***long-term, neutral, and not significant.***

Operational Stage – Additional Traffic on Public Roads

All assessed junctions indicate that impacts will be neutral to ***negative, imperceptible to slight and long term.***

Operational Stage – Mechanical Plant

Once noise emissions from operational plant and activities are designed in accordance with BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound the residual impacts are predicted to be ***long-term, negative, and not significant.***

18.3.4 Biodiversity

The proposed development will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects. In the review of the projects that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Specifically, there will be no loss of Key Ecological Receptor habitats or species. There will be no impact on population numbers of Key Ecological Receptors.

There will be no fragmentation of Key Ecological Receptor habitats or species.

There will be no negative impacts on Natura 2000 sites within the potential impact zone.

There will be no effect on the natural range of protected habitats or species, and areas they cover within that range, are stable or increasing.

The specific structure and functions which are necessary for the long-term maintenance of species and habitats exist and are likely to continue to exist for the foreseeable future.

The conservation status of habitats and species is favourable.

There will be no effects on the population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.

The natural range of the species will neither being reduced nor is likely to be reduced for the foreseeable future.

There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

18.3.5 Landscape and Visual

The proposed development will impact on the urban landscape to varying degrees in terms of its perceived nature and scale. These effects are tempered and conditioned by sensitivities associated with the receptor. The duration of such impacts is however determined by the design life of the proposed development. In this case the building development has a design life of up to 60 years. Impacts on landscape character are therefore deemed to be of long-term duration in this instance.

In assessing the landscape character impacts, there are three main inter-related aspects to be addressed in considering the development proposals, namely:

- The perceived character of the area, how it is affected by the proposal and how well it integrates, particularly in the context of a changing environment.
- Effects of the proposed development on social and cultural amenity
- The proposed views of the development, relative to the existing site and context and the associated impact on visual amenity

18.3.6 Land and Soils

Construction Stage

With the protective measures noted above in place during the excavation works and construction stage, any potential impacts on soils and geology in the area will not have significant adverse impacts, and no significant adverse impacts on the soils and geology of the subject lands are envisaged.

The residual risk associated with site clearance, excavation and construction are considered to be ***negative, slight (not significant) local, likely, and permanent.***

No additional residual impacts at construction stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site.

Operational Stage

There will be minor permanent regrading of the sites in line with the ground levels proposed for the buildings and roads. Open spaces will be regraded to meet these buildings and roads.

Reinstatement measures in relation to soils consist primarily of the re-soiling of open areas / landscaping and the replanting of these areas. No post development reinstatement works will be required.

On completion of the construction phase and following replacement of topsoil and implementation of a planting programme, no further impacts on the soil are envisaged.

SuDS measures, including permeable paving, swales, and rain gardens, will assist with cleaning surface water runoff while replenishing the natural ground water table and their impact will be ***positive, slight (not significant) likely, and permanent.***

No additional residual impacts at operational stage are anticipated for the Proposed Cherry Orchard Point - Phase 2 Subject Site.

18.3.7 Water

Construction Stage

Taking account of the proposed mitigation measures outlined within Environmental Report Chapter 12, no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in water demand and foul water outflow during the period of construction. This increase in water demand and foul flows generated with be ***negative, slight (not significant), likely and short-***term in nature.

Operational Stage

Due to the proposed mitigation measures outlined above, adverse impacts are not expected during the operational phase of the proposed development on surface water and groundwater quality.
Surface water discharge from the site will be restricted by means of attenuation to below the current greenfield runoff rate, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development. The impact will be positive, slight (not significant), & permanent.
The installation of a Sustainable Urban Drainage System will ensure surface water runoff will be of high quality before discharge to the local surface water network and will not have an impact on the receiving waters downstream of the development. The impact will be ***positive, slight (not significant), & permanent.***

There will be an increased water demand, and an increased foul flow volume generated for the proposed development. Uisce Éireann have confirmed in their Confirmation of Feasibility Letter that the existing network has sufficient capacity to cater for the development for the water demand and that upgrade works are planned for increasing the capacity of the foul water network. The impact will be ***negative, slight (not significant) and permanent.***

18.3.8 Population and Human Health

Residual impacts are those which remain following the implementation of the proposed mitigation measures; however, no significant adverse residual impacts have been identified. The character and condition of the land will change from disused, green field site to a residential land use. This change is in line with the specific zoning (Z14) of the site and the impacts is considered acceptable when balanced with the other positive impacts in terms of building a critical mass of population, compact urban development, provision of housing on strategic, edge of centre site and the indirect benefits arising for employment.

The development of the site in terms of increased population and provision of services and amenities is line planning objectives for the site as set out in the Dublin City Development Plan and relevant Local Area Plan, and represents plan led, compact growth.

18.3.9 Material Assets – Traffic and Transportation

Construction Stage

Development traffic during the construction stage is predicted to have a low-level impact on surrounding road network in comparison to the existing baseline traffic flows. The preparation and implementation of a detailed Construction Traffic Management Plan (CTMP) to manage construction traffic will further mitigate any residual impacts.

In line with their experience working on projects of this scale in similar locations, the developer will build a construction car park on the Phase 3 site at the start of works by laying a temporary surface for vehicles. Staff are likely to arrive to site before 8am, before the morning peak hour of 8am -9am. However, staff are likely to leave during the peak PM hour of 5-6pm. As the number of construction staff on site will be less than the number of people on site post development, the number of additional vehicles can be accommodated.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, which will be addressed by the Contractor as part of the Construction Traffic Management Plan (CTMP), and which will be approved by Dublin City Council (DCC). On this basis, construction will likely have a negligible impact on pedestrian and cyclists.

Due to the proposed mitigation measures outlined above, the residual impact of the proposed development will be ***temporary, slight, negative, and short term*** for the duration of the construction stage of Cherry Orchard Point.

Operational Stage

During the Operational Stage, there will be an increase in the use of the surrounding road network by private vehicles. However, the Mobility Management and Travel Plan will promote more sustainable forms of transport to help reduce the use of private cars by the residents of the proposed development. There is likely to be an increase in the number of pedestrians and cyclists in the surroundings of the development particularly on the approaches to the railway station. However, the existing footpaths and cycle paths, both internally and externally along the site frontage, will be upgraded as part of development, thus, the impact should be minimal.

The traffic modelling undertaken includes growth in background traffic flows which accounts for other developments in the area.

The increase in traffic volumes as a result of the proposed development will impact the adjacent existing developments as the traffic flows through access and egress from the site will increase. The transport assessment carried out indicates that six of the eight assessed junctions, operating with the improved junction layouts proposed as part of the subject development, would operate within the capacity of the junctions and the impact arising from the proposed development at these junctions would be considered negligible.

The existing roundabout at the intersection of Park West Avenue and Park West Road to the south of the railway (Junction 7) is likely to reach capacity about 2027 and exceed capacity by 2042 with or without the proposed development. It is expected that this junction which is remote from the subject site will be upgraded, probably to a signalised crossroads before 2042 by Dublin City Council as part of the ongoing implementation of the park West – Cherry Orchard LAP.

Due to the proposed mitigation measures outlined above, the residual impact of the proposed development during the operational stage will be slight to ***moderate, negative and long term*** for the duration of the operation of Cherry Orchard Point.

18.3.10 Material Assets – Waste Management

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.1) there will be no significant residual impact in relation to Material Assets - Waste Management. The implementation of the mitigation

measures outlined in Section 15.6 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that European, national and regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

Construction Phase

A carefully planned approach to waste management as set out in Section 15.6.1 and adherence to the RWMP (which includes mitigation) (Appendix 15.1) during the construction phase will ensure that the predicted effect on the environment will be ***short-term, imperceptible and neutral.***

Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.6.2 and adherence to the OWMP (Appendix 15.1) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, imperceptible and neutral.***

18.3.11 Material Assets – Utilities

Water Supply

Construction Phase

Due to the proposed mitigation measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in water demand and foul water outflow during the period of construction. This increase in water demand will be ***negative, slight (not significant), likely, and short-term*** in nature.

Operational Phase

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts during the operational phase of the Phase 2 development will not arise due to the above-mentioned mitigation measures.

There will be an increased water demand generated for the proposed development. Uisce Éireann have confirmed in their Confirmation of Feasibility Letter that the existing network has sufficient capacity to cater for the development. The impact will be ***slight (not significant), negative, & permanent.***

It is not envisaged that any other remedial or reductive measures will be necessary upon the completion of the development.

Foul Water

Construction Phase

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in foul water outflow during the period of construction. This increase in foul flows generated with be ***slightly negative, slight (not significant), likely, and short-term*** in nature.

Operational Phase

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts will not arise during the operational phase of the proposed development.

There will be an increased foul flow volume generated for the proposed development. Uisce Éireann have confirmed that upgrades to the public network are scheduled for completion in Q3 2028 and for which will facilitate the Proposed Cherry Orchard Point - Phase 2 development and remaining phases of the masterplan lands. The current programme of works for the Proposed Cherry Orchard Point - Phase 2 development is expected to start after Q3 2028 and thus it is assumed that Uisce Éireann will have the required capacity for the Subject Site.

Surface Water

Construction Phase

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development. There will be a minor increase in surface water outflow during the period of construction. This increase generated with be ***negative, slight (not significant), likely, and short-term*** in nature.

Operational Phase

There is no potential for adverse or minor temporary, or localised effects on the Dublin groundwater body as a result of the proposed development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration on its water body status or prevent attainment or potential to achieve the WFD objectives.

There are appropriately designed mitigation and design measures which will be implemented during the construction phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases however, these are temporary, short-lived events that will not impact on the water status of the underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessments.

Due to the proposed mitigation measures outlined above no significant, adverse impacts are expected as many of the potential impacts will not arise during the operational phase of the proposed development on surface water and groundwater quality.

Surface water discharge from the site will be restricted by means of attenuation to below the current greenfield runoff rate, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development. The impact will be ***positive, slight, & permanent.***

The installation of a Sustainable Urban Drainage System will ensure surface water runoff will be of high quality before discharge to the local surface water network and will not have an impact on the receiving waters downstream of the development. The impact will be ***positive, slight (not significant), & permanent.***

Electricity

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on ESB infrastructure.

Operational Phase

There will be an increased demand on the ESB Network as a result of the development however it is not expected that this will have any impact on the operation of the network.

Gas

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on gas infrastructure.

Operational Phase

There will be no increase in demand for gas as a result of the Phase 2 development and there will be no impact on existing consumers.

Telecommunications

Construction Phase

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on telecommunications infrastructure.

Operational Phase

There will be an increased demand on the telecommunications network as a result of the development however it is not expected that this will have any impact on the operation of the network.

18.4 Cumulative Effects

As stated elsewhere, while the current planning application to which this Environmental Report addendum relates to is for Phase 2 of the Cherry Orchard Point development, the Parent EIAR itself has been based on assessment of the environmental impacts of the overall Cherry Orchard Point development. The cumulative effects of the proposed development alongside other proposed and permitted developments have been considered as appropriate within each relevant environmental factor.

18.4.1 Air Quality

Construction Stage

According to the IAQM guidance (2024), should the construction phase of the proposed development coincide with the construction phase of any other developments within 500m, then, there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. A review of other permitted developments within 500m of the site was conducted in order to identify other developments with the potential for overlapping construction phases that may result in cumulative construction dust impacts. The following permitted developments were identified as having the potential for cumulative impacts should the construction phases coincide: 318607, 4313/22, 312290, 3403/21, SD19A/0098, SD19A0185, SD20A/0309, ABP-316119, SD22A/0093, SDZ22A/0010. Additionally, there are 2 no. sites within the LAP lands which have the potential for future development by Dublin City Council, these include Site 1 and Site 2 of the LAP lands which have plans for social and affordable housing schemes. Additionally, the approved Phase 1 associated with the overall masterplan site has been assessed within the previous sections of this chapter to ensure a fully cumulative assessment.

Provided the mitigation measures outlined in Section 5.5.1 and Appendix 5.1, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted.

Construction stage traffic also has the potential to impact air quality. The traffic data assessed as part of this Environmental Report has included other relevant cumulative development within the area, including the overall masterplan area. It was determined that the change in traffic was not of the magnitude to require a detailed modelling assessment of traffic emissions. It can be concluded that the cumulative impact of traffic on air quality will be ***imperceptible.***

With mitigation measures (as per Section 5.5.1) in place, there are no significant cumulative impacts to air quality predicted for the construction phase. Impacts will be ***short-term, localised, negative, imperceptible, and non-significant.***

Operational Stage

The traffic data used to assess the operational stage impacts to air quality included the cumulative traffic associated with the proposed development as well as other existing and permitted developments in the local area (see Chapter 14 Material Assets - Traffic and Transport). Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to localised, direct, long-term, neutral, and imperceptible, which is overall not significant in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

18.4.2 Climate Factors

With respect to the requirement for a cumulative assessment the TII guidance (2022a) references the IEMA guidance (IEMA, 2022) which states that:

"*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area as well as all phases of the full masterplan development for the site. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative, and slight,** which is overall ***not significant*** in EIA terms.

18.4.3 Noise and Vibration

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase, including the following:

Table 18.10 Development Planning permissions that can potentially overlap with the development

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022

	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the	Granted 16/06/2022

		north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	Granted 31 Jul 2019
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024

SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

Additionally, to the above Table 18.10 there are other Local Area Plan sites that have been advised by Dublin City Council (DCC) that could potentially overlap with proposed development during the construction phase, these are as follow:

Site 1 - DCC Affordable Purchase scheme delivering 172 new homes, targeting a construction completion date of Q1 2026.

Site 2 - Currently at design stage. A Part 8 is to be brought to council in Q1 2024 by DCC PPP section. Current iteration outlines 126 social and 47 affordable homes. There will be 3-4 shops. One 250sqm and the others in the region of 120sqm as per the LAP requirements.

The majority of the sites are located at distances greater than 200m from the proposed development and consequently there is likely to be no significant cumulative impacts associated with these developments.

If phases of the overall masterplan for Cherry Orchard Point proceed simultaneously then elevated construction noise emissions due to cumulative noise are likely to occur at receptor locations proximate to two or more construction sites as well as a potential increase in the length of time that the receptor will be exposed to construction noise. Hence, cumulative construction impacts will need to be considered and managed during the construction phase. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. With mitigation in place the impact of phases being constructed simultaneously will be ***negative, slight to moderate and brief to short-term.***

Operational Stage

Traffic data already accounts for other projects within the area and also for the latter stages of the overall Cherry Orchard masterplan, hence, the cumulative assessment has already been accounted for.

18.4.4 Biodiversity

The proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on European Sites, Nationally designated sites and protected species. This included a review of online Planning Registers and served to identify past and future plans and projects, their activities and their predicted environmental effects. This proposed development will have little significant negative impact in combination or cumulatively with other planned projects proposed for the locale.

There is a total of 5 no. residential planning applications, of which 4 are within the Dublin City administrative boundary and 1 within the South Dublin administrative boundary.

List of Residential Development within the 1km buffer of the Subject Site:

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	Granted 03-10-2022
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022

	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate & Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	Granted 08/10/2018

The area is heavily developed with many residential and commercial projects already completed.

Potential proposals for the remainder of this site will entail similar connection to existing services and little impact from this accumulation of construction projects, both completed and proposed, is expected.

Cumulative impacts are of greater concern when there are Key Ecological Receptors present or where there is a potential to negatively impact on national or internationally important sites. In this proposed development there are no KER`s present and no potential to impact national or international sites.

In considering this proposal the current mix of residential and commercial units on all adjoining sites was considered as was the potential for future development on the remaining portion of this site. Future plans for sites elsewhere in the locality are constrained by the paucity of available, suitable, sites. Any

future developments in this area will not cumulatively impact the present site as it is already degraded by fly tipping, antisocial behaviour, lack of grazing and the pressures on flora and fauna resulting from these. Development of this site and other sites within the environs will result in the creation of new habitats and niche opportunities. The removal of habitats and species that are not KERs will result in the loss of either habitats or species that are considered to be KERs.

The residual construction and post operational/construction impacts of the proposed development are considered cumulatively with other plans and projects as described above. Particular focus has been placed on those plans and projects that are in closest proximity to the proposed development.

All other construction activity in the locality is completed with mixed commercial and residential units evident in adjoining sites.

Potential future plans for the remainder of this site have been considered.

As such, there is no potential for the proposed development to contribute to any significant cumulative habitat loss when considered in combination with any other plans and projects.

No significant effects as a result of the proposed development in relation to disturbance, displacement or mortality of faunal species has been identified. Therefore, there is no potential for the proposed development to contribute to any cumulative effect in this regard. The proposed development will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects. In the review of the projects that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Specifically, there will be no loss of Key Ecological Receptor habitats or species. There will be no impact on population numbers of Key Ecological Receptors.

There will be no fragmentation of Key Ecological Receptor habitats or species.

There will be no negative impacts on Natura 2000 sites within the potential impact zone.

There will be no effect on the natural range of protected habitats or species, and areas they cover within that range, are stable or increasing.

The specific structure and functions which are necessary for the long-term maintenance of species and habitats exist and are likely to continue to exist for the foreseeable future.

The conservation status of habitats and species is favourable.

There will be no effects on the population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.

The natural range of the species will neither being reduced nor is likely to be reduced for the foreseeable future.

There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

18.4.5 Landscape and Visual

The cumulative effects are generated by schemes noted throughout this Environmental Report and in the context of the Park West Cherry Orchard Local Area Plan. It is clear from the assessment that the gap sites are causing urban dereliction and antisocial behaviour, with a notable effect on the quality of the public realm. The granting of schemes and the completion of permitted development will further consolidate the ambitions of the LAP and SDRA4 of the Dublin City Development Plan.

As schemes are permitted following national, regional and local guidance, it is fair to assume that the quality of design remains appropriate. In that regard, the generation of a good senses of place and innate wayfinding and definition in the streetscape, and the provision of public realm is seen in a positive light. Increasing the population and amenity in proximity to public transport and connecting it through green infrastructure to the local area, should be a positive way to make new, integrated communities. The cumulative effects are therefore seen as ***moderate and positive.***

18.4.6 Land and Soils

On completion of the construction phase of the Proposed Cherry Orchard Point - Phase 2 Subject Site and following replacement of topsoil and a planting programme, no further impacts on the soil environment are envisaged except for the possibility of contamination of soil from foul water effluent or oil/chemical spills from the site occupier (residents and commercial interests) operations.

This is based on the current assessment of the masterplan lands as a whole rather than just the subject application site. Mitigation measures noted throughout this report apply to the full masterplan lands and are cognisant of the Approved Phase 1 development, the Proposed Cherry Orchard Point - Phase 2 Subject Site, and the subsequent planning applications for further developments within the masterplan lands and not just the subject application.

Since the time of writing the approved Phase 1 Parent EIAR, no further development in the vicinity of the masterplan lands has been undertaken.

18.4.7 Water

Construction Stage

There are no anticipated construction stage cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a ***neutral, imperceptible, and*** temporary increase in water supply demand and increase to foul flows generated.

Operational Stage

There are no anticipated cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than a ***neutral, imperceptible, and permanent*** increased water supply demand and increase to foul flows generated. This is based on the assessment of the masterplan lands as a whole rather than just the subject application site. Mitigation measures noted throughout this report apply to the Proposed Cherry Orchard Point - Phase 2 Subject Site (and the masterplan lands) and their subsequent planning application and not just the subject application.

18.4.8 Population and Human Health

This Environmental Report has been prepared to reflect the overall impact of the proposed development of 11.5 hectares of lands, which have been identified as Key Development Site 4 and Site 5 in the Park West Cherry Orchard Local Plan 2019.

However, the development site boundary of the current planning application only relates to part of these lands. As such, cumulative impacts arising from development of the entire subject lands, beyond the extents of the application site, have been considered throughout this Environmental Report.

The surrounding context of the site consists of a mix of commercial, industrial, residential, and related land uses. The site is bound by Cloverhill Road to the north, Cedar Brook Avenue and Park West

Avenue to the east, the approved Phase 1 development (Bord. Ref: ABP-318607-23) to the south, and the M50 motorway to the west.

Two large industrial estates can be found to the south and southwest of the site as well as many green spaces and parks softening the area. There are established residential communities located to the east of the site within Cedarbrook and Barnville, north of the site in St. Oliver's Park and Bridgeview, and south of the site opposite the train station within the Crescent complex.

The potential cumulative impact of the proposed development on population and human health has been considered in conjunction with recent relevant planning permissions set out in Section 13.

However, it should be considered that the proposed development, alongside the relevant residential and commercial planning applications, form part of a key growth area as identified in the Local Area Plan and Dublin City Development Plan. The cumulative impact of the development of adjacent lands within Study Area will be the resulting rise in population, in line with national, regional, and local planning policy for Park West and Cherry Orchard.

This impact will be long term and positive in the context of the development zoning objectives for the subject site, and wider local, regional, and national planning policy. This is further supported by the strategic location of lands within the Study Area and their proximity to high-quality public transport services, and social and community services. The cumulative impact of the full development of lands in line with the objectives of the Local Area Plan will enhance the social and economic viability of the area.

18.4.9 Material Assets – Traffic and Transportation

For the purpose of cumulative impact, the Traffic and Transport Assessment Guidelines, issued by TII in May 2014 require that 'Traffic and Transport Assessment should consider all committed developments within the vicinity of the site. This includes sites which have previously been granted planning permission, but which are yet to become operational as well as any planning applications that have been submitted but have yet to be determined.'

Cumulative traffic impacts may arise where there are a number of existing or proposed developments, which may affect the traffic at this development and the traffic flows in the surrounding area.

Scoping for TTA

The Scoping for TTA prepared by Waterman Moylan in September 2022 identified that, in addition to the trips that will be generated by the future development of Sites 4 and 5, the trips that would be generated by the approved Park West SHD development on Site 6 should be included in the traffic assessment for the subject site.

Approved Development on Site 6

Planning permission for a residential development of 750 units and 552 car parking spaces (Including 14 spaces for car sharing) on a 9.4 ha site at Park West, Dublin 12 was granted by An Bord Pleanala to Greenseed Ltd in June 2022 subject to 29 conditions (ABP Reg Ref 312290-21). The site included the Aspect Hotel which is located some 5 minutes' walk from Site 4 (400m).

Other Projects

No other significant construction projects have been identified in the area of the subject site which would result in a significant cumulative impact on Traffic and Transport either during the construction or operational stages.

However, measures currently being considered by NTA, TII and Dublin City Council for the intensification of public transport services and cycle facilities in the surrounding area are likely to have a cumulative long term significant impact.

Future Increase in Traffic Flow

The traffic growth factors described in Section 14.6.2 above are derived by the Transport Infrastructure Ireland (TII) II and make an allowance for traffic growth due to future This is in line with industry standards and best practice. The traffic modelling undertaken for the subject development includes the growth factors from the TII publication – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections and therefore the potential cumulative impacts have been considered as part of this proposal.

Other Future Developments – Park West and Cherry Orchard LAP.

Any future development in the area around Cherry Orchard Point is likely to increase the traffic volumes on the surrounding road and therefore a full Traffic and Transport Assessment will be prepared, and appropriate mitigation measures implemented for any such future developments.

18.4.10 Material Assets – Waste Management

It is predicted with the implementation of the mitigation measures outlined in section 15.6 and adherence to the RWMP (Appendix 15.1) and OWMP (Appendix 15.1) there will be no significant cumulative residual impact in the receiving environment section, which includes cumulative developments that are already built and in operation in relation to Material Assets - Waste Management. As has been identified in the receiving environment section (section 15.3) all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

A review of the permitted and proposed developments, as set out in Chapter 18 of this Environmental Report, has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of land soils geology and hydrogeology.

This review identified the permitted developments outlined in this environmental report, which are capable of combining with the proposed development and have the potential to result in significant cumulative effects due to their scale and close proximity to the proposed development site.

Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase, including the following:

Table 18.11 Development Planning permissions that can potentially overlap with the development.

Reg. Ref.	Address	Summary Development Description	Decision and Date
Planning History for the Subject Lands known as Key Development Sites 4 and 5 under the Park West Cherry Orchard Local Area Plan 2019: *The subject lands are unused greenfield sites with no prior development, buildings, or feature of note.*			
Extant Planning Permission on designated Key Development Sites within Park West Cherry Orchard Local Area Plan (2019) Boundary			
4313/22 (Part 8)	Key Development Site 1	The proposed construction of a residential development comprising 172 no. dwellings (141 no. 3-bedroom two-storey terraced houses and 31 no. 2-bedroom two-storey terraced houses), 2 public open spaces approx. 0.83 ha /14% of site	Granted 03-10-2022

		area, associated site infrastructure works/ supporting infrastructure, landscaping, public lighting, access roads/pavements, boundary treatments and provision for a link road/ pavements and cycleways to Ballyfermot. The Development also consists of a pocket park and children's playground and 172 no. private parking spaces (1 no. in-curtilage parking per house) 14 no. on-street public car parking (includes 2 no. accessible parking spaces) and 20 no. public bicycle parking spaces.	
	Key Development Site 2	None	
	Key Development Site 3a	None	
	Key Development Site 3b	None	
318607	Key Development Site 4	Proposed construction of a residential led mixed use scheme across 16 blocks within 9 buildings ranging in height from 4 to 15 storeys	Granted 09-07-2024
	Key Development 5	None	
312290	Key Development Site 6	The proposed development on a total site of 9.4 hectares will consist of 750 residential units in 7 separate blocks, ranging in height from 2 to 15 storeys, 6,175 sq. m of communal amenity space and 14% public open space. 522 no. car parking spaces and 1,676 bicycle spaces. The development also includes: Retail Unit – 156 sqm Crèche – 410 sqm (84 child spaces) Community Space – 48 sqm Café/bar – 91 sqm	Granted 16-06-2022
	Key Development Site 7	None	
	Key Development Site 8	None	
Other Extant Planning Permission for Residential Schemes within the Local Area Plan (2019) Boundary			
3403/21		Planning permission for the proposed development will consist of modifications to the permitted residential development of 86 no. residential units over retail/restaurant uses (reg. ref. 3798/18, 3941/20, 2517/21) within blocks 70 and 72 as follows: modifications to the private amenity spaces attached to 65 no. residential units at ground, first second and third floor levels to provide winter gardens in lieu of previously permitted balconies including alterations to the existing curtain walling and permitted elevations. The floor area of the apartments and private amenity spaces remains unchanged form that previously permitted. Omission of previously permitted canopy at fourth floor level. The total number of apartments (86 no.), designated car parking spaces (86 no.) bicycle parking spaces (167 no.) and gross floor area of blocks 70 and 72 all remain as previously permitted.	Granted 6/12/2021
SD188/0006* (Part 8)	New Nangor Road, Clondalkin, Dublin 22.	Social Housing Development comprising of two and three storey housing and apartment units (44 units in total) on a site located at New Nangor Road, bounded by Riversdale Estate &	Granted 08/10/2018

		Mayfield Park, Clondalkin, Dublin 22. The proposed development shall consist of: 19 3-bed, two storey houses, 1 two storey specially adapted unit and 24 2-bed apartments in 3 storey building. The works include: Landscaping works to boundaries and new park/play area, new pedestrian access routes to adjacent shopping facilities and transport, ancillary works to landscape housing areas, and all necessary associated ancillary works on the site and adjacent areas. The housing provision includes two storey houses in terraces and adjacent to the existing two storey housing, and three storey own door apartments of 3 units addressing the new Nangor Road.	

Reg. Ref.	Address	Summary Development Description	Decision and Date
SD21A/0100*	Unit 15, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10,	Construction of a revised two storey mono-pitched Discount Foodstore.	Granted 17/06/2021
3999/21	Unit 55, Park West Road, Park West Industrial Park, Dublin 12	PERMISSION & RETENTION: The development will consist of extension of the existing office space at second floor level resulting in an overall office floorspace increase of 125 sqm approximately, construction of a new mezzanine level in the warehouse area (circa 257 sqm) and a new stairwell. Creation of 2no. openings to the south elevation and 1no. opening to the west elevation and associated site development works. The development will also include the retention of the existing office space at ground and first floor level of 250 sqm approximately.	Granted 04/02/2022
312290	Park West Avenue and Park West Road, Park West, Dublin 12	Greenseed Limited intend to apply to An Bord Pleanála for a 10-year permission for a strategic housing development at this site (c.9.4ha) at Park West Avenue and Park West Road, Park West, Dublin 12 (site bounded by Park West Avenue to the west, Park West Road to the south, Park West Industrial Estate to the east and the Dublin to Cork Mainline Railway to the north. The site is also part of the site known as Site 6 within the Park West and Cherry Orchard Local Area Plan 2019). Of a total of 70,694sq.m gross floor area (GFA) in 7no. blocks (Blocks A to G) including: 750no. residential apartment units comprising 321no. 1 bed units, 384no. 2 bed units and 45no. 3 bed units (totalling 69,989sq.m), non-residential floorspace	Granted 16/06/2022
SD20A/0309*; SD22A/0093*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22	Provision of 4 new information and communications technology (ICT) facility	Granted 23 Mar 2021
SD19A/0185*	3-4, Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22.	Alterations to approved plans (Grant of Permission ref PL06S.243151 and PA Reg Ref SD13A/0271 and SD18A/0068) to the previously granted planning permission for the construction of an ESB 110kV Gas Insulated Substation for the use by Crag Digital Limited in support of the development and to incorporate an ESB Network Substation to improve and upgrade power supply to Clondalkin and adjoining areas; the proposed ESB 110kV Gas Insulated Substation is a two storey building of gross floor area of 1,586sq.m and Client Control Room building of an area of 116sq.m; single storey 2MV ESB Substation of 38sq.m floor area is proposed to be constructed to facilitate the construction of the already granted development until	Granted 31 Jul 2019

		completion and commissioning of the proposed ESB 110kV GIS Substation, including for 3 ESB external transformers and 3 Crag Digital Limited external transformers; alterations include for the relocation on site of previously granted client transformers, control building and energy centre ancillary building to facilitate the revised ESB 110kV Substation building layout; ESB Substation and client control building and transformer compound are to be secured with a 2.6m and 3m high palisade fence and access gates; all landscaping and ancillary site works as per previously granted planning permission SD18A/0068.	
5311/22	Block 7, Parkwest Business Campus, Parkwest, Dublin 12	The development will consist of the change of use of the ground, first and second floors from class 3 office use to class 8 for use as a health centre / clinic along with all associated works.	Granted 05 Apr 2023
SD22A/0060*	Cloverhill Industrial Estate, Cloverhill Road, Dublin 22	Change of use of 464sq.m of warehouse mezzanine storage, approved under planning reference SD18A/0031, to office use, as well as associated and ancillary internal works, elevational changes and external ground works to facilitate this new use.	Granted 19 Jul 2022
SD24A/0106*	Block 1, Units 10-13 Weatherwell Industrial Estate, Neilstown, Clondalkin, , Dublin 22.	The construction of new office space at first floor level including enclosing the existing access stairs (total area @ 87.915 sq./mts), all works proposed are ancillary to the use of the existing building and business.	Granted 12 Sep 2024
SD24A/0125W	Unit 10, Clondalkin Business Centre, Crag Cres, Clondalkin Industrial Estate, Dublin 22, Co. Dublin	Gabor Construction Limited are applying for Permission for partial change of use as constructed under Reg. Ref. S99A/0146, from Warehouse to Office use (29sqm) to include for internal alterations and extension of current office floor areas on ground and first floor level.	Granted 4th July 2024
SDZ22A/0010	The proposed development is located west of the Ninth Lock Road, south of the Dublin-Cork railway, line north of Cappaghmore, housing estate and whitton Avenue and east of an existing carpark/park, Dublin 22, Co. Dublin	The proposed development consists of the construction of 294no. dwellings, creche and retail/commercial unit.	Granted 2nd May 2023

**These applications are South Dublin County Council*

Due to the high number of waste contractors in the Dublin region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency 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 mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be short-term, imperceptible, and neutral.

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, and the remaining phases of the Cherry Orchard Point masterplan development, 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.

18.4.11 Material Assets – Utilities

The main interactions relating to this Environmental Report Chapter are Land & Soils, Biodiversity, and Utilities.

During construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.
In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants leaking into the underlying geology.

In respect of Biodiversity, there is interaction between hydrology and the downstream habitats present as the public surface water network outfalls volume and water quality to the natural watercourse. The mitigation measures ensure that surface water runoff is treated to the required standards so that downstream habitats are not negatively impacted.

Electricity

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services for foul, water supply and surface water drainage, provided that the other developments implement appropriate mitigation measures.

Gas

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

Telecommunications

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

www.kpmg.com