Tiznow Property Company Limited
(Comer Group Ireland)

ARUP

City Park Development

At the Former Tedcastles Site

Environmental Impact Assessment Report

Part 1 of 2
Non-technical Summary and Main Chapters

April 2022

Tiznow Property Company Limited
(Comer Group Ireland)

City Park Development at the Former Tedcastles Site

Environmental Impact Assessment Report

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Glossary

AA – Appropriate Assessment

AADT – Annual Average Daily Traffic

ABP – An Bord Pleanála

ABTA – Area-Based Transport Assessment

ACA – Architectural Conservation Areas

AHLV – Areas of High Landscape Value

AiS – Asbestos in Soil AiS

AOD – Above Ordinance Datum

AQS – Air Quality Standards

BCI – Bat Conservation Ireland

BER – Building Energy Report

bgl – below ground level

BH – Borehole

BOD – Biological Oxygen Demand

Bq/m^3 – Becquerel per cubic metre

BRE – Building Research Establishment

BRT – Bus Rapid Transit

BSI – British Standard Institution

C&D – Construction and Demolition

c. – circa

CAFE Directive – Cleaner Air for Europe

CAP – Climate Action Plan

CASP – Cork Area Strategic Plan

CCC – Cork City Council

CCMS – Cork City Centre Movement Strategy

CCDP – Cork City Development Plan

CDRMP – Construction Demolition Resource Management Plan

CEMP – Construction Environmental Management Plan

CFA – Continuous Flight Auger

CFD – Computational Fluid Dynamics

CFRAM – Catchment Flood Risk Assessment and Management

CIBSE – Charted Institution of Building Services Engineers

CIEEM – Chartered Institute of Ecology and Environmental Management

CIRIA – Construction Industry Research and Information Association

CITES – Convention on International Trade of Endangered species

CMATS – Cork Metropolitan Area Transport Strategy

CO – Carbon Monoxide

CO_2 – Carbon Dioxide

COD – Chemical Oxygen Demand

COMAH – Control of Major-Accident Hazards

cSAC – candidate Special Areas of Conservation

CSM – Conceptual Site Model

CSO – Central Statistics Office

CTMP – Construction Traffic Management Plan

CUH – Cork University Hospital

DaS – Dumping at Sea

dB - Decibels

DEAP – Dwelling Assessment Procedure

DECLG – Department of the Environment, Community and Local Government

DEHLG – Department of Environment, Heritage and Local Government

DEV – deviation (traffic modelling)

DHPCLG – Department of Housing, Planning, Community and Local Government

DHPLG – Department of Housing, Planning and Local Government

DMP – Demolition Management Plan

DMR – Dry Mixed Recyclables

DMURS – Design Manual for Urban Roads and Streets

EAHP – Exhaust Air Heat Pumps

EC – European Commission

EEC – European Economic Community

EIA – Environmental Impact Assessment

EIAR – Environmental Impact Assessment Report

ELV – Emission Limit Value

EMS – Environmental Management Systems

EPA – Environmental Protection Agency

EQS – Environmental Quality Standards

ESB – Electricity Supply Board

ESRI – The Economic and Social Research Institute

EU – European Union

EWC – European Waste Catalogue

FRA – Flood Risk Assessment

GAC – Generic Acceptance Criteria

GHG – Greenhous Gas

GI – Ground Investigation

GLVIA – Guidelines for Landscape and Visual Impact Assessment

GQRA - Generic Quantitative Risk Assessment

GSI – Geological Survey of Ireland

GSV – Gas Screening Value

GTV – Groundwater Threshold Values

GW – giga watts

GWB – Ground Water Body

Ha – Hectares

HFA – Housing for All

HGV – Heavy Goods Vehicle

HSA – Health and Safety Authority

HSE – Health Service Executive

HWO – Haz-Waste Online

HVAC – Heating Ventilation and Air Conditioning

IAA – Irish Aviation Authority

IAQM – Institute of Air Quality Management

ICAO – International Civil Aviation Organisation

ICOMOS – International Council on Monuments and Sites

IED – Industrial Emissions Directive

IFI – Inland Fisheries Ireland

IGI – Institute of Geologists Ireland

IGV – Interim Guideline Values

IPPC – Integrated Pollution Prevention and Control

ISMP – Invasive Species Management Plan

ITM – Irish Transverse Mercator (co-ordinate system)

IUCN – International Union for Conservation of Nature

kW – kilo watts

l/s – litres per second

LA_{10} – the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for traffic noise

LA_{90} – the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise

LA_{eq} – A-weighted equivalent continuous steady sound level during the sample period effectively representing an average value

LA_{max} – maximum A-weighted sound pressure level occurring in a specified time period

LCA – Landscape Character Assessment

LCT – Landscape Character Types

LGV – Light Goods Vehicle

LIHAF – Local Infrastructure Housing Activation Fund

LoW – List of Wastes

LPZ – Landscape Protection Zones

LRT – Light Rail Transit

LVG – Lee Valley Gravel Aquifer

LVIA – Landscape and Visual Impact Assessment

m/s – meters per second

m^3 – cubic meters

MAPP – Major-Accident Prevention Policy

MEM – Maximum Entropy Models

MMP – Mobility Management Plan

MNR – Mixed Non-Recyclable

mOD – metres above/below Ordinance Datum

Mt – mega tonnes

Mt CO_2 eq – Megatonnes of CO_2 equivalent

MTU – Munster Technical University

MVHR – Mechanical Ventilation Heat Recovery

NAF – National Adaptation Framework

NBDC – National Biodiversity Data Center

NCCAF – National Climate Change Adaptation Framework

NCDWC – National construction and De Waste Council

NGOs – Non-Governmental Organisations

NHA – Natural Heritage Area

NIAH – National Inventory of Architectural Heritage

NIS – Natura Impact Statement

NMI – National Museum of Ireland

NMS – National Monuments Service

NO_2 – Nitrogen Dioxide

NOx – Nitrogen Oxides

NPF – National Planning Framework

NPO – National Policy Objectives

NPWS – National Parks and Wildlife Service

NRA – National Roads Authority

NRMM – non-road mobile machinery

NVMP – Noise and Vibration Management Plan

NSO – National Strategy Outcomes

NTA – National Transport Authority

NTS – Non-Technical Summary

NWMP – Noise and Vibration Management Plan

NZEB – Nearly Zero Energy Buildings

OPW – Office of Public Works

OSI – Ordinance Survey of Ireland

PAHs – Poly-Aromatic Hydrocarbons

PAG – Project Appraisal Guidelines

PCU – Passenger Car Units

PDA – Planning and Development Act 2000

PE – Population Equivalent

PFAS – Per- and Poly- fluoroalkyl substances

PIR – Passive Infrared

PM_{10} – Particulate Matter that is 10 microns in size or below

$PM_{2.5}$ – Particulate Matter that is 2.5 microns in size or below

pNHA – proposed Natural Heritage Area

PRF – Potential Roost Feeders

QBAR – Queue Base Address Register

QI – Qualifying Interests

RBMP – River Basin Management Plan

RFC – Ratio of Flow to Capacity

RMP – Records of Monuments and Places

RPO – Regional Planning Objective

RPS – Records of Protected Structures

RSES – Regional Spatial and Economic Strategy

SAC – Special Area of Conservation

SAP – Small Area Population

SCI – Special Conservation Interest

SDLAP – South Docks Local Area Plan

SHD – Strategic Housing Development

SI – Site Investigation

SIR – Site Infrastructure Report

SMR – Site and Monuments Record

SO_2 – Sodium Dioxide

SPA – Special Protection Area

sqm – square metres (m^2)

SUDS – Sustainable Urban Drainage Systems

TGD – Technical Guidance Document

TII – Transport Infrastructure Ireland

TN – Total Nitrogen

TP – Total Phosphorous

TP – Trial Pit

TSS – Total Suspended Solids

UCC – University College Cork

UWWTD – Urban Wastewater Treatment Directive

VRF – Variable Refrigerant Flow

WEEE – Waste electrical and electronic equipment

WFD – Water Framework Directive

WHO – World Health Organisation

WWDA – Wastewater Discharge Authorisations

WWTP – Wastewater Treatment Plant

ZO – Zoning Objective

ZoI – Zone of Influence

Non-Technical Summary

This is the non-technical summary of the environmental impact assessment report (EIAR) for the 'City Park Development at the Former Tedcastles Site', hereafter referred to as the '*proposed development*'.

This document summarises, in non-technical language, the EIAR including the likely significant effects identified, the mitigation and monitoring measures proposed as well as any residual effects arising from the proposed development that have been identified.

The location of the proposed development is outlined in **Figure 1** and **Figure 2.**

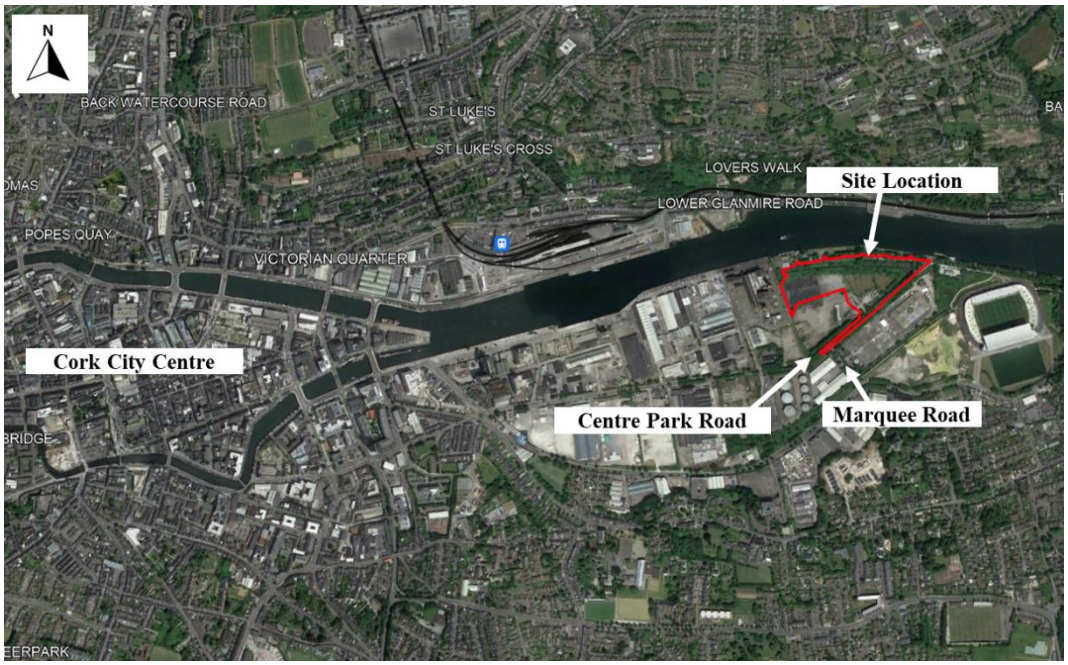

Figure 1: Location of the proposed development site in relation to Cork City Centre | Not to scale [Source: Google Earth © 2022]

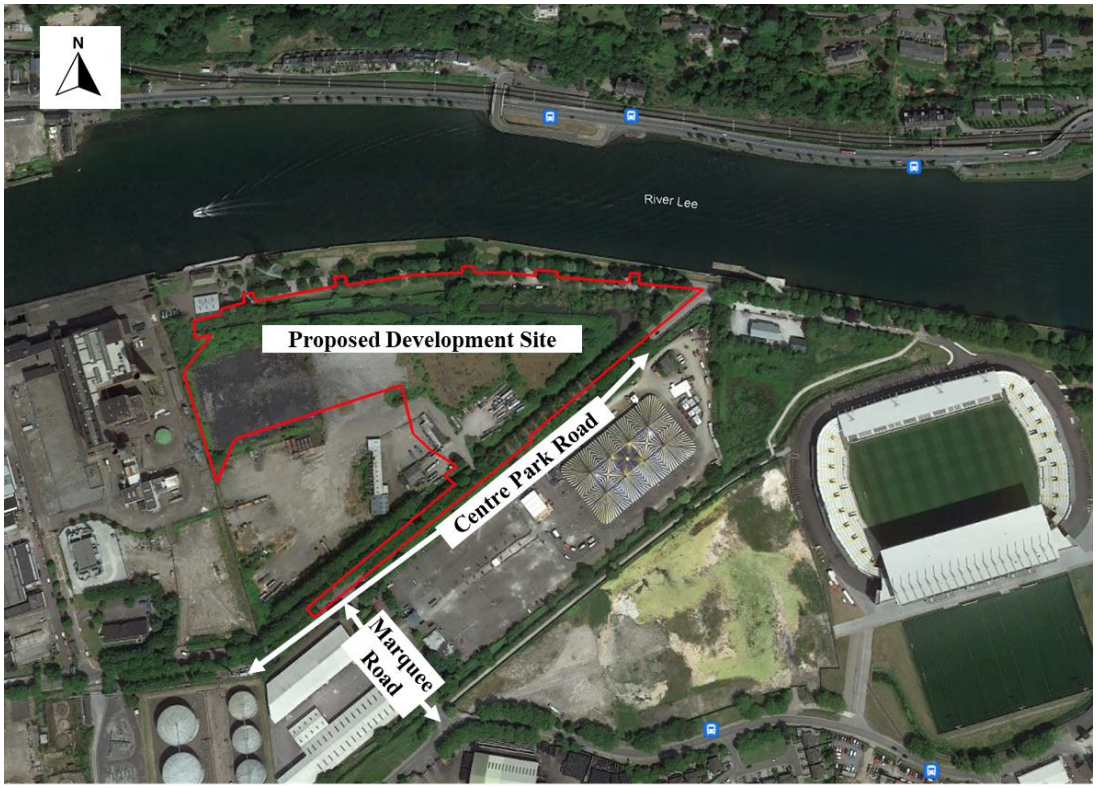

Figure 2: Indicative boundary of the proposed development | not to scale [Source: Google Earth © 2022].

Tiznow Property Company Limited intend to apply to An Bord Pleanála (the Board) for planning permission for a Strategic Housing Development (SHD) with a total application site area of c. 4.86 ha, on lands located at the former Tedcastles site, Centre Park Road, Cork.

Planning Process

Strategic Housing Development

The proposed development constitutes a Strategic Housing Development in accordance with Section 3 of the *SHD Act*[1]

Section 3 of the SHD Act confirms, inter alia, that:

"strategic housing development" means –

(a) The development of 100 or more houses on land zoned for residential use or for a mixture of residential and other uses,

As the development provides for more than 100 no. dwellings and those dwellings are proposed on land zoned for '*Mixed Use Development'*[2], the proposal constitutes a strategic housing development.

Environmental Impact Assessment

A proposed infrastructure project, which would exceed any one of the following specified thresholds (specified in Schedule 5 of the Planning and Development Regulations 2001), is required to have an EIAR prepared which is to be considered by the planning authority before an appropriate consent for development can be given:

Infrastructure projects

(a) Industrial estate development projects, where the area would exceed 15 hectares.

(b) (i) Construction of more than 500 dwelling units.

(ii) Construction of a car park providing more than 400 spaces other than a car park provided as part of, and incidental to the primary purpose of, a development

(iii) Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.

(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.

(In this paragraph, 'business district' means a district within a city or town in which the predominant land use is retail or commercial use.)

(*Planning & Development Regulations 2001 (as amended), Schedule 5, Part 2, Section 10*).

[1] Government of Ireland (2017) *Planning and Development (Strategic Housing Development) Regulations 2017.* Stationery office, Dublin.
[2] Cork City Council (2016) Cork City Development Plan (2015-2021)

The proposed development involves the construction of 823 no. dwelling units, which is above the threshold of 500 dwelling units mentioned above. Therefore, a mandatory Environmental Impact Assessment is required under Class 10 (b)(i).

Consultation

During the preparation of this EIAR, several statutory and non-statutory bodies were consulted to ensure that issues relating to the proposed development were addressed. The parties consulted include the following:

The following parties were consulted as part of the preparation of this EIAR:

- The Development Applications Unit
- An Taisce
- Birdwatch Ireland
- Cork Airport
- Irish Aviation Authority
- Geological Survey of Ireland
- Heritage Council
- Bat Conservation Ireland
- Health and Safety Authority
- Health Service Executive
- Transport Infrastructure Ireland
- National Transport Authority
- Inland Fisheries Ireland
- Irish Raptor Study Group
- Shandon Boat Club
- Lee Rowing Club
- Sea Fisheries Protection Authority
- Marine Institute
- Bord Iascaigh Mhara.

Details relating to consultation with the stakeholders outlined above are included where applicable in the relevant topic assessments. Any responses received from these parties have been addressed where appropriate in the emerging design and assessment of the proposed development.

Background and Need for the Scheme

Need for the Proposed Development

The need for the proposed development is to bring into use an underutilised, brownfield site in order to offer an opportunity to become a catalyst for a wider development of a significant new city precinct that would be part of Cork City's growth as it more than doubles its population over the next 20 years.

The layout and design of the proposed development allows for future connectivity to adjoining sites and connectivity to the city and the airport.

The scale of the Docklands will ensure that there will also be the delivery of services, retail, employment, education and leisure all within 15-minutes' walk of each other and also within 15 minutes of the city centre by public transport.

In addition, the proposed development addresses National Policy Objectives identified within the National Planning Framework.

Site Selection

The developer has selected the proposed development site because it is an underutilised site at a prime location in Cork City. It has the potential to deliver significant benefits in terms of increased residential housing, increased employment as well as providing important resources and amenities for people living in this area of the city in a sustainable location.

The key attributes of the proposed development site are as follows:

- Site size;
- Underutilised nature and availability;
- Site conditions;
- Good road infrastructure and access to the site, with significant potential for enhanced permeability;
- Access to utilities services including water, wastewater, electricity, gas, telecommunications, etc.;
- Identification of the site within a key brownfield development area (Cork City Docklands) for new sustainable urban communities (Cork 2050: Realising the Full Potential);
- Location of the site in an area that is currently served by high capacity, frequent public transport; and
- Location of the site within a high-quality, mixed-use waterfront quarter, which can link the city with greenspace amenities that connect to the wider suburban area.

The proposed development addresses a long-standing need for the appropriate redevelopment of the Former Tedcastles site. The proposed development will help to address the current housing crisis and the national target of achieving 300,000 additional housing units by 2030. The proposed development will contribute to national policy objectives through the provision of 823 no. new residential units.

In addition, the location of the proposed development in proximity to Cork City Centre is suitable for such a development and addresses key policy objectives relating to the sustainable growth of Cork City.

The proposed development will, therefore, play a significant role in addressing national, Southern-Regional and Cork City-based plans, strategies and policies.

Alternatives Considered

Alternative Site Locations

No alternative sites were studied by the developer. The site is owned by the developer and the nature of the proposed development constitutes a regeneration of the subject site. No alternative sites were considered that met the developer's objectives.

Alternative Site Layout and Designs Considered

The proposed development forms part of an overall masterplan for the site, which includes another Strategic Housing Development at the former Cork Warehouse Company site immediately south of the proposed development (the subject of a separate planning application for that site).

The design of the proposed development was an iterative process which considered seven potential configurations for residential, open space and ancillary facilities on the site, as follows:

Option 1: Considered 2,790 apartments with 11 no. blocks ranging from eight to 32 stories in height, three site access points from Centre Park Road and Block A set against the Marina Park edge of the site.

Option 2: Considered 1,515 apartments with blocks ranging from eight to 33 stories in height, the removal of Blocks G, H and I, the reduction of Blocks E and J to facilitate existing zoning, removal of one site access point from Centre Park Road and the increase in height of Block A by one storey.

Option 3: Considered 1,029 apartments with blocks ranging from eight to 33 stories in height, the removal of Block E, the decision to remove Block J and develop it as part of a separate planning application, refinement of Block K and realignment of Block A to align with Centre Park Road.

Option 4: Considered 1,030 apartments with blocks ranging from eight to 33 stories in height, refinement of site massing and development of character areas including the Ecology Park and Village Plaza.

Option 5: Considered 970 apartments with blocks ranging from eight to 35 stories in height, increase in height of Block K, lowering of Blocks B, D and F, and a further development of the architectural design and materials proposed for the scheme.

Option 6: Considered 917 apartments with blocks ranging from eight to 35 stories in height, omission of Block K, omission of Centre Park Road link, and inclusion of Block E and neighbourhood centre.

Option 7 (Proposed Development): The final design included a reduction from 917 to 823 apartments ranging from sic to 35 stories in height, the further refinement of Block A's façade, the reduction in height of Blocks B, D and F to eight to ten stories, reduction in height of Blocks C and E to six to eight stories, and further development of material palettes.

Comparison of Environmental Effects

The selection of site layouts and final design was primarily driven by the objective to create an attractive and commercially viable development which made optimum use of the site while paying respect to the zoning areas, historic context and potential future development. This selection was also driven by the objective to provide a wide range of tenure types to allow for all dwelling types and consistent with the provision of life cycle homes. This emphasis on creating a thriving hub of creativity, productivity and life is supported by a social and commercial mixed use ground floor environment. This will support quality community and place making on site.

A matrix of likely environmental effects using a colour code system is provided for each of the Options considered. This colour coded system provides an indication of the potential environmental effects; the green indicates the lowest environment effects; the amber zones represent neutral effects and the red zone represents the greatest environmental effects - refer to **Table 1.**

Table 1: Comparison of Environmental Effects

Alternatives	Effects on Townscape and Visual	Effects on Air Quality and Climate	Effects on Traffic and Transportation	Population and Human Health
Option 1				
Option 2				
Option 3				
Option 4				
Option 5				
Option 6				
Option 7 (Proposed Development)				

Proposed Development

Site Description

The site is located in Cork City. It lies on the grounds of the former Tedcastles site which is classified as *Artificial Surfaces – Industrial and Commercial Units* under the EPA Corine 2018 data.

The site is a brownfield site and is not currently in use.

This site lies within the area covered by the Cork City Development Plan 2015-2021, and is zoned as *"Mixed Use Development", "Public Open Space"* and *"Neighbourhood Centres".*

The objectives of these land zones are, respectively:

- ZO 16: Mixed Use Development – *To promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency;*
- ZO 09: Neighbourhood Centre – *To protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services*; and
- ZO 14: Public Open Space – *To protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.*

Main Features of the Proposed Development

The development will consist of:

- The demolition of existing structures and the construction of a strategic housing development of 823 no. apartments in 6 no. buildings ranging in height from part-1 to part-35 no. storeys over lower ground floor level. The development will contain 282 no. 1 bedroom apartments, 414 no. 2 bedroom apartments and 127 no. 3 bedroom apartments.
- All blocks will contain ancillary commercial areas including: 3 no. café/restaurants and 2 no. public houses (1,089 sq m); 7 no. retail units, a convenience retail store which includes the sale of alcohol for consumption off premises, a library, medical centre, pharmacy, post office and dentist (2,484 sq m); and 2 no. childcare facilities (662 sq m). The development will also contain supporting internal resident amenity spaces (2,760 sq m) and external communal amenity spaces at podium and roof terrace levels.
- Block A is part-3 to part-35 no. storeys over lower ground and will contain a retail unit split over 2 no. levels, restaurant, convenience retail store, a public house over 2 no. floor levels, 174 no. apartments and ancillary internal and external resident amenity spaces.

- Block B is part-8 to part-10 no. storeys over lower ground containing a public house, café, retail unit and ancillary resident amenity at ground floor level. There are 95 no. apartments provided at upper levels.
- Block C ranges in height from part-1 to part-6 no. storeys over lower ground with a medical centre at lower ground and ground floor levels, a library over 2 no. floor levels, 2 no. retail units, ancillary resident amenity and 75 no. apartments.
- Block D is part-1 to part-10 no. storeys over lower ground and contains a creche, café/restaurant, retail unit and internal and external ancillary resident amenity spaces at lower ground and ground floor levels. 171 no. apartments are provided at the upper levels.
- Block E ranges in height from part-1 to part-6 no. storeys over lower ground and contains a pharmacy, post office, 2 no. retail units and dentist split over 2 no. levels and 95 no. apartments at upper levels.
- Block F is part-1 to part-10 no. storeys over lower ground and consists of a creche at ground floor level, ancillary resident amenity spaces and 213 no. apartments.
- Pedestrian bridges are provided from the Former Tedcastles Yard to the Marina which includes the removal of 13 no. existing car parking spaces on the Marina to facilitate pedestrian connections to existing pedestrian infrastructure.

The proposed development also provides for hard and soft landscaping, boundary treatments, public realm works on Centre Park Road, car parking, bicycle stores and shelters, bin stores, signage, lighting, sprinkler tank, plant rooms and all ancillary site development works above and below ground. Vehicular access to the proposed development will be provided via Centre Park Road.

Construction Strategy

Construction

The proposed development is anticipated to be constructed from East to West in four phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase.

It is assumed construction will commence within 4-8 months of a final planning grant. This assumption relies on tender strategy, design progression and market factors, etc.

The construction sequencing for each phase of the development is described in chronological order as follows:

- Phase 1: Lower Ground Floor to Podium Level (Blocks A, B, C, D, F)
    - Phase 1A: Enabling Works Phase
        - Phase 1A.1: Site Establishment (full site)
        - Phase 1A.2: Demolition and Site Clearance (full site)
        - Phase 1A.3: Utility Diversions (full site)
    - Phase 1B: Earthworks, Foundation and Podium Structure Works
- Phase 2: Blocks A, B & C (344 units)
    - Phase 2A: Superstructure Works
    - Phase 2B: Façade & Fit-Out Works & Drainage / Utilities Completions
    - Phase 2C: Landscaping Works.
- Phase 3: Blocks D & E (266 units)
    - Phase 3A: Earthworks, Foundation and Podium Structure Works (Block E)
    - Phase 3B: Superstructure Works
    - Phase 3C: Façade & Fit-Out Works & Drainage / Utilities Completions
    - Phase 3D: Landscaping Works.
- Phase 4: Block F (213 Units)
    - Phase 4A: Superstructure Works
    - Phase 4B: Façade & Fit-Out Works & Drainage / Utilities Completions
    - Phase 4C: Landscaping Works.

Site Establishment

The site establishment works, to be carried out by the appointed Contractor, will include erecting perimeter hoardings around the site, construction of the site compound and storage areas, forming site access and egress points, enacting the traffic management plan, providing site security and erecting cranes.

Demolition and Site Clearance

A pre-demolition survey will be undertaken to provide sufficient information for the Main Contractor to prepare a detailed Demolition Management Plan (DMP), giving methodology and work sequences for the demolition phase.

An asbestos audit will be undertaken on all structures to be demolished prior to demolition. Asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

Construction of New Buildings

The following works will be required during the construction of the proposed development:

- Utility Diversions
- Podium structure works
- Earthworks
- Foundations
- Ground Floor Slab and Substructure
- Podium Level Slab
- Superstructure Works
- Façade and Fit Out Works
- Landscaping Works.

Management

A Construction Environmental Management Plan (CEMP) and schedule of mitigation measures have been prepared to define the minimum standards required of the contractor. The contractor will be required to prepare method statements in advance of any works commencing on site.

A construction traffic management plan (CTMP) will be prepared for the proposed development. Traffic flows and scheduling will be appropriately planned to ensure traffic to and from the site is managed efficiently and effectively in accordance with the relevant legislation requirements.

It is anticipated that there will be circa 350-400 construction employees on site during the peak construction period. Temporary offices and welfare facilities will be installed on site. The core construction working hours for the proposed development (as advised by Cork City Council) will be:

- 7am - 7pm: Monday to Friday;
- 7am - 4pm: Saturday.

Activities undertaken outside of these hours will require the prior approval of the Planning Authority.

Planning and Policy

The key provisions of national, regional and local planning policy as they relate to the proposed development have been assessed.

The principal guiding international, national, and regional documents include:

- Housing for All (2021)
- Project Ireland 2040 - National Planning Framework (2018)
- Sustainable Urban Housing Design Standards for New Apartments (2020)
- Building Height Guidelines for Planning Authorities (2018)
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)
- Urban Design Manual – A Best Practice Guide (2009)
- Design Manual for Urban Roads and Streets (2013)
- Childcare Facilities: Guidelines for Planning Authorities (2001)
- Universal Design Guidelines for Early Learning and Care Settings (2019)
- The Planning System and Flood Risk Management (2009)
- Appropriate Assessment Plans and Projects in Ireland Guidelines for Planning Authorities
- South Regional Assembly: Regional Spatial and Economic Strategy (2020)
- Cork Areas Strategic Plan (CASP) (2020) and CASP update (2008)
- Cork Metropolitan Area Transport Strategy (CMATS) 2040 (2020)
- Joint Housing Strategy: Cork Planning Authorities
- Cork City Development Plan 2015-2021
- South Docks Local Area Plan (SDLAP).

Cork City Development Plan 2015-2021

The Cork City Development Plan (CCDP) 2015-2021 sets out an overall strategy for the proper planning and sustainable development of the functional area of

Cork City. The core vision for this Plan seeks to develop Cork City as a *"successful, sustainable regional capital and to achieve a high quality of life for its citizens and a robust local economy".*

Among the main goals outlined in the Core Strategy of the Plan are to:

- Increase population and households to create a compact sustainable city;
- Achieve a higher quality of life, promote social inclusion and make the city an attractive and healthy place to live, work, visit and invest in; and
- Promote sustainable modes of transport and integration of land use and transportation.

Table 2.3 of the Development Plan provides the '*indicative capacity of key development areas…*' and states that the Docklands has capacity to accommodate an estimated 8,227 no. residential units. The proposed delivery of 823 no. residential units is consistent with the core strategy. The vision for the Docklands set out in the Development Plan is provided below:

"Cork City Docklands represent the biggest development opportunity for Cork City and the CASP (Cork Area Strategic Plan) area over the Plan period and beyond, its redevelopment and renewal being of regional and national significance. The vision for Docklands is that of a vibrant mixed use and socially inclusive urban quarter that will capitalise on the intrinsic advantages of the area:"

The proposed development aligns with the following Zoning Objectives outlined in the CCDP:

- ZO 16: Mixed Use Development – To promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency;
- ZO 09: Neighbourhood Centre – To protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services; and
- ZO 14: Public Open Space – To protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.

Traffic and Transportation

The potential traffic and transport effects associated with the proposed development was assessed.

Construction traffic would be generated from a number of sources during the proposed development construction period, primarily associated with:

- Construction staff and site visitors;
- Materials removal and delivery; and
- Equipment delivery.

Construction hours are expected to be from 07:00-19:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. During peak construction activity, it is predicted that the site will engage a maximum of approximately 350-400 construction personnel. With 25% of workers estimated to avail of public transport and an assumed average occupancy of 1.2 persons per car, it is calculated that 250 vehicles will be travelling to site on a daily basis. Allowing a 10% increase to account for miscellaneous trips increases this to 275 vehicles per day at the site.

Peak weekly HGV/LGV vehicle trips to the site during construction are estimated to be a maximum of 50 vehicles per day. Heavy vehicles are expected to have an evenly spread distribution profile starting early in the morning throughout the day towards the evening.

During operation, additional vehicular trips generated by the proposed development have been applied to the local road network in the traffic assessment. An analysis of link flows and junction performance carried out on this network both with and without the proposed development estimates a slight impact on the local road network, and demonstrates generally low percentage increases in flows with the majority of the road links assessed showing traffic increases below 5%, and a number between 5-10%.

The largest proportional increases are on the local roads adjacent to the site (Marquee Road, Centre Park Road and Maryville, with a maximum increase seen on Centre Park Road of 43% in the AM Peak) – these larger proportional increases are due to the prevailing low flows on these roads.

A junction assessment was carried out for the proposed development under the scenarios of Base Year (2019), Opening Year (2025) and Opening Year +5 (2030) at the following junctions:

- Centre Park Road/Marquee Road junction;
- Monahan Road (existing/extended)/Marquee Road junction;
- Maryville/Blackrock Road junction;
- Victoria Road Roundabout/Signalised junction; and
- Albert Road/N27 signalised junction.

No significant negative effects on the local road network are predicted during construction or operation of the proposed development.

Air Quality and Climate

The likely significant effects of the proposed development on air quality and climate during construction and operation were assessed.

Dust emissions are likely to result from earthworks, handling of construction materials, wind blow from temporary stockpiles, construction traffic movement and landscaping. Two sensitive receptors have been identified within 50m of the proposed development. These are Shandon Boat Club and Lee Rowing Club. Other sensitive properties such as the Marina Park (130m) and Páirc Uí Chaoimh (200m), are located in the area beyond 50m of the site. As the works are over 50m from these properties, no significant effect is likely, with standard mitigation in place.

Most properties surrounding the proposed development site are public amenities and industrial developments. There are no hospitals, schools or places of worship within 50m of the site boundary at present.

The nearest residential areas include existing residences on the north side of the River Lee, such as Myrtle Hill Terrace circa 220m to the north, existing residences to the southeast, such as Birch Grove and Botanika, circa 300m distant,

Other sensitive receptors in the wider area include the School of the Divine Child (Lavanagh Centre) circa 600m southeast of the subject site, Ballintemple National School on Crab Lane circa 670m to the south, and the St Joseph's SMA Church on Blackrock Road, circa 570m to the south.

Due to the phasing of the proposed development, some construction impacts will occur during initial operational phases as a result of the continued construction at the site. These will include short term impacts from dust and long-term impacts from operational traffic emissions and potential odours, which are predicted not to be significant.

Asbestos in Soil (AiS) and per- and poly-fluoroalkylated substances (PFAS) have been identified on site. Other soil contaminants exist but will be dealt with by the same measures that shall be employed for the AiS which will ensure no significant negative effects occur.

The predicted increase in traffic was calculated to identify the potential for adverse effects on air quality and climate. The assessment concluded that this increase will not result in a significant effect on air quality.

The proposed development is not predicted to give rise to significant odour effects during the construction or operational phases.

The design of the proposed development includes passive and active energy and carbon emission reduction measures which will result in a reduction in the consumption of fuel and the associated carbon emissions from the proposed development. In addition, low energy / carbon and renewable energy solutions are

being considered for the proposed development which include exhaust air heat pumps, low energy LED lighting, use of natural ventilation and variable refrigerant flow units, and E-CAR charging points.

No significant negative effects on air quality or climate are predicted as a result of the construction and operation of the proposed development.

Noise and Vibration

An assessment of the noise and vibration effects arising from the proposed development on the existing environment was carried out.

A baseline noise survey was carried out at three locations within the subject site, and one location immediately north of the subject site on 20 January 2022 and 07 and 08 February 2022. The results indicate that noise levels on the proposed development site are currently relatively quiet. Baseline noise is principally associated with distant road traffic.

The key noise and vibration sensitive receptors that could be affected by the proposed development are the existing residences on the north side of the River Lee, such as Myrtle Hill Terrace circa 220m to the north, existing residences to the southeast, such as Birch Grove and Botanika, circa 300m distant, future residences that are already subject to planning consent, such as the those on the neighbouring former Ford Distribution Site to the east, future residents within the site of the proposed development that may be affected by the later phases of the proposed development, the nearby boat and rowing clubs (Shandon Boat Club and Lee Rowing Club) and the neighbouring amenity areas of the Marina Walk and the Marina Park Development. Other sensitive receptors in the wider area include the School of the Divine Child (Lavanagh Centre) circa 600m southeast of the subject site, Ballintemple National School on Crab Lane circa 670m to the south, and the St Joseph's SMA Church on Blackrock Road, circa 570m to the south.

Noise and vibration will be generated during the construction phase as a result of the following activities – site establishment, demolition and site clearance, utilities diversions, construction of site infrastructure, excavation of foundations and façade, fit-out and landscaping works.

A noise assessment of the site preparation and construction works was carried out and concluded that the construction daytime noise limit of 70dB LAeq can typically be complied with for the scenarios assessed. This includes future residents of the initial phases of the development who will experience construction noise associated with the later phases of development.

No rock-breaking or blasting is predicted to be required for the construction of the proposed development, as all excavation will be in soils, and the piling will be bored. Vibration effects associated with construction activities are likely to be negligible to slight.

The predicted change in traffic arising from the construction of the proposed development does not exceed 25% on any external road, but the change in operational traffic on two local roads, Centre Park Road (east of Marquee Road),

and on Marquee Road is predicted to exceed the 25% criterion in 2025 and 2030 and therefore a noise modelling assessment was carried out for these two roads. The predicted noise impacts associated with traffic generated by the proposed development will be imperceptible.

During the operational phase, noise sources include additional traffic accessing and egressing the site, mechanical plant and equipment operating on the site and typical noise sources associated with residential developments – domestic radios/ music, voices and play activities in the amenity areas within the proposed development. No significant vibration is predicted to arise from the operation of the proposed development.

The proposed development has been designed to ensure appropriate residential comfort for future residents on the site.

Following the implementation of the mitigation measures outlined above and compliance with limit values, no significant effect on the environment in terms of noise and vibration at construction, operation or decommissioning stages is predicted.

Biodiversity

The potential significant direct, indirect and cumulative effects of the proposed development on terrestrial and aquatic biodiversity, including flora, fauna and habitats in proximity to the site, was assessed.

As well as reviewing existing information, a number of specialist surveys were carried out to establish the current ecological condition within the footprint of the proposed development and within the vicinity of all the proposed development elements. These studies include a habitat survey, bird survey, general mammal survey and bat survey, all carried out 20 July, 3 September, 15 September, 23 September, 24 September, 26 of September 2021.

Along with the Environmental Impact Assessment Report (EIAR), a report for screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS), and Invasive Species Management Plan (ISMP) have been prepared, in line with the requirements of the European Union (EU) Habitats directive to assess the potential impacts of the proposed development on Natura 2000 sites. The proposed development is not located within a Natura 2000 site; however, it is potentially hydrologically connected to two Natura 2000 sites: Cork Harbour Special Protection Area (SPA) (004030) and Great Island Channel Special Area of Conservation (SAC) (001058), which, respectively, lie 1.9km east and 6.6km northeast of the site. The NIS concludes that with the implementation of the proposed mitigation, there will be no significant impacts on any Natura 2000 sites as a result of the construction and operation of the proposed development, either alone or in combination with other plans or projects. The competent authority will make the final determination in this regard.

Site surveys undertaken indicate that habitats within the proposed development area to be directly affected by the proposed development consist primarily of modified habitats with limited ecological value and are classified as Local

importance (Lower to Higher value). No impacts on habitats within the Cork Harbour SPA or other designed sites e.g., Douglas River Estuary pNHA or any other NHA/pNHA will occur. No rare or uncommon plant species were recorded within the proposed development site.

The following invasive species were recorded within the development boundary:

- Japanese Knotweed (*Fallopia japonica),* dominates an area of scrub and has become established at multiple locations within the site including dense thickets along the open channels that run along the northern boundary and along the western and southern boundary;
- Three medium impact non-native invasive species were recorded at the site i.e., Buddleia *Buddleja davidii*, Traveller's Joy *Clematis virginiana* and Pampas grass *Cortaderia selloana* have a scattered distribution within the site and in some places are the dominant species.
- Other invasive species recorded including *Cotoneaster* spp., Montbretia *Crocosmia x crocosmiiflora* and Winter heliotrope *Petasites fragrans* were recorded at the site. These species are recognised as having invasive qualities and under certain environmental conditions are known to spread locally.

The proposed development site is generally of low value for bats but boundary habitats provides low to moderate foraging/commuting habitat for populations of Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat. While small numbers of bats were recorded, no bat emergence was recorded from any of the buildings earmarked for demolition and/or repurpose, nor any signs of bats including dropping, staining and prey remains.

A bird survey was carried out in conjunction with habitat surveys in July 2021 and March 2022. In general, the species recorded at the site were common bird species typical of an urban landscape.

No signs of Otter were recorded during the site survey and no holts were detected within 150m of the proposed development site.

No significant direct or indirect residual effects on water are predicted as a result of the proposed development.

The final height of the buildings at the proposed development will be up to 35 storeys in height. While the buildings are likely to increase rates of collision for common local bird species, the impact on birds due to collision during operation will be localised negative, slight and long-term at a local level.

Other plans and projects relevant to the proposed development and potential cumulative impacts were assessed and no significant cumulative impacts were identified. No significant residual cumulative effects will occur.

Archaeology, Architectural and Cultural Heritage

Archaeology and Cultural Heritage

The assessment studied the likely significant effects the proposed development would have on the archaeological heritage of the site and recommended appropriate mitigation measures.

The proposed development site is located approximately 2.3km to the east of the medieval city of Cork and is not located within, or close proximity to, the zones of archaeological potential identified in the Cork City Development Plan 2015-2021.

No recorded archaeological sites were identified within the proposed development site, and or within 200m of its boundary. There are two examples within the surrounding 500m study area which comprise late 18th/early 19th century country houses (CO074-086---- and CO074-101----) located in the Montenotte area on the north side of the River Lee. No indirect impacts on the settings of these buildings are predicted as a result of the proposed development.

A review of the National Monument Service's online Wreck Viewer revealed that the location of a wreck (NMS ref. W11312) of unknown date or classification is indicated in an area of the Marina outside the north end of the proposed development. The online record does not provide any descriptive information apart from the place of loss being recorded in the River Lee, Cork City and cites the UK Hydrographic Office (UKHO) as providing the co-ordinates for the location.

The Excavations Database does not list any licensed archaeological investigations within the proposed development area but does contain descriptions of a number of investigations undertaken within the surrounding streetscape. These investigations did not reveal anything of archaeological significance and the following provides a summary of the results.

It is, therefore, concluded that the construction and operational phases of the proposed development will not result in any likely significant effects on the archaeological or cultural heritage resources.

Architectural Heritage

This assessment studied the likely significant effects the proposed development would have on architectural heritage within and in the vicinity of the site.

The proposed development site was visited in October and November 2021 to assess historic landscape, existing use, including ground conditions and standing structures, and the potential for the presence of previously undetected archaeological features and structures of potential architectural, cultural or industrial heritage significance.

The proposed development site (4.86 hectares) lies within the former Tedcastles coal site, which is categorised as a brownfield site.

The proposed development site is not within a designated or proposed Architectural Conservation Area (ACA) and is located 270m outside the west end of the Former Ford Factory ACA.

The RPS and NIAH do not list any designated architectural heritage buildings or structures within the proposed development site.

The streetscape within the surrounding 500m study area on the south side of the river contains a number of Protected Structures and the nearest example, Shandon Boat Club (PS 1242) is located 40m to the north. Of the examples on the same side of the river channel, Chiplee House (PS513) is located *c.* 385m to the south while a Ford's tractor factory building (PS1135) is *c.* 325m to the west.

There are no designated architectural heritage structures, or associated curtilage features, located within the proposed development site, and it is not within an Architectural Conservation Area. The proposed development will result in no predicted direct operational phase impacts on the protected structures and NIAH-listed buildings located within the surrounding study area on the south side of the river.

The proposed development will not result in any significant effects on architectural heritage during construction or operational phases.

Townscape and Visual

The assessment considers the proposed landscape and visual effects from the proposed development. This Landscape and Visual Impact Assessment (LVIA) was informed by a desktop study and a survey of the site and receiving environment between April and November 2021.

Potential effects have been identified during the construction and operation of the proposed development. During construction, the proposed development would generate traffic to and from the site associated with the delivery of materials to the site. During operation, the proposed development could potentially have a significant visual impact on neighbouring properties and roads in the vicinity of the site. This would be created by the new buildings that would be present.

Landscape Effects

The proposed development has a brownfield, derelict and vacant character with no distinctive or notable landscape features, with its locale dominated by silos, cranes and built form of existing and former industrialised landscapes. Accordingly, it would be categorised as a *poor* and damaged townscape of *low* sensitivity and very capable of accommodating change.

The proposed development is not located within any national or regionally designated landscapes and not part of any Architectural Conservation Areas. However, it is partially located within an Area of High Landscape Value along the northern boundary of the proposed development.

As part of the assessment, 11 townscape character areas were identified. Townscape / landscape sensitivity ranged from *Low, Variable* and *High to Medium* sensitivity. The magnitude of change ranged from *Low* to *High.*

During construction, the removal of the existing buildings and vegetation would have no significant effects on local townscape character. Specifically, demolition activities would have *neutral* effects (i.e., no better or worse) on the character of the site which will undergo an intensive change in site character which will cause a temporary *slight adverse* effect comparative to the existing situation and is not considered significant.

During operation, the proposed development will result in significant changes to the site character due to introduction of a series of taller buildings in the form of Blocks A, B, C, D and F that will have *profound* effects on the baseline setting on completion.

Consequently, residual permanent effects on Townscape as a result of the proposed development will be:

Major Positive	(Proposed development site);
Moderate Positive	(Cork South Docks, Cork City);
Moderate Neutral	(Ballintemple, River Lee aside site, Marina Park, Port of Cork 2000 Garden, Páirc Uí Chaoimh); and
Neutral	(Kennedy Park, Ballinlough Park, Beaumont Park).

Visual Effects

A series of 20 no. representative viewpoints were chosen to assess the likely impact on views and visual quality deriving from the proposed development.

Overall, viewpoint sensitivity ranged from *Medium to Low* to *High* across the 20 viewpoints. Similarly, Magnitude of change ranged from *Low* to *Major.*

During construction, the site will be hoarded to clearly delineate working areas. As the construction of higher floors commences, there will be more visual exposure, and this will continue to have *slight adverse* effects on local townscape areas. Being a commercial / industrial location with brownfield characteristics and several sites having a degraded condition, effects deriving from construction and traffic would not constitute a significant change from the existing situation. To areas across the wider east city including Ballintemple, the construction phase will have *negligible* effects until the taller elements are being constructed and come into view. Generally, the effects would be of a *low magnitude* and not of a significant nature. Significance during construction range from *Negligible* to *Minor Neutral* and *Minor Adverse.*

During operation, significance of effects predominantly *Minor Neutral* and *Moderate Neutral.*

Overall, residual visual effects as a result of the proposed development will be:

Negligible	(Viewpoint 18);

Minor Neutral (Viewpoints 8, 9, 14, 16, 19); and

Moderate Neutral (Viewpoints 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 15, 17, 20).

Land, Soil, Geology and Hydrogeology

This section describes the likely impacts of the proposed development on land and soils (i.e. soils, geology and hydrogeology).

As part of the site investigation works, a site walkover (30th June 2021) and ground investigation (August-September 2021) were carried out. During routine geo-environmental sampling, several potential containments were identified within site, including Asbestos in Soil (AiS) and per- and poly-fluoroalkylated substances (PFAS). As such, a Contaminated Land Remediation Strategy Report was prepared for the appropriate mitigation and remediation of these contaminants. This report has been included within the planning application package.

During the Construction Phase the following items have been highlighted that could have a potential impact on the environment:

- Removal of surfacing (hardcore /concrete/topsoil) and temporary stockpiling of contaminated soils which could have the following impacts:
    - mobilisation of contamination in the soil into the open channels;
    - mobilisation of contamination into the Lee Valley Gravel Regionally Important Aquifer; and
    - exposure of site workers and future residents to soil contamination, air borne contamination.
- Dredging the open channel mobilising PFAS into the local watercourse, Lee or Lee Valley Gravel regionally important aquifer;
- Removal of soil from site or potential re-use;
- Construction of the foundations of the building by piling;
- Temporary storage of hazardous substances associated with the operation of plant e.g. fuels; and
- Dewatering.

During the operational phase the following items have been highlighted that could have a potential impacts the environment:

- Impacts of the foundation on flow in the aquifer;
- Reduction in recharge to the aquifer; and
- Impact on site users and the environment from the retention of contaminated soils on site.

With the implementation of the remediation strategy and appropriate mitigation measures, the potential adverse effects on human health, groundwater quality beneath the proposed development and Lee Estuary Lower will be negligible and imperceptible significance. Hence no significant residual effects are anticipated during the construction phase.

No residual effects of significance on land soil geology and hydrogeology are predicted during the operational phase.

Water

The assessment considers the likely effects associated with the construction and operation of the proposed development on surface water, water quality and flood risk.

There are two existing open channels located along the northern and southeastern boundaries of the site. Both open channels ultimately discharge to the River Lee via the outfall at the north-eastern corner of the site. The southern channel is culverted in two locations, one at the southern corner of the site, and one at the main site entrance.

The River Lee runs approximately 30m north of the site boundary and flows eastwards to Cork Harbour.

The site of the proposed development is potentially at risk from flooding due to its proximity to the River Lee. However, a Flood Risk Assessment was carried out as part of this EIAR, and it was concluded that the risk of fluvial, tidal, pluvial and groundwater flooding to the site is considered to be *low*.

A desktop review of EPA[3], OSI[4] and OPW[5] sources has shown the River Lee's Transitional Waterbody WFD status to be *'at risk'*. The Cork Harbour Coastal Waterbody has also been classed as *'at risk'*. The WFD ecological status of Lough Mahon (the water body to which the River Lee discharges) has been classified as *'moderate'* with a WFD Risk Score of '*at risk of not achieving good status'*. However, EPA monitoring stations located approximately 8.9km upstream of the proposed development site have indicated *'high'* and *'good'* biological status.

The following short-term moderate negative potential effects during the construction of the proposed development were assessed:

- There is the potential for silt-laden surface run-off during site preparation, site clearance and construction of site access roads. The potential for this silt laden run-off is likely to continue through the construction phase of the works, and until the ground has been completely consolidated;
- The washing of construction vehicles and equipment may pose a pollution risk to watercourses in the area if undertaken in inappropriate locations.

[3] Environmental Protection Agency (EPA) Source: https://gis.epa.ie/EPAMaps/ [Accessed October 2021]
[4] Ordinance Survey Ireland (OSI) Source: https://www.geohive.ie [Accessed October 2021]
[5] Office of Public Works (OPW) Source: https://www.floodinfo.ie [Accessed October 2021]

Spillages of fuel and oil and concrete / cement run-off are a potential short term significant negative effect, from the use of vehicles and plant on the construction sites.

- Silt laden run-off from the storage of excavated material may present a pollution risk to watercourses; and
- During the construction phase there is a risk that spills/leaks could result in surface water becoming contaminated with suspended solids or hydrocarbons entering the nearby watercourses via the existing drainage system on site.

Potential short-term moderate negative effects identified during the operational phase include the following:

- Hydrocarbons from the car park could be carried in the surface water and have the potential to contaminate the site's proposed surface water drainage system;

Implementation of the mitigation measures outlined in the Construction Environmental Management Plan (CEMP) and the protection measures as described in the Construction Industry Research and Information Association (CIRIA) guidance note, will minimise as far as possible the risk of surface water contamination.

With the employment of appropriate mitigation measures during the construction and operation along with the design of the proposed development, the proposed development will not have any significant negative residual effects on water or flood risk.

Resource and Waste Management

An assessment of the likely significant effects the proposed development would have on resource and waste management was undertaken.

The proposed development will require the demolition of one existing structure, which is approximately 269m^2. Surface material removed from within the working area of the proposed development will be reused within the proposed development in so far as reasonably practicable. Where this is not practicable, the material will be transferred for recovery or disposal at appropriately authorised waste facilities in respect of which a waste permit or a waste licence is granted. If material is to be re-used offsite, this will only be done at sites which have appropriate planning permission, with associated environmental assessments completed and approved, as required.

Construction works, site offices and temporary works facilities will require the use of resources and will generate construction waste. Where possible, waste materials arising from demolition and site clearance works will be reused within the proposed development, particularly materials of conservation interest. Where this is not practicable, the material will be transferred by licenced contractors for recovery or disposal to appropriately authorised waste facilities. An estimated maximum of approximately 73,022m^3 of material will be excavated during the construction works for the proposed development. Most of this material will be

comprised of made ground, silts and potentially some sand / gravels. It is estimated that a total of 13,499 tonnes of waste will be generated during construction. These waste materials will be non-hazardous or inert. Any hazardous material will be dealt with in appropriate manner and removed to a suitably licenced off-site facility.

During the operational phase, waste will be generated from the residents and commercial facilities which include two no. crèches, retail units, food and beverage facilities, medical facilities and other site amenities, and from transient users of the town square. Both hazardous and non-hazardous wastes will be generated. Typical operational wastes include dry mixed recyclables, organic waste, glass and general waste. In addition, other wastes will be generated in smaller quantities and will be managed separately e.g. batteries, waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous), waste cooking oil. All waste will be collected by licensed contractors and transported to permitted facilities. The implementation of the Operational Waste Management Plan will work to ensure that waste is managed in accordance with the waste hierarchy.

Following the implementation of mitigation measures (including the implementation of a Construction and Demolition Waste Management Plan and Operational Waste Management Plan), the residual impacts of the proposed development on resource and waste management will be slight, negative and short-term during excavation and construction phases, and negligible and long-term during the operational phase.

Population and Human Health

The likely significant effects of the proposed development on population and human health were assessed and described.

The proposed development site is a brownfield site and is currently undeveloped. The existing site is bounded by Centre Park Road to the southeast, by the Marina to the north and by the former ESB power station to the west. There are two open channels located within the proposed development site, one adjacent to the south-eastern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

Potential effects on population were considered under the following headings:

Social Consideration: The phased construction strategy of the proposed development will allow Phase 1 and Phase 2 completed residential and retail units to open and operate, while the subsequent construction of phases (Phase 3 and Phase 4) occurs. This will have a positive impact on the surrounding area, as the opening of these units will contribute to meeting the population demand for housing in Cork City, as efficiently as possible.

The design of the proposed development was cognisant of the requirement to ensure that the proposed development does not reduce the quality of the public realm. It was concluded that the wind conditions within the proposed development area are considered to be within suitable limits with the adoption of appropriate

mitigation measures. Similarly, a daylight and sunlight analysis was completed and concluded that the proposed development will generally have a non-significant impact on the levels of daylight and sunlight availability in the surrounding existing properties and amenity spaces.

The proposed development has been designed to be in keeping with the immediate surroundings and to minimise adverse effects on visual amenity. No significant negative effects were identified upon completion of a visual impact assessment.

The proposed development will provide local amenity through the provision of retails units, gym, crèche, café, and public realm and indirectly support businesses in the area.

Traffic and Accessibility: The level of traffic generated during the construction phase of the proposed development has the potential to affect road users. In addition, due to the phasing of the proposed development, construction traffic will also impact the residents of the proposed development as subsequent Phases 3 and 4 are constructed.

In the long-term, the proposed development will generate additional vehicles on the road network within the local vicinity, however this impact will not be significant.

With the implementation of a Construction Traffic Management Plan and Mobility Management Plan, no significant negative effects are predicted.

Economic Activity: During the construction phase, direct employment of a maximum of 350 to 400 employees will have a moderate positive effect on economic activity in the short term. In addition to direct construction employment, the construction of the proposed development will require suppliers and materials which will have an indirect slight positive impact on construction suppliers and associated economic activity in the short term.

The operation of the mixed-use retail and commercial development will lead to direct local employment opportunities and will also contribute to attracting new businesses and services to the area which would also benefit the wider community. The direct economic effect would be moderate, long-term and positive. The indirect effect will be moderate, long-term and positive.

Land Use: The site will have a temporary hoarding/security fencing during the construction phase for safety reasons. Hoarding/security fencing will block views of the area and alter the passive amenity available to local residents and passers-by.

The operational phase of the proposed development will result in a change of land use. The development proposed is the conversion of an existing undeveloped site to an area for use as residential development amongst other uses.

Human Health: Human health could potentially be affected during the construction phase of the proposed development in relation to an increase in air pollutants (i.e. dust and asbestos), an increase in noise levels and a risk of major accidents. However, with the implementation of suitable mitigation measures, no significant negative effects are predicted.

No effects on human health are predicted during the operational phase. However, in the short term, while subsequent construction phases are carried out, there will be potential short-term effects on the human health of residents on the site in terms of construction noise, odours, dust and traffic.

Overall, a direct moderate positive long-term residual effect on population and human health is predicted to occur as a result of the addition of residential areas and economic and employment opportunity associated with the proposed development.

Material Assets

This section describes the potential effects the proposed development could have on material assets in the form of utilities and land use. The infrastructure considered include:

- Electricity
- Water Supply Infrastructure
- Foul surface water drainage.
- Gas
- Telecommunications (including broadband and TV).

Utilities

Due to the previous uses of the site, there are various existing underground services present throughout the area. Most of these will be deemed redundant in the context of serving the proposed development.

Electricity

There are currently live 110kV overhead power lines in the western part of the proposed development site, which cross the River Lee north of the site. A former ESB power station is located to the west of the proposed development site. While the generating station is not in operation, there is a live ESB substation on the site with available capacity.

During construction, a connection will be made to the existing network where there is sufficient capacity for the proposed development during construction.

During operation, the estimated electrical load for the proposed development is 6.5mVA. As a result, eight new substations (14 new transformers) will be installed, and a connection will be made to the existing network.

As there is sufficient capacity within the network this effect is expected to be slight negative and long-term.

Telecommunications

Eir have existing telecommunications infrastructure outside of the proposed development site along Centre Park Road and Marquee Road. These

telecommunications cables enter the proposed development site from the existing access point along Centre Park Road. There are existing overhead telephone poles located within the proposed development site.

There are several telecommunications installations for mobile network and wireless broadband connections within the surrounding area from which the site may be served. The closest is located at the Marina Radio Site on Centre Park Road, approximately 60m south of the site. Other telecommunication infrastructure in the wider area is located at Pairc Uí Chaoimh (approximately 250m southeast), Beechbrook Capital Ireland DAC (approximately 500m southwest) and Ballintemple (approximately 750m southeast).

There will be no disruption to existing telecommunications as a result of the construction of the proposed development.

During operation, there is sufficient existing telecommunications capacity to serve the proposed development.

Gas

There is no gas infrastructure located within the proposed development site. A gas pipeline currently runs along Centre Park Road and south along Marquee Road outside of the proposed development site.

There will be no effect on gas services during the construction of the proposed development. During operation, a connection will be made to the existing gas pipeline located on Centre Park Road. As such, the effect on gas supply is predicted to be slight negative and long term.

Water Supply

There is a 300mm diameter Irish Water potable watermain located along Centre Park Road, west of the junction with Marquee Road, which then downsizes to 100mm diameter east of the junction with Marquee Road.

A temporary water and sewer connection will be made to facilitate construction works. During operation, it is proposed to provide a new potable watermain with a single new connection from the existing watermain located in Centre Park Road.

The effect on water supply as a result of the proposed development will be slight negative and long term.

Surface Water

Surface water runoff from the site drains to the existing open channels to the north and southeast of the site. During construction, surface water will be drained via the existing surface water drainage system. During operation, it is proposed to collect all surface water from the proposed development within a new dedicated surface water network.

As part of the proposed development there will be a requirement to make amendments to the existing channels where the proposed development interfaces with them. This will include re-profiling the channel located to the north and culverting sections of the channel to the south.

As such, no significant negative effects on surface water are predicted.

Foul Water

There is a 525mm diameter Irish Water foul water sewer which flows east along Centre Park Road, which increases to a 600mm diameter along Marquee Road, prior to connecting to the existing 3.2m diameter Interceptor Sewer along Monahan Road.

Foul water from the construction phase of the proposed development will tie into the existing infrastructure in which there is sufficient capacity.

During operation, it is proposed to collect all foul water through a dedicated foul sewer network along Centre Park Road, east of the junction with Marquee Road. It is proposed that one connection point to this existing sewer will be made from the new foul water drainage network.

As their will be an increase in foul run-off as a result of the proposed development, the effect on foul drainage will be slight negative and long term.

Land Use

The construction of the proposed development will require temporary use of lands during the construction phase, which will transition to a permanent change during the operational phase.

There will be no direct effect on any property adjoining the redline boundary during the construction phase.

Construction phase effects on land use and property are expected to be slight negative, temporary effects**.**

No mitigation measures for land-use are required. It is expected that the proposed development will have a positive effect on land use and property.

The effect of the proposed development on land use will be significant, positive and permanent as the proposed development will create a new residential asset for the Cork City docklands area. The proposed development will provide additional housing for the growing City population, as well as amenity areas for retail and childcare. The proposed development will result in a boost for the local economy in the area.

Indirect effects will occur due to an increase in population at the area as a result of the proposed development. This will encourage increased spending in the area.

This will have a moderate positive and long-term indirect effect on land-use.

Major Accidents and Disasters

An assessment of the likely significant adverse effects arising from the vulnerability of the proposed development and the potential of the proposed development to cause a major accident and/or disaster was undertaken.

A risk assessment was prepared which identifies and quantifies risks due to the proposed development, focusing on unplanned, but possible and plausible events occurring during the construction and operation of the proposed development.

All of the potential risks identified during the construction, operation and decommissioning phases of the proposed development can be classified as '*low risk*', with the majority of risks identified as being '*very unlikely'* or *'extremely unlikely'.*

Among the highest risk scores for the proposed development were the risk of a fire/explosion, contamination of waterbodies; extreme weather events; a fire and/or explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors; structural collapse and/or damage to existing structures/ buildings; vehicle collision (involving construction traffic); and release of asbestos fibres to atmosphere or surface water during the construction, operation and decommissioning phases.

No plausible major accidents or disaster hazards were identified, to which the proposed development will be particularly vulnerable. As mentioned above all potential risks identified were determined to be low to medium risk scenarios. No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside of the proposed development.

Potential risks during the construction phase will be managed through the Construction and Environmental Management Plan (CEMP).

The proposed development has been designed and will be constructed in line with best international current practice and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design. In line with building regulations and health and safety laws, appropriate fire detection and abatement systems will be installed throughout the site.

Cumulative and Interactive Effects

Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

- The interaction between the various effects within the proposed development; and
- The interaction between the other existing and/or permitted projects with this proposed development.

Cumulative impacts will consider whether the addition of many minor or significant effects of the proposed development itself or the cumulation of effects of other permitted or planned projects have the potential to result in larger, more significant effects when combined with the effects of the proposed development.

Interactive effects will consider the interaction between the various environmental aspects, for example the interaction between noise and ecology.

The Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site, Centre Park Road, Cork City which will be located immediately south-west of the proposed development site.

This development will consist of the demolition of all existing structures and the construction of a strategic housing development of 190 no. apartments in a building ranging in height from single to 12 storeys; the provision of 3 no. café / restaurant units, 2 no. retail units, a creche, and supporting tenant amenity facilities at ground floor level; and provision of outdoor amenity areas, landscaping, public realm works on Marquee Road and Centre Park Road, car parking, bicycle stores and shelters, bin stores, ESB substation, plant rooms and all ancillary site development works.

The development may be constructed at the same time as the development at the former Cork Warehouse Company site, which may give rise to cumulative effects arising from both developments.

The main potential cumulative impacts as a result of the proposed development in cumulation with the development at the former Cork Warehouse Company site were identified under the following environmental topics –

- Traffic and Transportation
- Air Quality and Climate
- Noise and Vibration
- Townscape and Visual
- Population and Human Health

- Material Assets

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the predicted increased in traffic volumes and the implementation of the Construction Environmental Management Plans for both projects, no significant cumulative negative effects on air quality and climate are predicted.

Other Cumulative Developments

The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

The main potential cumulative impacts resulting from the proposed development in cumulation with the development at the former Ford Distribution Site were identified under the following environmental topics –

- Traffic and Transportation
- Air Quality and Climate
- Noise and Vibration
- Townscape and Visual
- Population and Human Health
- Material Assets

No significant negative effects during construction or operation are predicted.

Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and “nature” zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

The main potential cumulative impacts resulting from the proposed development in cumulation with the proposed public infrastructure developments were identified under the following environmental topics –

- Traffic and Transportation
- Air Quality and Climate
- Noise and Vibration
- Population and Human Health

Any potential cumulative effects during construction will be managed with the implementation of the *Construction Environmental Management Plan* (**Appendix 5.1**) and a Construction Traffic Management Plan.

Interactive Effects

While potential interactive effects were identified, no significant negative interactive effects are predicted as a result of the proposed development.

1 Introduction

1.1 Introduction

Tiznow Property Company Limited (Comer Group Ireland) intend to apply to An Bord Pleanála for planning permission for a strategic housing development (SHD) at the Former Tedcastles Site (4.86 ha), Centre Park Road, in Cork City (hereafter referred to as '*the proposed development'*).

This area is considered to be a brownfield site with a number of pre-existing structures on the site which have been partially demolished. The proposed development site is bounded by Centre Park Road to the southeast, and ESB Charging Station to the west.

The site location and indicative boundary of the proposed development site are shown in **Figure 1.1** and **Figure 1.2.** below.

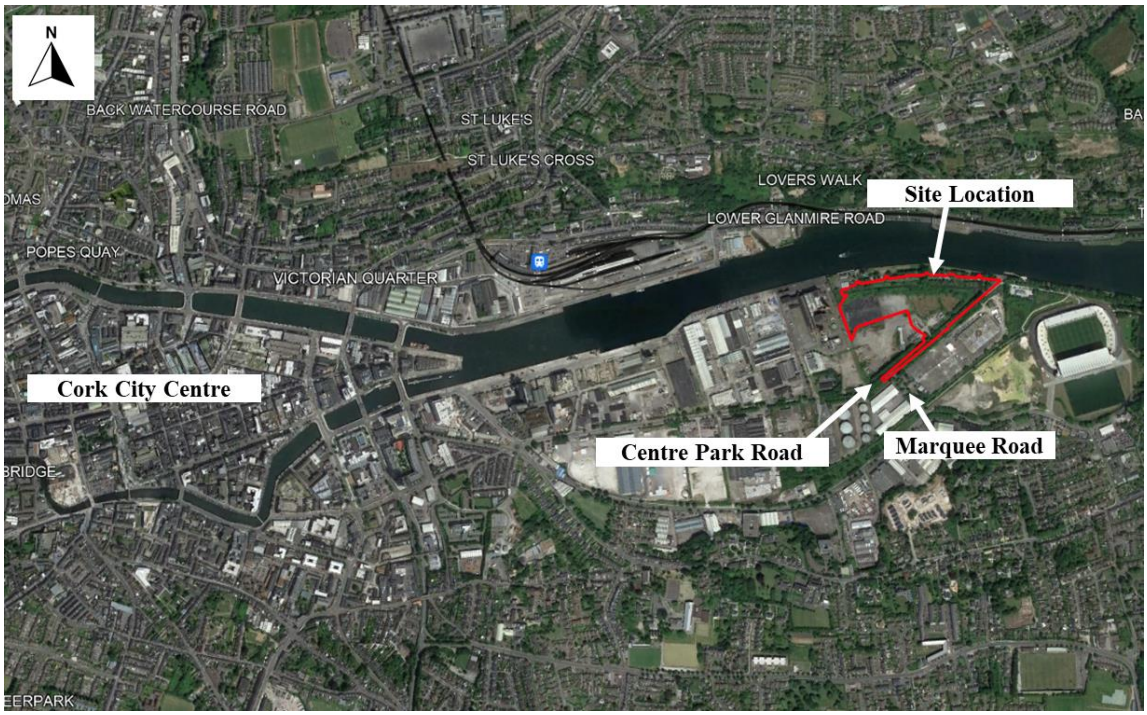

Figure 1.1: Location of the proposed development site in relation to Cork City Centre | not to scale [Source: Google Earth © 2022].

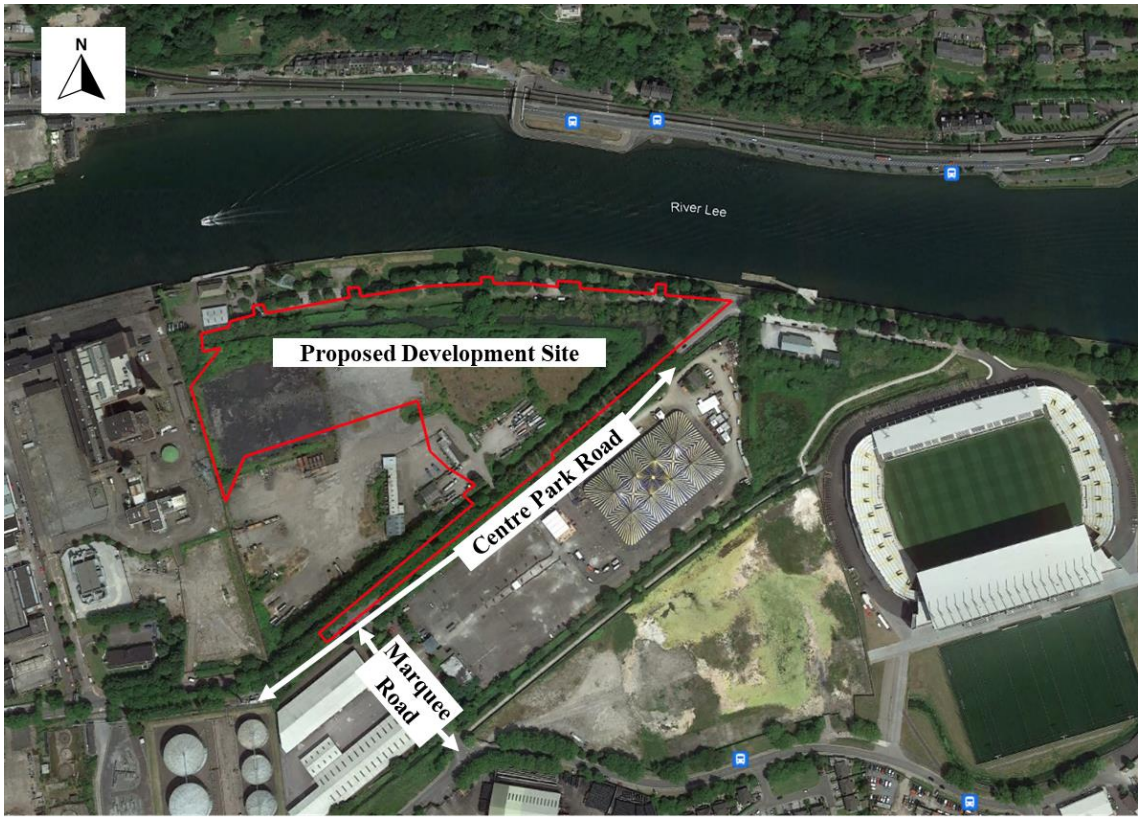

Figure 1.2: Indicative boundary of the proposed development | not to scale [Source: Google Earth © 2022].

1.2 Overview of the Proposed Development

Tiznow Property Company Limited (Comer Group Ireland) intends to apply to An Bord Pleanála (the Board) for planning permission for this Strategic Housing Development (SHD) with a total application site area of c. 4.86 ha.

The development will consist of:

- The demolition of existing structures and the construction of a strategic housing development of 823 no. apartments in 6 no. buildings ranging in height from part-1 to part-35 no. storeys over lower ground floor level. The development will contain 282 no. 1 bedroom apartments, 414 no. 2 bedroom apartments and 127 no. 3 bedroom apartments.
- All blocks will contain ancillary commercial areas including: 3 no. café/restaurants and 2 no. public houses (1,089 sq m); 7 no. retail units, a convenience retail store which includes the sale of alcohol for consumption off premises, a library, medical centre, pharmacy, post office and dentist (2,484 sq m); and 2 no. childcare facilities (662 sq m). The development will also contain supporting internal resident amenity spaces (2,760 sq m) and external communal amenity spaces at podium and roof terrace levels.
- Block A is part-3 to part-35 no. storeys over lower ground and will contain a retail unit split over 2 no. levels, restaurant, convenience retail store, a public house over 2 no. floor levels, 174 no. apartments and ancillary internal and external resident amenity spaces.
- Block B is part-8 to part-10 no. storeys over lower ground containing a public house, café, retail unit and ancillary resident amenity at ground floor level. There are 95 no. apartments provided at upper levels.
- Block C ranges in height from part-1 to part-6 no. storeys over lower ground with a medical centre at lower ground and ground floor levels, a library over 2 no. floor levels, 2 no. retail units, ancillary resident amenity and 75 no. apartments.
- Block D is part-1 to part-10 no. storeys over lower ground and contains a creche, café/restaurant, retail unit and internal and external ancillary resident amenity spaces at lower ground and ground floor levels. 171 no. apartments are provided at the upper levels.
- Block E ranges in height from part-1 to part-6 no. storeys over lower ground and contains a pharmacy, post office, 2 no. retail units and dentist split over 2 no. levels and 95 no. apartments at upper levels.
- Block F is part-1 to part-10 no. storeys over lower ground and consists of a creche at ground floor level, ancillary resident amenity spaces and 213 no. apartments.
- Pedestrian bridges are provided from the Former Tedcastles Yard to the Marina which includes the removal of 13 no. existing car parking spaces on the Marina to facilitate pedestrian connections to existing pedestrian infrastructure.

The proposed development also provides for hard and soft landscaping, boundary treatments, public realm works on Centre Park Road, car parking, bicycle stores and shelters, bin stores, signage, lighting, sprinkler tank, plant rooms and all ancillary site development works above and below ground. Vehicular access to the proposed development will be provided via Centre Park Road.

1.3 Overview of the Planning Process

1.3.1 Planning Process Overview

Section 4(1) of the *Planning and Development (Housing) and Residential Tenancies Act 2016*, as amended, (referred to herein as "***the SHD Act***") provides that an application for permission for a SHD shall be made directly to An Bord Pleanála under this section and not to a Planning Authority.

The purpose of the SHD process is to accelerate the delivery of much needed housing in accordance with the principles and objectives combined in the '*Rebuilding Ireland: Action Plan for Housing and Homelessness*[6]' as an emergency measure justified by the evidence-based housing crisis.

The SHD application process to An Bord Pleanála consists of two principal stages:

Stage 1: Pre-Application Consultation: Pre-application consultation is mandatory for prospective applicants prior to making an application for strategic housing development (SHD). Prospective applicants consult first with the relevant planning authority and then with An Bord Pleanála who will issue an Opinion as to whether documents submitted constitute a reasonable basis for an application or whether further consideration or amendment to the documents is required. Guidance and pre-application request forms are available for prospective applicants and planning authorities.

Refer to **Section 1.7** for further information on the consultation process.

Stage 2: Planning Application: Applicants submit consent applications for SHD directly to An Bord Pleanála. Applications are to be decided within a mandatory 16-week time period which also provides for public consultation period and the submission of a report by the planning authority.

A *Screening and Scoping Report* has been prepared as part of this planning application process and is included as **Appendix 1.1**.

1.3.2 Legislative Overview

The proposed development constitutes a Strategic Housing Development in accordance with Section 3 of the *SHD Act*[7]

Section 3 of the SHD Act confirms, inter alia, that:-

"strategic housing development" means –

(b) The development of 100 or more houses on land zoned for residential use or for a mixture of residential and other uses,

[6] Government of Ireland (2016) *Rebuilding Ireland: Action Plan for Housing and Homelessness*. Stationery Offices, Dublin.
[7] Government of Ireland (2017) *Planning and Development (Strategic Housing Development) Regulations 2017*. Stationery office, Dublin.

(c) The development of student accommodation units, which when combined, contain 200 or more bed spaces, on land the zoning of which facilitates the provision of student accommodation or a mixture of student accommodation and other uses thereon,

(ba) development –

(i) Consisting of shared accommodation units that, when combined, contain 200 or more bed spaces,

And

(ii) On land the zoning of which facilitates the provision of shared accommodation or a mixture of shared accommodation thereon and its application for other uses,",

"(c) development that contains development of the type to which all of the foregoing paragraphs, or any two of the foregoing paragraphs, apply, or",

(d) The alteration of an existing planning permission granted under section 34 (other than under subsection (3A)) where the proposed alteration relates to development specified in paragraph (a), (b), (ba) or (c),

Each of which may include other uses on the land, the zoning of which facilitates such use, but only if –

i) the cumulative gross floor space of the houses, student accommodation units, shared accommodation units or any combination thereof comprises not less than 85 per cent, or such other percentage as may be prescribed, of the gross floor space of the proposed development or the number of houses or proposed bed spaces within student accommodation or shared accommodation to which the proposed alteration of a planning permission so granted relates,

And

ii) the other uses cumulatively do not exceed —

I) 15 square metres gross floor space for each house or 7.5 square metres gross floor space for each bed space in student accommodation, or shared accommodation in the proposed development or to which the proposed alteration of a planning permission so granted relates, subject to a maximum of 4,500 square metres gross floor space for such other uses in any development, or

II) such other area as may be prescribed, by reference to the number of houses or bed spaces in student accommodation or shared accommodation within the proposed development or to which the proposed alteration of a planning permission so granted relates, which other area shall be subject to such other maximum area in the development as may be prescribed;"

As the development provides for more than 100 no. dwellings and those dwellings are proposed on land zoned for '*Mixed Use Development'*[8], the proposal constitutes a strategic housing development.

The proposed development aligns with the following Zoning Objectives outlined in the Cork City Development Plan (CCDP) 2015-2021:

- ZO 9: Neighbourhood Centres – to protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services.
- ZO 14: Public Open Space – to protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.
- ZO 16: Mixed Use Development – to promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency.

The proposed development is also partially located within an area of High Landscape Value.

Having regard to this zoning objective, the proposed development will provide 823 no. apartments, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities which are permitted in principle uses on the subject lands.

1.4 Approach to the EIA

1.4.1 Definition of EIA

EIA supports the decision-making process as it is integrated into consenting processes for new development projects. This ensures that consent decisions are made in the knowledge of the environmental consequences of the project.

Section 171A of the PDA 2000 provides the following definition of *"environmental impact assessment":*

171A. In this Part—

'environmental impact assessment' means a process—

(a) consisting of—
(i) the preparation of an environmental impact assessment report by the

applicant in accordance with this Act and regulations made thereunder,

(ii) the carrying out of consultations in accordance with this Act and regulations made thereunder,

[8] Cork City Council (2016) Cork City Development Plan (2015-2021)

(iii) the examination by the planning authority or the Board, as the case may be, of—

(I) the information contained in the environmental impact assessment report,

(II) any supplementary information provided, where necessary, by the applicant in accordance with section 172(1D) and (1E), and

(III) any relevant information received through the consultations carried out pursuant to subparagraph (ii),

(iv) the reasoned conclusion by the planning authority or the Board, as the case may be, on the significant effects on the environment of the proposed development, taking into account the results of the examination carried out pursuant to subparagraph (iii) and, where appropriate, its own supplementary examination, and

(v) the integration of the reasoned conclusion of the planning authority or the Board, as the case may be, into the decision on the proposed development, and

(b) which includes—

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this Part and regulations made thereunder, that identifies, describes and assesses, in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following:

(I) population and human health;

(II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;

(III) land, soil, water, air and climate;

(IV) material assets, cultural heritage and the landscape;

(V) the interaction between the factors mentioned in clauses (I) to (IV), and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development;"

For the purpose of this EIAR, Tiznow Property Company Limited (Comer Group Ireland) is the '*The Developer'* of the proposed development and An Bord Pleanála is the '*Competent Authority'* responsible for undertaking the EIA and integrating its reasoned conclusion in this regard into the consent decision for the proposed development.

1.4.2 Legislative Context

Section 172 of the *PDA 2000*[9] sets out the requirement for an EIA as follows:

"*172 (1) An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—*

(a) the proposed development would be of a class specified in—

Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—

such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or

no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—

such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or

no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(b)(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and

(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment."

The Fifth Schedule of the Regulations[10] specifies classes of development where to which requirements relating to EIA apply. Where a project exceeds a threshold set out for the particular category of development under Part 1 or Part 2 of the Fifth Schedule, then it must be subjected to EIA.

An overview of the proposed development is provided in **Section 1.2**, and a detailed description of the same is provided in **Chapter 4** *The Proposed Development*. As previously outlined, the proposed development will provide for some 823 no. residential units.

[9] Inserted by European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018), article 17.
[10] European Commission (2017) *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;*

The relevant class of development with regard to EIA, is Class 10(b)(i) of Part 2 of the Fifth Schedule to the Regulations, namely: *"Construction of more than 500 dwelling units"*. As such, the number of proposed residential units exceeds the threshold in this instance.

Therefore, an EIAR is required for the proposed development, on a mandatory basis, to be submitted to An Bord Pleanála to inform its decision on the SHD application.

1.4.3 Guidance

This EIAR has been prepared with due regard to the following overarching guidance on EIA:

- European Commission (2017) *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*[10]*;*
- Department of the Environment, Community and Local Government (2013) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*[11];
- Government of Ireland (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (August 2018)[12];
- Department of the Environment, Heritage and Local Government (2003) *Environmental Effect Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development*[13];
- Department of Housing, Planning, Community and Local Government (2017) *Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems*[14];
- Department of Housing, Planning, Community and Local Government (2017) *Circular PL 1/2017 - Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on the Administrative Provisions in Advance of Transposition*[15];

[11] Department of the Environment, Community and Local Government (2013) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*. Stationery Office, Dublin.
[12] Government of Ireland (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*. Stationery Office, Dublin.
[13] Department of the Environment, Heritage and Local Government (2003) *Environmental Effect Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development*. Stationery Office, Dublin.
[14] Department of Housing, Planning, Community and Local Government (2017) *Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems*. Stationery Office, Dublin.
[15] Department of Housing, Planning, Community and Local Government (2017) Circular PL 1/2017 - *Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on the Administrative Provisions in Advance of Transposition.* Stationery Office, Dublin.

- Department of Housing, Planning and Local Government (2018) *Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*[16]; and
- Environmental Protection Agency (2017) *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (Draft August 2017)[17].

Additional topic-specific guidance used to undertake assessments is identified in **Chapters 7** to **18**, as appropriate.

1.4.4 Methodology

1.4.4.1 General EIA Methodology

The methodology adopted for the preparation of this EIAR comprised a systematic analysis of the effects of the proposed development in relation to the existing environment. The overall methodology for preparation of the EIAR is discussed under the following headings:

- Basis for assessment;
- Impact assessment and mitigation; and
- Significance of environmental issues.

1.4.4.2 Basis for Assessment

The impact assessment examines the existing environmental conditions within the study area for each element of assessment and then determines the potential effects associated with the proposed development during its construction and operational phases.

The study area considered within this EIAR may differ for each aspect of the environment being examined and is extended to incorporate all areas where there was potential for significant effect. Further information on the extent of study area considered for each topic is addressed in the relevant corresponding EIAR chapter.

[16] Department of Housing, Planning and Local Government (2018) Circular PL 05/2018 - *Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) And Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.* Stationery Office, Dublin

[17] Environmental Protection Agency (2017) *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports*. Dublin

1.4.4.3 Impact Assessment and Mitigation

The preparation of the EIAR was an iterative process, linking into the design development process.

The approach adopted in the impact assessment and preparation of the EIAR was generally based on that recommended in the *Draft Guidelines on the information to be contained in Environmental Impacts Assessment Reports* (EPA, 2017)[11], as outlined below.

A design was developed and the potential effects of the proposal on the receiving environment were identified along with mitigation measures, as required.

1.4.4.4 Significance of Environmental Effects

The glossaries contained in the Draft *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017)[11] describes an impact as "*Change resulting from the implementation of project*" and the significance of an impact as *"The importance of the outcome of the impact (or the consequence of change) for the receiving environment."*

It is important to note that terminology varies under different pieces of legislation. The term 'effect' is generally used throughout this EIAR. Where there is reference to the term 'impact' it should be understood that this has the same meaning as 'effect', and that both terms are interchangeable.

The following factors were considered when determining the significance of the effect, both positive and negative, of the proposed development on the various aspects of the receiving environment:

- The quality and sensitivity of the existing/baseline receiving environment;
- The relative importance of the environment in terms of national, regional, county, or local importance;
- The degree to which the quality of the environment is enhanced or impaired;
- The scale of change in terms of land area, number of people effected, number and population of species affected, including the scale of change resulting from cumulative effects;
- The consequence of that effect/change occurring;
- The certainty/risk of the effect/change occurring;
- Whether the effect is temporary or permanent; and
- The degree of mitigation that can be achieved.

The relevant terms listed in **Table 1.1,** as outlined in the EPA guidelines have been used consistently throughout this EIAR to describe specific effects. Further information on the specific methodologies utilised for the assessment of each environmental aspect is included in the relevant EIAR chapters.

Table 1.1: Description of Effects

Quality of Effects	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/Adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effects	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not Significant An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant Effects An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.
Duration and Frequency of Effects	**Momentary Effects** Effects lasting from seconds to minutes.
	Brief Effects Effects lasting less than a day.
	Temporary Effects Effects lasting less than a year.
	Short-term Effects Effects lasting one to seven years.
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.
	Permanent Effects Effects lasting over sixty years.

	Reversible Effects Effects that can be undone, for example through remediation or restoration.
	Frequency of Effects Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Types of Effects	**Indirect Effects** Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	Do-Nothing Effects The environment as it would be in the future should the subject project not be carried out.
	Worst-case Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects When the full consequences of a change in the environment cannot be described.
	Irreversible Effects When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SO_x and NO_x to produce smog).

1.4.5 Structure of the EIAR

- The non-technical summary summarises the findings of the EIAR in a clear, accessible format that uses non-technical language and supporting graphics. The non-technical summary describes the proposed development, existing environment, effects and mitigation measures and relevant aspects of the EIAR in a manner that can be easily understood by the general public;
- The main EIAR including introductory chapters in addition to 'assessment' chapters for each environmental aspect in accordance with Article IV of the EIA Directive. The front-end chapters (**Chapters 1** to **6**) provide the relevant project context; the assessment chapters (**Chapters 7** to **18**) provide a description of the relevant environmental aspects and likely significant effects; and summary chapters address cumulative effects and interactions (**Chapters 19** and **20)**;

- The technical appendices include other relevant drawings, modelling outputs, background reports and/or supporting documents.

1.5 Project Team

1.5.1 Design Team

Consultants that have been involved in the proposed development to date have been set out in **Table 1.2.**

Table 1.2: List of Main Project Participants

Role	Consultant
Client	Tiznow Property Company Limited (Comer Group Ireland)
Architect	C+W O'Brien Architects
Civil & Structural Engineers	Arup
Contractor	To Be Confirmed
Mechanical and Electrical Engineers	Arup
Quantity Surveyor	Comer Group Ireland
PSDP	Arup
Fire Consultant	Arup
Landscape Architect	Park Hood Landscape Architects
Planning Consultant	HW Planning Consultants
Traffic & Transport Engineers	Arup
Environmental Consultants	Arup
Aviation Consultants	O'Dwyer & Jones Design Partnership
Daylight & Sunlight Assessment	Arup
Wind Microclimate Assessment	Arup
Archaeology, Architectural and Cultural Heritage	John Cronin & Associates
Biodiversity	DixonBrosnan

1.6 EIAR Team

An EIAR for the proposed development has been prepared on behalf of the developer by a multi-disciplinary consultancy team of competent experts led by Arup with input from specialist sub-consultants.

Arup has been awarded an EIA Quality Mark by the Institute of Environmental Management and Assessment in recognition of its excellence in EIA activities. Further, all technical leads are considered to be qualified and competent experts in their fields in accordance with Article 5(3) of the EIA Directive, given their academic qualifications, professional affiliations and professional experience on other EIAs for major infrastructure projects.

Table 1.3 provides further detail on the competency and qualifications of experts that have contributed to this EIAR.

Table 1.3: List of Competent Experts for EIAR

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
EIAR Manager • Chapter 8 Air Quality & Climate • Chapter 9 Noise & Vibration • Chapter 18 Major Accidents and Disasters	Daniel Garvey	Arup	27 years	MSc Environmental Protection, Institute of Technology Sligo, 2008. BA (Hons) Geography and Public Policy Studies, University College Cork, 1999; Diploma in Construction Studies (Architectural Technology), Cork Institute of Technology, 1994. Dan has 27 years' experience in environmental impact assessment, industrial licensing, waste and GMM licensing, and planning. He has prepared more than 35 environmental impact statements / assessment reports.	Chartered Member of the Institution of Environmental Sciences Chartered Geographer Fellow of the Royal Geographical Society Member of Earth Science Ireland

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
EIAR Coordinator • Chapter 1 Introduction • Chapter 2 Background and Need for Scheme • Chapter 3 Alternatives Considered • Chapter 4 The Proposed Development • Chapter 14 Water • Chapter 15 Resource and Waste Management • Chapter 16 Population & Human Health • Chapter 17 Material Assets • Chapter 18 Major Accidents and Disasters • Chapter 19 Cumulative & Interactive Effects	Debbie Flynn	Arup	5 years	BSc Environmental Science Debbie has over five years' experience as an Environmental Consultant, based in the Arup Cork Office. She holds a BSc in Environmental Science from the University of Limerick. Debbie primarily works on the preparation of Environmental Impact Assessment Reports (EIAR), EIA Screening Reports, Reports for Screening for Appropriate Assessment and technical due diligence reports. Debbie has coordinated and contributed to the preparation of a number of large-scale EIA developments including Wilton Town Centre, Horgan's Quay, Arklow Wastewater Treatment Plant, Custom House Quay Development and Greenlink Interconnector.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Assisted with: • Chapter 1 Introduction • Chapter 4 Proposed Development • Chapter 14 Water • Chapter 15 Resource and Waste Management • Chapter 16 Population and Human Health • Chapter 17 Material Assets • Chapter 18 Major Accidents and Disasters • Chapter 19 Cumulative and Interactive Effects	Julie Hayes	Arup	1.5 years	BSc Environmental Science; 2019 MSc Applied Environmental Geoscience; 2020 Julie joined the Arup Cork Office in April 2021. She has one year's experience in environmental monitoring and compliance work for a local authority. Since joining Arup, Julie has assisted with appropriate assessments, environmental due diligence reports, environmental impact assessments and an Industrial Emissions (IE) licence review.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Chapter 5 Construction Strategy	Stephen Ginn	Arup	11 years	BE (Hons) - Civil & Environmental Engineering, University College Cork (Structural), 2007. Certified Project Management Associate (IPMA-D), Institute Project Management Ireland/ University College Cork, 2013 Designing for Safety in Construction (2021) Stephen has 14 years' experience as a structural engineer, project manager, site engineer and construction manager. Stephen has experience in project initiation and planning, concept, basic and detailed design, construction supervision, commissioning, qualification, project delivery and close-out. He has multi-discipline design and construction management experience having spent 7 years on site at a major pharmaceutical site in Ringaskiddy delivering multiple significant construction projects from initiation to close-out. More recently Stephen has coordinated and contributed to the preparation of EIA screening reports, Construction and Environmental Management Plans and NIS documentation for the Corkbeg Catchment Basin Upgrade. He has also written Outline Construction Management Plans for a Confidential office/ residential project in Dublin.	Chartered Engineer – Engineers Ireland (CEng MIEI) Graduate Member IStructE (MIStructE)

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Chapter 6 Planning and Policy	Harry Walsh	Harry Walsh Planning	22 years	BA (Hons) MIPI, Master of Regional and Urban Planning Harry Walsh is the Director at HW Planning. Harry has 22 years' experience in the planning profession comprising Local Authority roles and private practice. Harry has acted as planning lead on a wide variety of projects which have required EIAR's including the development of the 'Shannonpark Urban Expansion Area' in Carrigaline, Co. Cork and the proposed expansion of the whiskey maturation facility at Ballymona North, Dungourney, Co. Cork on behalf of Irish Distillers Limited.	
Chapter 7 Traffic and Transportation	Clifford Killeen	Arup	15 years	BEng (Hons) Civil and Environmental Engineering (UCC) Clifford Killeen is a Senior Civil Engineer with Arup. He holds a BEng (Hons) in Civil and Environmental Engineering from University College Cork and is a Chartered Member of Engineers Ireland. Clifford has worked in the field of transport planning for 15 years and has prepared numerous Traffic & Transport Assessment (TTA) reports and has provide traffic chapter input to many Environmental Impact Assessment Reports.	Chartered Member of Engineers Ireland.

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
	James Glenn-Craigie	Arup	2 years	BA, BAI, MAI Civil, Structural & Environmental Engineering, TCD, James has worked for over 2 years in Arup as part of the Transport Planning Team. His role in the team has been to provide support on the delivery of various transport projects for both public and private clients. Many of these projects have required the preparation of Traffic Impact Assessments and Traffic and Transport chapters for EIARs. Such assessments involved traffic data analysis and junction modelling. Projects which James has worked on include Intel Manufacturing Facility at Leixlip, Co. Kildare, MacCurtain Street Public Realm Improvement Scheme, Cork City and Indaver Waste-to-Energy upgrade scheme.	Chartered Engineer with Engineers Ireland

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Chapter 10 Biodiversity	Carl Dixon	DixonBrosnan Environmental Consultants	20+ years	BSc Applied Ecology, University College Cork MSc Ecology, University College Cork. Carl Dixon MSc (Ecology) is a senior ecologist who has over 20 years' experience in ecological and water quality assessments. Carl Dixon holds an Honours Degree (BSc) in Ecology and a Masters (MSc) in Ecological Monitoring from UCC. He is a senior ecologist who has over 25 years' experience in ecological assessment. Prior to setting up DixonBrosnan Environmental Consultants in 2000, Carl set up and ran Core Environmental Services which included Rural Environmental Protection Scheme (REPS) planning for landowners and ecological assessments. Carl has particular experience in freshwater ecology including electrofishing fish stock assessments and water quality assessments. He also has considerable experience in habitat mapping and mammal ecology including survey work and reporting in relation to badgers and bats. Other competencies include surveys for invasive species and bird surveys. Carl has extensive experience with regards to EIAR and NIS mitigation and impact assessment. He has particular experience in large-scale industrial developments with extensive experience in complex assessments as part of multi-disciplinary teams. Such projects include gas pipelines, incinerators, electrical cable routes, oil refineries and quarries.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
	Sorcha Sheehy	DixonBrosnan Environmental Consultants	12 years	BSc, University College Cork (UCC) PhD (Ecology / Ornithology) Dr. Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant specialising in bird behaviour. Sorcha received a BSc in Applied Ecology from UCC and subsequently went on to receive a PhD in behavioural ornithology at UCC. During her PhD research, Sorcha studied bird-aircraft collision with a particular focus on bird behaviour, included field-based behavioural observations at airports, bird cadaver examination and collision classification and the use of radar tracking to model collision risk. Sorcha has worked for over 12 years in a professional ecology role and specialises in the coordination of ecology projects and assessments. She has coordinated and contributed to Habitats Directive Assessments (AA screenings and NIS) and Environmental Impact Assessment Reports (EIAR) for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Notable projects include Arklow Bank Wind Park, Shannon Technology and Energy Park and Waste to Energy Facility Ringaskiddy	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Chapter 11 Archaeology, Architectural and Cultural Heritage	John Cronin	John Cronin & Associates	30 years	BA Archaeology, 1991 (UCC) MRUP Master of Regional and Urban Planning, 1993 (UCD) MUBC Master of Urban and Building Conservation, 1999 (UCD) John Cronin is a qualified archaeologist, planner and building conservation specialist. Since establishing John Cronin & Associates in July 2000, John has built a dynamic and innovative company specialising in urban and building conservation, cultural heritage and archaeology throughout Ireland. Drawing on his professional training and experience in both the public and private sectors, and with a growing team of professional heritage management practitioners, he has developed a wide-ranging and bespoke service operating from offices located in Counties Cork and Donegal. With 30 years professional experience, he has acted as an expert witness in the area of archaeological mitigation, cultural heritage, and architectural heritage for a multitude of private and public sector clients.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
	Tony Cummins	John Cronin & Associates	25+ years	BA Archaeology, 1992 (UCC) MA Archaeology, 1994 (UCC) Tony Cummins joined John Cronin & Associates in 2009 as a licence-eligible archaeologist. He has gained a wide range of excavation experience over the past twenty years and has worked at sites of national importance, including the prehistoric settlements at Ferriter's Cove, Co. Kerry and Lough Gur, Co. Limerick. Tony has also gained experience working abroad as a member of excavation teams in Britain and Lebanon. Tony qualified as a licence-eligible archaeologist in 1998 and since that time he has been employed as a site director with a number of Irish archaeological consultancies. He has overseen archaeological investigations on large-scale infrastructure projects such as the N25 Waterford Bypass, the Limerick Southern Ring Road and the Kinsale Main Drainage Scheme (Phase 1). Since joining John Cronin & Associates he has supervised and led numerous archaeological projects including cultural heritage assessments and excavations.	License-eligible Archaeologist (ROI) since 1998

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
Chapter 12 Townscape and Visual	Andrew Bunbury	Park Hood Landscape Architects	25+ years	BSc Landscape Architecture Post Graduate Diploma in Landscape Design Andrew who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute (CMLI) with over 25 years' consultancy experience in the profession across Ireland and the UK. He works between the Dublin, London and Belfast offices of Park Hood where there are 24 members of staff including a further ten Chartered Landscape Architects.	Chartered Member of the Landscape Institute (CMLI)
Chapter 13 Land, Soils, Geology and Hydrogeology	Christopher Newton	Arup	11 years	MSc in Geology Diploma in Planning and Environmental Law Christopher is a Senior Hydrogeologist with 11 years' experience preparing Land chapters and land contamination assessments for Environmental Impact Assessments. He is a Chartered Geologist, has an MSc in Geology (Bristol) and a Diploma in Planning and Environmental Law. He is a Fellow of the Geological Society of London and is Vice Chair of the Irish Brownfield Network.	Fellow of the Geological Society of London Vice Chair of the Irish Brownfield Network
	Chloe Sullivan	Arup	1 years	BSc Geology -2019 MSc Applied Environmental Geoscience 2020 Chloe joined the Arup Cork Office in October 2020. Since joining Arup Chloe has assisted with desk studies, preparing tender packages, due diligence reports and environmental impact assessments. Chloe has supervised geo-environmental and geotechnical ground investigations in Co. Cork and in Co. Dublin.	

1.7 Consultation Undertaken

1.7.1 Overview

Extensive consultation has been undertaken with a range of stakeholders during the development of the EIAR and statutory consent application in order to:

- Provide information on the proposed development;
- Ascertain and understand the views of stakeholders; and
- Seek input from stakeholders on the design, construction and assessment aspects of the proposed development.

The design of the proposed development has taken cognisance of the outcomes of the various consultations, as detailed in the statement of consistency which is included in the planning application.

It should be noted that this section describes project-wide consultation that has been undertaken. Where appropriate, **Chapters 7** to **18** identify specific consultation that has been undertaken to support individual assessments and assessment chapters.

1.7.2 Cork City Council – Pre-Application Consultation

Numerous meetings preparing for the Section 247 (S247) Submission were held with Cork City Council Planners, Traffic and Transport Engineers and the City Architect from March to September 2021.

The design of the proposed development evolved, based on these discussions as follows:

- The proposal was reduced from 2,790 residential units to 1,029 units following the S247 discussions (as it was at the time of this consultation);
- The proposal was reduced from 11 no. blocks to five no. blocks following the removal of Blocks E, G, H, I and J. (Block E was removed to allow for greater flexibility for a potential future development on the site bounded by Centre Park Road and the street within the proposed development. It was decided Block J will be subject to a separate planning application);
- One of the connections from Centre Park Road into the site was removed as it bisected the school zoning, however, one connection was retained to create a route through the development;
- The height of Block A was increased by one storey to emphasis its role as a landmark;
- The heights of the buildings ranging from 8 to 33 stories remained unchanged;
- Block K was refined to a more rectilinear shape instead of an oval to increase adaptability and functionality;

- Significantly more 3-bed apartments were proposed to ensure the long-term viability and flexibility of the final scheme; and
- Block A was flipped to align with Centre Park Road and in turn emphasise this main promenade and connection back towards Cork City.

1.7.3 An Bord Pleanála – Pre-Application Consultation

Following submission to ABP and CCC (October 2021), the scheme was developed in further detail with regarding the overall site, the massing and the individual blocks. This included:

- Creating more of a separation between Block D and F to allow further connection between the site and Marina Park;
- Allowing for greater permeability through the site and development of the character areas of the Ecology Park along the waterway, Village Plaza between Block A, B and C and City Park to the west of the site; and
- Increasing residential units from 1,029 to 1,030.

Further to the Tripartite meeting on the 20th of December 2021 and following receipt of the An Bord Pleanála Opinion, a review of the scheme was carried out and the following changes were made:

- Further refinement of Block A's façade to add articulation to it and enhance the landmark nature of the building;
- Review of the material palettes and changes to the selected bricks to reflect the bricks used in the former ESB Power Station and Odlum's Mill buildings to the west;
- The reduction in building heights from a range of 8 to 33 storeys to a range of 6 to 35 storeys. This included:
    - A reduction in the height of Blocks B, D and F to remove the tower elements with heights being set at 8 to 10 storeys; and
    - A reduction in the height of Blocks C and E to remove the tower elements with heights being set at 6 to 8 storeys;
- The reduction in residential units from 1,029 units to 823 units;
- The omission of Block K situated to the west of the Public Open Space Zoning;
- Inclusion of a new Block (E) to the west of Block C, to complete the remaining zoned lands between Block C and the lands zoned for Schools in the southwest of the proposed site; and
- Additional site sections were produced to demonstrate boundary treatments and interactions with the adjoining lands.

Following receipt of the ABP Opinion, the applicant and the Design Team met with the Department of Education on the 9th March 2022. This meeting centred around discussions for the wider requirements for schools in the South Docks area and the future interaction between the subject site and the school zoned lands immediately to the west.

1.7.4 Consultation with Relevant Stakeholders

The following parties were consulted as part of the preparation of this EIAR:

- The Development Applications Unit
- An Taisce
- Birdwatch Ireland
- Cork Airport
- Irish Aviation Authority
- Geological Survey of Ireland
- Heritage Council
- Bat Conservation Ireland
- Health and Safety Authority
- Health Service Executive
- Transport Infrastructure Ireland
- National Transport Authority
- Inland Fisheries Ireland
- Irish Raptor Study Group
- Shandon Boat Club
- Lee Rowing Club
- Sea Fisheries Protection Authority
- Marine Institute
- Bord Iascaigh Mhara

Details relating to consultation with the stakeholders outlined above are included where applicable in the relevant assessment chapters.

1.8 Difficulties Encountered During the Assessment

Difficulties encountered in the preparation of the EIAR are outlined in each chapter as they relate to the various environmental topics, but no significant difficulties were encountered in any topic that constrained or limited the robustness of the impact assessments.

1.9 References

Cork City Council (2016) *Cork City Development Plan (2015-2021) – Variation No. 3 Vacant Sites* Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-3-vacant-sites-copy.pdf [Accessed: January 2022].

Cork City Council (2016) *Cork City Development Plan (2015-2021)* Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/cdp_volume_2_optimised.pdf [Accessed: January 2022].

Department of Housing, Planning and Local Government (2018) *Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*

Department of Housing, Planning, Community and Local Government (2017) *Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems.*

Department of Housing, Planning, Community and Local Government (2017) *Circular PL 1/2017 - Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on the Administrative Provisions in Advance of Transposition.*

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Department of the Environment, Heritage and Local Government (2003) *Environmental Effect Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development.*

Environmental Protection Agency (2017) *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft August 2017).*

European Commission (2017) *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*.

European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018), article 17.

Government of Ireland (2016) *Rebuilding Ireland: Action Plan for Housing and Homelessness.* Stationery Offices, Dublin.

Government of Ireland (2017) *Planning and Development (Strategic Housing Development) Regulations 2017*. Stationery office, Dublin.

Government of Ireland (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018).*

Section 4(1) of the *Planning and Development (Housing) and Residential Tenancies Act 2016*, as amended.

2 Background and Need for Scheme

2.1 Introduction

This chapter provides a summary of the background to the proposed development and site context. This includes a description of the proponent, objectives and need for the proposed development as well as an overview of the existing site layout.

2.2 Tiznow Property Company Limited (Comer Group Ireland)

The current business was established over 30 years ago by brothers, Brian & Luke Comer, originally from Co. Galway. The Comers have created a leading property company with substantial development and investment interests in a number of market sectors, including luxury residential homes, office parks, retail parks, hotels and leisure facilities.

With a substantial land bank and an extensive development programme, The Comer Group is continuing its major expansion in a number of property development sectors. The proven exceptional financial acumen of The Comer Group together with the direct and hands-on management style of the Comer brothers enables it to positively predict trends ahead of the market and capitalise on new opportunities as they arise. A lateral entrepreneurial management structure facilitates rapid transaction completion without a lengthy corporate process that many of its competitors have to undertake.

Brian and Luke Comer have been instrumental in recruiting and shaping a highly skilled and valuable senior management team of designers, architects and construction professionals. Corporate ethos nurtures and encourages both creativity and innovation, which are hallmarks of the Comer brand.

The Comer Group lead by Brian & Luke Comer has laid a very solid foundation to exploit forthcoming opportunities. Through astute planning and strategy, the company is confident of achieving its ambitious growth plans.

Future success is eagerly anticipated as the company continues to implement its many development plans with inspiration, organisation, reputation and a highly experienced team.

2.3 Need and Objectives for the Proposed Development

The need for the proposed development is to bring into use an underutilised, brownfield site in order to offer an opportunity to become a catalyst for a wider development of the docklands that would be part of Cork City’s growth as it more than doubles its population over the next 20 years.

This population growth is envisaged in the National Planning Framework 2040 (NPF); and in order to ensure the delivery of this level of residential

accommodation in a sustainable compact city, then sites such as the site of this proposed development, needs to be considered in the context of the wider impact of the potential growth in the surrounding brownfield and semi-industrial sites.

The layout and design of the proposed development allows for future connectivity to adjoining sites and connectivity to the city, and airport.

The scale of the docklands will ensure that there will also be the delivery of services, retail, employment, education and leisure all within 15-minutes' walk of each other and also within 15 minutes of the city centre by public transport.

The following sections outline the proposed development's response to the main policy and planning objectives.

Further details have been included in **Chapter 6** *Planning and Policy*.

2.3.1 National Planning Framework Project Ireland 2040

The proposed development is consistent with all strategic aims and objective contained in the NPF. In particular, the proposed development is in accordance with national policy objectives, which aim to increase Cork City and its suburbs to a minimum population of 314,000 by 2040 and which will require a growth rate of 50-60%. These include the following:

- National Policy Objective 2a of the NPF sets a target of half (50%) of the future population and employment growth will be focused in the existing five cities and their suburbs;
- National Policy Objective 3b of the NPF seeks to deliver at least half (50%) of all new homes that are targeted in the five Cities and suburbs of Dublin, Cork, Limerick, Galway and Waterford, within their existing built-up footprints;
- National Policy Objective 4 of the NPF seeks to ensure the creation of attractive, liveable, well-designed, high quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being;
- National Policy Objective 8 of the NPF seeks to ensure that the targeted pattern of population growth of Ireland's *cities* to 2040 is in accordance with the targets set out in Table 4.1 of the NPF;
- National Policy Objective 11 of the NPF states that in meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth;
- National Policy Objective 13 of the NPF states that in urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve targeted growth. These standards will be subject of a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected;

- National Policy Objective 27 of the NPF seeks to ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments and integrating physical activity for all ages;
- National Policy Objective 32 of the NPF seeks to target the delivery of 550,000 additional households to 2040;
- National Policy Objective 35 of the NPF seeks to increase residential density in settlements, through a range of measures including reductions in vacancy, reuse of existing buildings, infill development schemes, area or site-based regeneration and increased building heights; and
- National Policy Objective 64 of the NPF seeks to improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking, and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions.

2.3.2 Housing for All (2021)

Housing for All – A new Housing Plan was published by the Department of Housing, Local Government and Heritage in September 2021 as an overarching housing plan to 2030. It is estimated that 33,000 no. new dwelling units will need to be delivered per year between 2021 to 2030 to meet current demand.

The government guidance identifies four key pathways for achieving housing for all:

- Supporting home ownership and increasing affordability;
- Eradicating homelessness, increasing social housing delivery and supporting social inclusion;
- Increasing new housing supply; and
- Addressing vacancy and efficient use of existing stock.

The proposed development of 823 no. residential units will contribute to increasing the supply of new housing to meet the needs of people in a wide variety of circumstances.

2.3.3 Rebuilding Ireland Action Plan for Housing and Homelessness (2016)

The action plan for housing and homelessness is based around five pillars, including the aim of building more homes as well as improving the rental sector. Each pillar consists of several action points.

Pillar 3— Build More Homes aims to support the building of new homes and outlines the Government objective "to ramp up delivery of housing from its current under-supply across all tenures to help individuals and families meet their

housing needs". This Plan sets ambitious targets to double the annual level of residential construction to 25,000 homes and deliver 47,000 units of social housing in the period to 2021.

The sustainable location and proposed mix of dwellings, including a social housing component, ensures that the subject proposal will contribute positively to meeting the pillar three objective of doubling the completion level of additional homes in the next four years to deliver over 25,000 homes on average per annum. The proposed development falls under the Strategic Housing Development planning process aimed at fast tracking the delivery of much needed housing.

The action plan also notes "*there is an acute shortage of apartment developments in the centre of Cork, despite a growing demand from new FDI-type employers establishing adjacent to the city centre, because of the gap between delivery costs and prices of second-hand homes in the wider Cork city area. Therefore, closing the supply gap, particularly in the right locations, is critically dependent on ensuring viability of housing provision, taking account of the prices that are affordable to potential buyers and renters.”*

The south docklands have been identified for strategic mixed-use development that will support and enhance the growth of the city centre by providing a mix of high- quality units that are easily accessible by sustainable means of travel from the city centre. In addition to existing pedestrian, cycle and public transport infrastructure, Centre Park Road is also identified as part of the future route of the planned Light Rail Transit System.

The proposed development of 823 no. high quality apartment units in this location will positively contribute to alleviating the acute shortage of suitable residential units which is accelerating the lack of affordable housing in the wider Cork City area.

2.3.4 Regional Spatial and Economic Strategy for the Southern Region (2020)

The Regional Spatial and Economic Strategy for the Southern Region (RSES) came into effect on 31st January 2020 and sets out a 12-year strategic development framework for the Southern Region. It includes the Cork Metropolitan Area Strategic Plan (MASP).

The proposed development addresses Regional Planning Objectives (RPOs) 5,9, 10 and Section 5.0 which relate to the MASPs for each of the three metropolitan areas of the Southern region – Cork, Limerick-Shannon and Waterford.

This includes aligning with:

- RPO 5 – *Population Growth and Environmental Criteria* by resulting in the uplift of population in the area and through the completion of environmental reports including an Environmental Impact Assessment Report and Natura Impact Statement;
- RPO 9 – *Holistic Approach to Delivering Infrastructure* in that it will provide for increased population growth in an area that is well connected by pedestrian

and cycle linkages and will hence promote non-car modes of transport. In addition, the proposed Light Rail Tram Corridor and increased public realm improvements will increase connectivity to wider surrounding areas in Cork and an enhanced amenity in the area which will improve overall pedestrian and cyclist experience; and

- RPO 10 – *Compact Growth in Metropolitan Areas* in that the currently vacant and underutilised site presents an opportunity for suitable development within an area envisaged for significant regeneration. In addition, the site is excellently located within reasonable distance of a range of employment nodes by walking, cycling and public transport.
- Section 5.0: *Housing and Regeneration*, in that the proposed development at this brownfield site will assist in achieving the targets set out by the RSES through the delivery of 823 no. residential units, two no. crèches and commercial units including café/restaurant units, public house, retail units and supporting tenant amenity facilities.

The RSES includes the following objective and infrastructure priorities for the South Docklands:

- Potential Residential Yield: 9,500 residential units, 9,500 jobs based on 920,000 sq m office space and additional jobs from services, retail, restaurants etc.
- Flood Relief Measures.
- Brownfield site remediation.

The proposed development at this brownfield site will assist in achieving the targets set out by the RSES through the delivery of 823 no. residential units, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities. The proposed development has been cognisant of the objectives and infrastructure priorities for the south dock lands throughout the design process. The proposed application has the capacity to deliver a significant uplift in population in the South Docklands Area.

2.3.5 Cork Metropolitan Area Transport Strategy (CMATS), 2040

The Cork Metropolitan Transport strategy (CMATS) has been published in the context of the National Planning Framework which envisages that Cork will become the fastest growing city region in Ireland in the coming years. This projected population and associated economic growth will result in a significant increase in the demand for travel. This demand needs to be managed and planned for carefully to safeguard and enhance Cork's attractiveness to live, work, visit and invest in.

- An increase in walking levels for work, education and leisure across the CMA, particularly for short journeys (less than 2-3km);
- Addressing the safety issues and barriers that prevent citizens and visitors from walking more in Cork;

- Supporting a high quality and fully accessible environment for all abilities and ages by continuing to develop a safe, legible and attractive public realm;
- Facilitate walking's role as part of linked trips, particularly with rail and bus journeys; and
- Promote a far higher standard of urban design in developments, and in highway design, in a fashion that consistently prioritises pedestrian movement safety over that of the private car.

As part of the proposed development, a pedestrian movement strategy has been prepared with a design to encourage walking and cycling as a primary mode of travel to and from the proposed development, as well as utilising existing and proposed public transport services.

2.3.6 Joint Housing Strategy: Cork Planning Authorities

The Joint Housing Strategy was produced in accordance with the adopted County and City Development Plans for the respective planning authorities in 2014-2015. This was to ensure that the proper planning and sustainable development of Cork City and County provides for the housing of the existing and future population of the area in an appropriate manner. An overall framework has been set out for the supply of land to meet housing needs across the county as well as the following four key principles. Specifically, Principles 1-3 are applicable to the proposed development:

- Principle 1: To provide for a diverse range of housing needs to suit varying income levels and social circumstances
- Principle 2: To promote socially balanced and inclusive society in all housing areas within Cork City and County
- Principal 3: To promote high quality and sustainable communities in the Urban and Rural Environment, though the implementation of the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas published in May 2009.

The proposed development has been designed to cater for a range of household sizes by providing a mix of different units including 1, 2 and 3 bed apartments.

The proposed layout has been designed to enable easy access by all and complies with Part M of the Building Regulations. Building for Everyone: A Universal Design Approach. The design of the proposed development is in accordance with the 1 2 criteria for residential development as outlined in the 2009 Urban Design Manual: A best practice guide.

2.3.7 Cork City Development Plan 2015-2021

The Cork City Development Plan (CCDP) 2015-2021 sets out an overall strategy for the proper planning and sustainable development of the functional area of Cork City. The core vision for this Plan seeks to develop Cork City as a *"successful, sustainable regional capital and to achieve a high quality of life for its citizens and a robust local economy".*

Among the main goals outlined in the Core Strategy of the Plan are to:

- Increase population and households to create a compact sustainable city;
- Achieve a higher quality of life, promote social inclusion and make the city an attractive and healthy place to live, work, visit and invest in; and
- Promote sustainable modes of transport and integration of land use and transportation.

Table 2.3 of the Development Plan provides the '*indicative capacity of key development areas…*' and states that the Docklands has capacity to accommodate an estimated 8,227 no. residential units. The proposed delivery of 823 no. residential units is consistent with the core strategy. The vision for the Docklands set out in the Development Plan is provided below:

"Cork City Docklands represent the biggest development opportunity for Cork City and the CASP (Cork Area Strategic Plan) area over the Plan period and beyond, its redevelopment and renewal being of regional and national significance. The vision for Docklands is that of a vibrant mixed use and socially inclusive urban quarter that will capitalise on the intrinsic advantages of the area:"

The proposed development aligns with the following Zoning Objectives outlined in the CCDP:

- ZO 9: Neighbourhood Centres – to protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services.
- ZO 14: Public Open Space – to protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.
- ZO 16: Mixed Use Development – to promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency.

Having regard to this zoning objective, the proposed development will provide 823 no. apartments, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities which are permitted in principle which are permitted in principle uses on the subject lands.

2.3.8 South Docklands Local Area Plan (2008)

Although the South Dock Local Area Plan, 2008 expired in 2018 and is largely outdated it has been included for completeness. The vision of the South Docklands Local Area Plan, 2008 is to deliver the development of:

- A new identity for the docklands
- Places for people Places that are inclusive
- Places that have a mix of uses

- Places for learning
- New places for work
- New places for play
- A sustainable place

The proposed development aligns with Zoning Objectives of the South Docks Local Area Plan 2008 –

- SD 01: Mixed Use Development
- SD 02: Public Open Space
- SD 04: Neighbourhood Centre

2.4 History of Site

The Cork City Council planning records[18] were consulted to identify any previous planning applications which have been made on site. No records were found.

However, the planning history for adjacent sites include the following:

The Former Cork Warehouse Company Site, Marquee Road

- **ABP-313142-22:** SHD application which includes the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

The former Ford Distribution Site, Centre Park Road

- **ABP-309059-20:** SHD Permission (10-year permission) granted in April 2021 (ABP) for the demolition of existing structures, for the construction of 1,002 no. apartments, childcare facilities and associated site works.
- **TP 08/32919:** Permission granted for a 10 year permission for redevelopment of a 4.984ha site and all site development works to incorporate the construction of a mixed use development of 12 no. buildings arranged in 11 no. parcels ranging from 1 to 27 no. floors plus mezzanine, the demolition of the existing structures and site clearance on the site of the old Ford Distribution site at Centre Park Road, Cork. The development included: 564 no residential units, 11 no. retail units, office space, 205 bed hotel, Events Arena, and associated uses.

Shandon Boat Club

- **TP 21- 39935:** Permission granted for the construction of a steel clad structure to serve as a gymnasium within the curtilage of the Shandon Boat Club, which is a Recorded Protected Structure.

18 https://corkcity.maps.arcgis.com/apps/webappviewer/index.html?id=e4af482c8da547de9f1689eba346a1ed

- **TP 15-36575:** Permission granted for the construction of a two storey extension to the existing club house and all ancillary site works.

Passenger Ferry Landing Station – the Marina

- **TP 08-32790:** Permission granted to construct a passenger ferry landing station at the Marina (120m east of Centre Park Road / the Marina Junction).

2.5 Site Selection

The developer has selected the proposed development site because it is an underutilised site at a prime location in Cork City. It has the potential to deliver significant benefits in terms of increased residential housing, increased employment as well as providing important resources and amenities for people living in this area of the city in a sustainable location.

The key attributes of the proposed development site are as follows:

- Site size;
- Underutilised nature and availability;
- Site conditions;
- Good road infrastructure and access to the site, with significant potential for enhanced permeability;
- Access to utilities services including water, wastewater, electricity, gas, telecommunications etc;
- Identification of the site within a key brownfield development area (Cork City Docklands) for new sustainable urban communities (Cork 2050: Realising the Full Potential);
- Location of the site in an area that is currently served by high capacity, frequent public transport; and
- Location of the site within a high quality, mixed use waterfront quarter, which can link the city with greenspace amenities that connect to the wider suburban area.

2.6 Conclusion

There is a long-standing need for the appropriate redevelopment of the Former Tedcastles site. The proposed development will help to address the current housing crisis and the national target of achieving 300,000 additional housing units by 2030. The proposed development will contribute to national policy objectives through the provision of 823 no. new residential units.

In addition, the location of the proposed development in proximity to Cork City Centre is suitable for such a development and addresses key policy objectives relating to the sustainable growth of Cork City.

The proposed development will, therefore, play a significant role in addressing national, Southern-Regional and Cork City-based plans, strategies and policies.

2.7 References

Cork City Council (2008) *Cork Area Strategic Plan – Strategy for Additional Economic and Population Growth - An Update*. Available at: https://www.corkcity.ie/en/media-folder/planning/casp-update-2008.pdf

Cork City Council (2008) *South Docks Local Area Plan*. Available at: https://www.corkcity.ie/en/media-folder/planning/south-docks-local-area-plan-2008.pdf

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Southern Regional Assembly (2020). *Southern Assembly Regional Spatial and Economic Strategy (RSES)*. Available at: http://www.southernassembly.ie/regional-planning/regional-spatial-and-economic-strategy.

3 Alternatives Considered

3.1 Introduction

This chapter presents the alternative aspects of the proposed development that were considered prior to deciding upon the final project design. Under the EIA Directive 2014/52/EU, amending Directive 2011/93/EU, the developer must provide a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects.

3.2 Alternative Site Locations

No alternative sites were studied by the developer. The site is owned by the developer and the nature of the proposed development constitutes a regeneration of the subject site. No alternative sites were considered that met the developer's objectives.

3.3 Design Objectives

The design proposal for the proposed development forms the basis of a significant urban renewal scheme, that in addition to providing much needed high quality residential accommodation also achieves many other significant objectives such as:

- The regeneration of the Cork City South Docklands Area from brownfield site to residential area with a wide range of residential / retail ground and first floor units;
- The provision of a landscaped amenity areas such as the neighbourhood centre, village centre and riverfront area and internal street areas;
- 35 storey tower building, which will be a tall feature and character area;
- The provision of a variety of apartment typologies to accommodate a range of family and age demographics;
- The provision of a number of vibrant, energetic and usable landscaped and public open spaces, which will include a village plaza, wildflower meadow, rain garden, roof gardens and a new wetland area; and
- The provision of commercial and community facilities such as crèche, neighbourhood centre, cafés / restaurants, public house, medical centre, pharmacy, dentist, post office and library facilities.

The proposed development will meet the following design criteria:

- **Context:** The proposed development seeks to enhance its surrounding environment in the Cork South Docklands area and increase movement through the site to connect the Marina Park on the northern edge of the lands to the development to the south and west.
- **Connections:** Aligned with the best urban design principles, the proposed development aims to prioritise pedestrians and cyclists and improve connectivity to the city by providing routes through and around the site. Public transport will also be facilitated and seen as a key part of the proposed development.
- **Inclusivity:** Inclusivity for all is central to the proposed development, and the design ensures that all buildings and external areas are accessible. The principle will be to create a new local/ village centre to the east of the site with the future Light Rail stop to be aligned and connect to this.
- **Variety:** The proposed development aims to achieve variety in its design, which will be achieved through a mix of 1-2-3 bed apartments varying in size and orientation, a mix of commercial spaces and the provision of open space.
- **Efficiency:** The proposed development strives for efficiency, which will be achieved through the efficient use of valuable zoned lands and public open space to link to the site to the wider green network section along the river; and provision of apartment units that are suitable for all family and age demographics and are designed such that there is adequate space and generously sized communal and private open space available within the development.
- **Distinctiveness:** The proposed development seeks to create a distinct design which is characterised by each apartment block and the distinctive residential neighbourhood centre through a combination of varying facade modulation and a palette of high-quality finishes with character that embraces its location next to a future high-quality rail service.
- **Layout:** The layout of the proposed development seeks to create people-friendly streets and spaces through a series of blocks increasing in height from west to east, set within high-quality urban external spaces of separate public and communal open space.
- **Public Realm:** The layout of the proposed development proposes to maximise the permeability and connectivity to and through the site prioritizing the quality of open space within the development to ensure a safe, secure and enjoyable public space.
- **Adaptability:** To ensure the adaptability of the proposed development, a mix of units have been incorporated into the design which can be reconfigured to adapt to the changing life cycles and personal needs of residents. In addition, levels have been established to ensure that the vulnerable uses are above the flood levels.
- **Privacy and Amenity:** The proposed development aims to provide a decent standard amenity to all residents. As such, each unit will be in compliance

with storage requirements and will have an area of usable communal open space and private open space in balconies.

- **Parking:** The proposed development seeks to accommodate cark parking in its design. This will be provided through the provision of undercroft spaces for residents and surface spaces for visitors.
- **Detailed Design:** The proposed development aims achieve well thought through detailed building and landscape design which represents a high-quality design whilst optimising the appropriate use of the site which will help meet the ever-increasing demand for residential accommodation.

3.4 Alternative Site Layouts and Designs Considered

The proposed development forms part of an overall masterplan for the site, which includes another Strategic Housing Development at the former Cork Warehouse Company site immediately south of the proposed development (the subject of a separate planning application for that site).

3.4.1 Option 1

The initial design feasibility considered the development of the entire site from the point of establishing a cohesive masterplan. Part of this strategy involved objective viewing of the specific zoning objectives for the area but primarily focused on maximising the potential of the site.

The design consisted of 11 no. blocks from Block A through to Block K laid out across the full range of the site in such a way as to promote connectivity with the surrounding area and proposed future developments as well as allowing access and permeability through the site towards the River Lee. Block A was set against the Marina Park edge of the site, emphasising this as the primary elevation. Each block was developed as a base building with a tower element which created an active environment at street level while also developing a dynamic skyline. There was 3 no. access points to the site from Centre Park Road which created a series of link roads that were integrated into the existing infrastructure.

The heights of the buildings ranged from 8 to 32 stories and provided 2,790 residential units.

Figure 3.1: Option 1 | Not to Scale | Source: C+W O'Brien Architects

3.4.2 Option 2

For Option 2 the design was primarily influenced by the existing zoning for the site, which included two areas zoned for schools. The first, and larger of these, necessitated the removal of Blocks G, H and I as well reducing the size of Block E. Block J was also impacted by the adjacent school zoning which reduced its overall size and footprint.

One of the connections from Centre Park Road into the site was removed as it bisected the school zoning, but one was retained to create a route through the development.

The height of Block A was increased by one storey to emphasis its role as a defining feature.

The heights of the buildings ranged from 8 to 33 stories and provided 1,515 residential units.

Figure 3.2: Option 2 | Not to Scale | Source: C+W O'Brien Architects

3.4.3 Option 3

One of the most significant developments at this stage (Option 3) was the removal of Block E entirely as well as the removal of Block J from this application. Block E was removed to allow for greater flexibility for a potential future development on the site bounded by Centre Park Road and the street within the proposed development. It was decided that Block J should be subject to a separate planning application.

Block K was refined to a more rectilinear shape instead of an oval to increase adaptability and functionality.

Significantly more 3-bed apartments were proposed to ensure the long-term viability and flexibility of the final scheme.

The final move was to flip Block A to align with Centre Park Road and in turn emphasis this main promenade and connection back towards Cork City.

The heights of the buildings ranged from 8 to 33 stories and provided 1,029 residential units.

Figure 3.5: Option 4 | Not to Scale | Source: C+W O'Brien Architects

3.4.4 Option 4

For Option 4 the proposed development was developed in further detail with regard to both the overall site, the massing and the individual Blocks. The refinement of the massing included creating more of a separation between Block D and F to allow further connection between the site and Marina Park. Each block was as progressed in terms of architectural articulation and material selection.

This revised proposal also allowed greater permeability through the proposed development and started to develop the character areas of the proposed Ecology Park along the waterway, proposed Village Plaza between Block A, B and C and City Park to the west of the site.

The heights of the buildings ranged from 8 to 33 stories and provided 1,030 residential units.

Figure 3.4: Option 3 | Not to Scale | Source: C+W O'Brien Architects

3.4.5 Option 5

Option 5 consists of the scheme that was submitted for the Tripartite meeting between the applicant, Cork City Council and An Bord Pleanála, which had been developed in response to Cork City Council commentary on the design as presented at the Section 247 pre-planning meeting.

Early in the design process the applicant and the architects reached out to specialist urban designers to avail of their extensive expertise in developing a sound strategy for the heights of the blocks in the proposed development. As a result of this collaborative process a less linear approach to the block heights was taken, as seen in **Figure 3.5**.

Block A remained as the tallest tower and this feature was emphasised by the lowering of Blocks B, D and F along the Marina Park elevation.

Block K was raised to bookend the elevation and to respect the potential future developments of the adjacent sites back towards the city centre.

Another key area of improvement of the proposal related to the overall articulation of the top, middle and base sections of each building as well as the introduction of a step back at the upper floors of the base buildings which soften the scale of the buildings. The towers tops were articulated to differentiate them from the middle portions of the buildings, while the design of the base has been further developed to relate more directly to the specific conditions found at ground level.

The heights of the buildings ranged from 8 to 35 stories and provided 970 residential units.

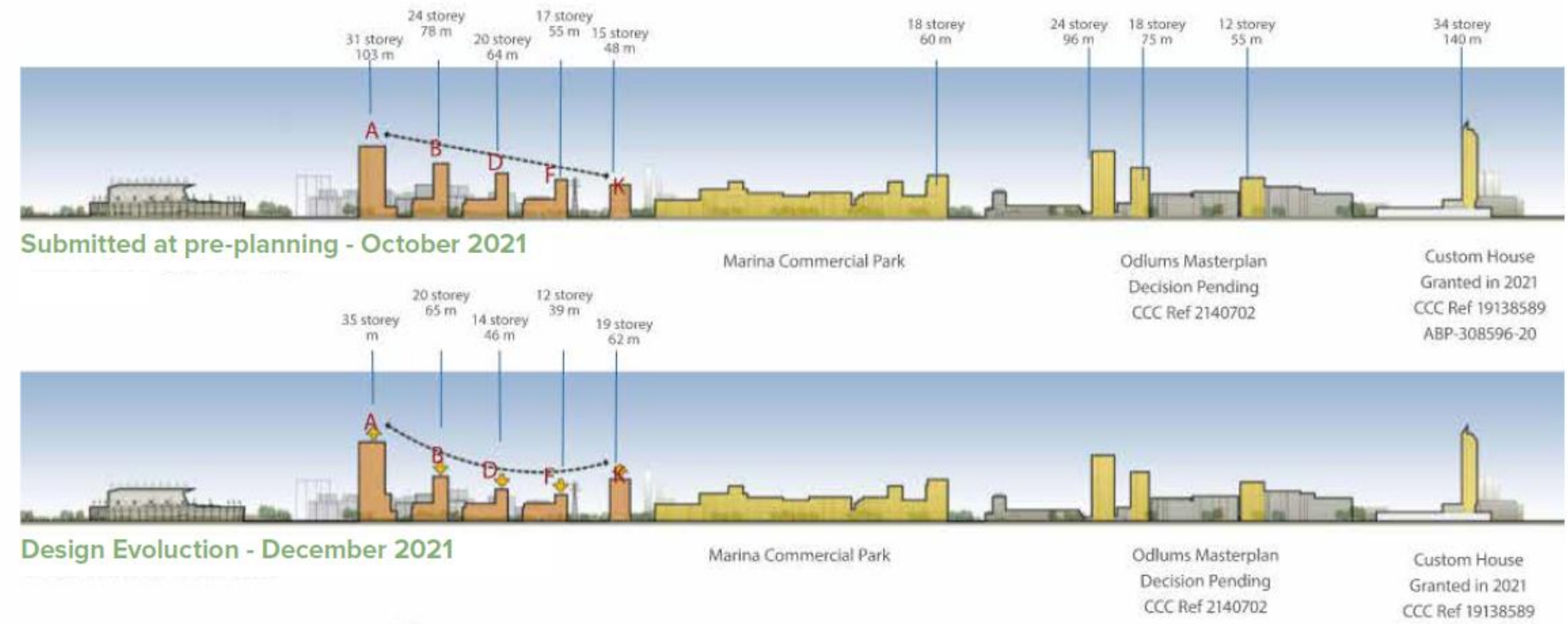

Figure 3.5: Option 5 | Not to Scale | Source: C+W O'Brien Architects

3.4.6 Option 6

Following on from the Tripartite meeting, the design team entered into further dialogue with Cork City Council (following a suggestion from An Bord Pleanála). Option 6 was presented to Cork City Council as part of this process.

There were three key design changes at this stage: the omission of Block K, omission of Centre Road link and inclusion of Block E and neighbourhood centre.

Following on from the Tripartite meeting it was decided to omit Block K from the proposed development and to focus on clarifying and refining the core blocks. The Centre Park link road was also removed to allow for increased flexibility for the future potential development on the lands zoned for schools. As part of this process an indicative school layout was developed to demonstrate how the future school needs could be met while paying respect to the overall masterplan of the proposed development.

The addition of Block E was included to complete the remaining zoned lands between Block C and the lands zoned for schools in the south-west of the proposed site. A number of neighbourhood uses have been positioned in line with the current Cork City zoning in the south side of Blocks C and E fronting onto Centre Park Road.

The heights of the buildings ranged from 8 to 35 stories and provided 917 residential units.

Figure 3.6: Option 6 | Not to Scale | Source: C+W O'Brien Architects

3.4.7 Option 7 (Proposed Development)

Following on from the meeting with Cork City Council, further changes were made regarding the architecture and urban design proposals which led to Option 7 which is the proposed development.

The most significant change relates to the reduction in the proposed heights of the secondary towers on the site and the refinement of the tower façade design. It was agreed that there was a need for a tall building, Block A, at the prow of the site, but there was a preference for the complete removal of the tower elements in the remaining blocks. The material palette has been reviewed and refined to create a cohesive visual environment.

The end result of these changes reduced the total number of dwellings from 2,790 residential units to 823 units.

The changes included:

- Further refinement of Block A's façade to add articulation to it and enhance the tall nature of the building. The proposed design is for a tower with an elegant and sophisticated appearance that will be a strong focal point for the site and the city;
- A reduction in the height of Blocks B, D and F to remove the tower elements with heights being set at 8 to 10 storeys. Setback floors have been maintained on part of the river frontage to allow the massing to be broken down to a human scale;
- A reduction in the height of Blocks C and E to remove the tower elements with heights being set at 6 to 8 storeys. Setback floors have been maintained on part of the Centre Park Road frontage to allow the massing to be broken down to a human scale; and
- The material palettes have been reviewed with changes to the selected bricks to reflect the bricks used in the former ESB Power Station and Odlums Mill buildings to the west. High end materials such as brick, zinc and glass are used throughout the development with bronze feature elements employed to link all the blocks to the tower. The heights of the buildings range from 6 to 35 stories and provide 823 residential units.

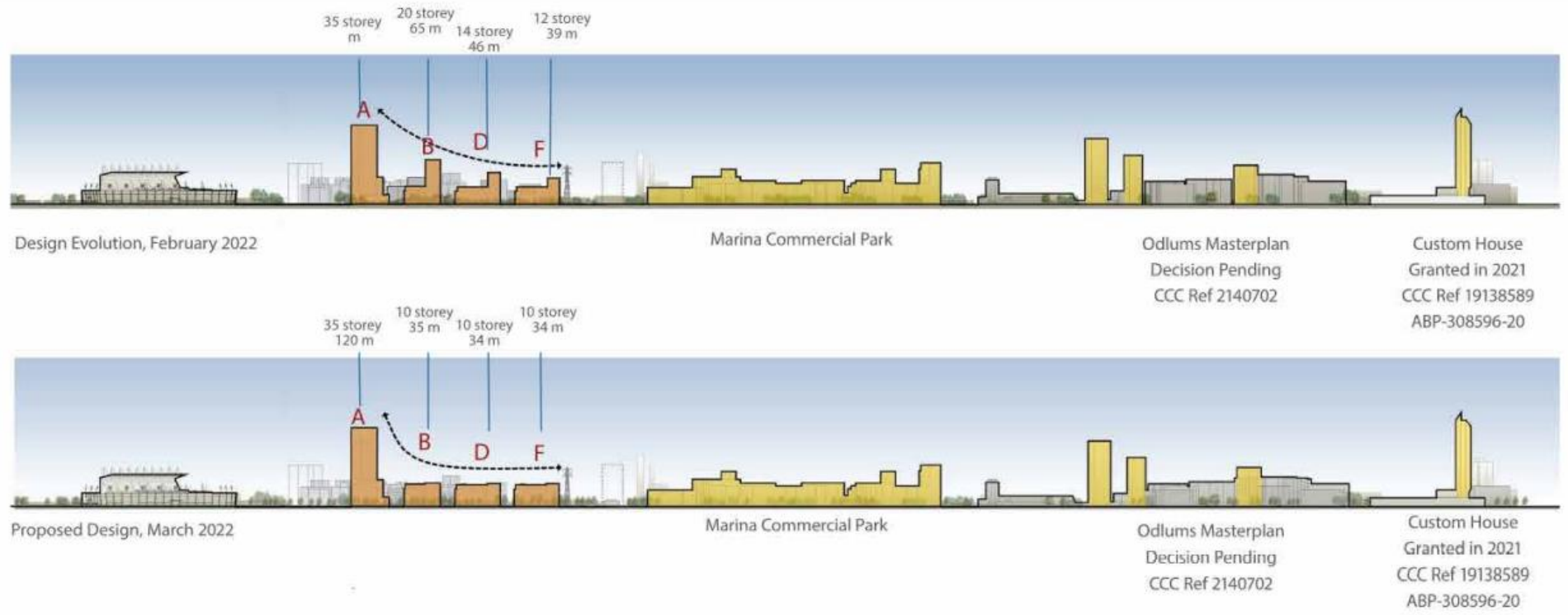

Figure 3.7: Option 7 – Proposed Development | Not to Scale | Source: C+W O'Brien Architects

3.5 Other Alternatives Considered

The proposed development is not of a type which could integrate alternative building technologies into the design. As documented in **Section 3.4** above, the mix of units has been carefully considered throughout the design process. A key driver for this is the commercial viability of the unit types, in the context of the existing and predicted market for a development of this type along with anticipating future demand for housing in a city earmarked for significant growth in the coming years. Another key driver is the feedback and comments received by Cork City Council as part of the Section 247 consultations.

3.6 Comparison of Environmental Effects

The selection of site layouts and final design was primarily driven by the objective to create an attractive and commercially viable development which made optimum use of the site while paying respect to the zoning areas, historic context and potential future development. This selection was also driven by the objective to provide a wide range of tenure types to allow for all dwelling types and consistent with the provision of life cycle homes. This emphasis on creating a thriving hub of creativity, productivity and life is supported by a social and commercial mixed use ground floor environment. This will support quality community and place making on site.

A matrix of likely environmental effects using a colour code system is provided for each of the Options considered. This colour coded system provides an indication of the potential environmental effects; the green indicates the lowest environment effects; the amber zones represents neutral effects and the red zone represents the greatest environmental effects - refer to **Table 3.1.**

Table 3.1: Comparison of Environmental Effects

Alternatives	Effects on Townscape and Visual	Effects on Air Quality and Climate	Effects on Traffic and Transportation	Population and Human Health
Option 1				
Option 2				
Option 3				
Option 4				
Option 5				
Option 6				
Option 7 (Proposed Development)				

3.6.1 Option 1

The layout of Option 1 considered the entire applicant ownership site from the point of establishing a cohesive masterplan. This layout included 11 no. blocks which ranged in height from 8 to 32 stories, the provision of 2,790 residential units and the construction of three access points from Centre Park Road. Although compliant with the relevant local planning policies, from an environmental perspective the layout of Option 1 had the potential to have the most significant effect on Townscape and Visual, Air Quality and Climate and Traffic and Transportation. Given the layout of Option 1 would not deliver on the requirements to provide for the potential future educational needs of the South Docklands in the immediate future and had the potential to make the area demographically unsustainable this Option had the potential to have a significant effect on Population and Human Health.

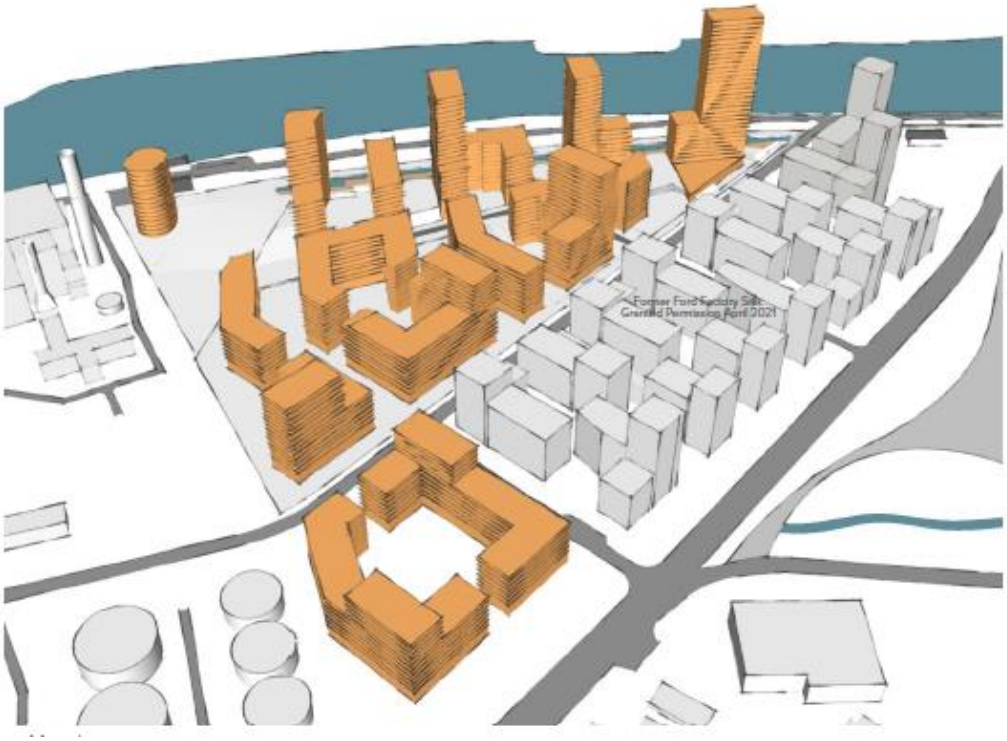

Figure 3.11: Option 1 | Not to Scale | Source: C+W O'Brien Architects

3.6.2 Option 2

Once the relative zoning was taken into account the removal of Blocks G, H and I and the reduction in size of Block E and J was considered to have a more neutral effect on Townscape and Visual. Additionally, the removal and reduction in size of the proposed Blocks would have a more favourable effect on Air Quality and Climate during the construction phase.

With the removal of one access point to Centre Park Road, the proposed 2 no. access points and the 1,515 residential units has the potential to have a negative effect on Traffic and Transportation. The layout for Option 2 also included two

areas zoned for schools which would have a neutral impact on Population & Human Health.

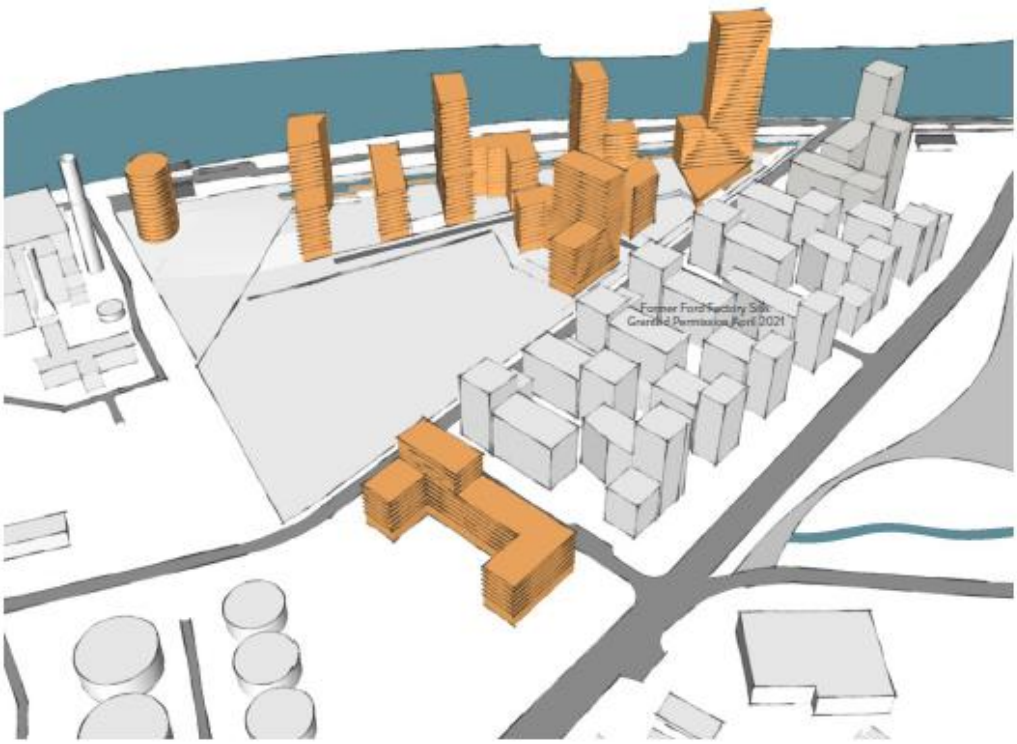

Figure 3.12: Option 2 | Not to Scale | Source: C+W O'Brien Architects

3.6.3 Option 3

The layout of Option 3 included the removal of Block E and Block J and the rotation of Block A to align with the Centre Park Road thereby making it the main promenade and connecting to the City Centre. Such a layout would have a neutral effect on Townscape and Visual and the reduction in the number of residential units from 1,515 to 1,029 would have a neutral impact on Traffic and Transport. Further, Option 3 offered significantly more 3-bed apartments which would have a positive effect on Population and Human Health.

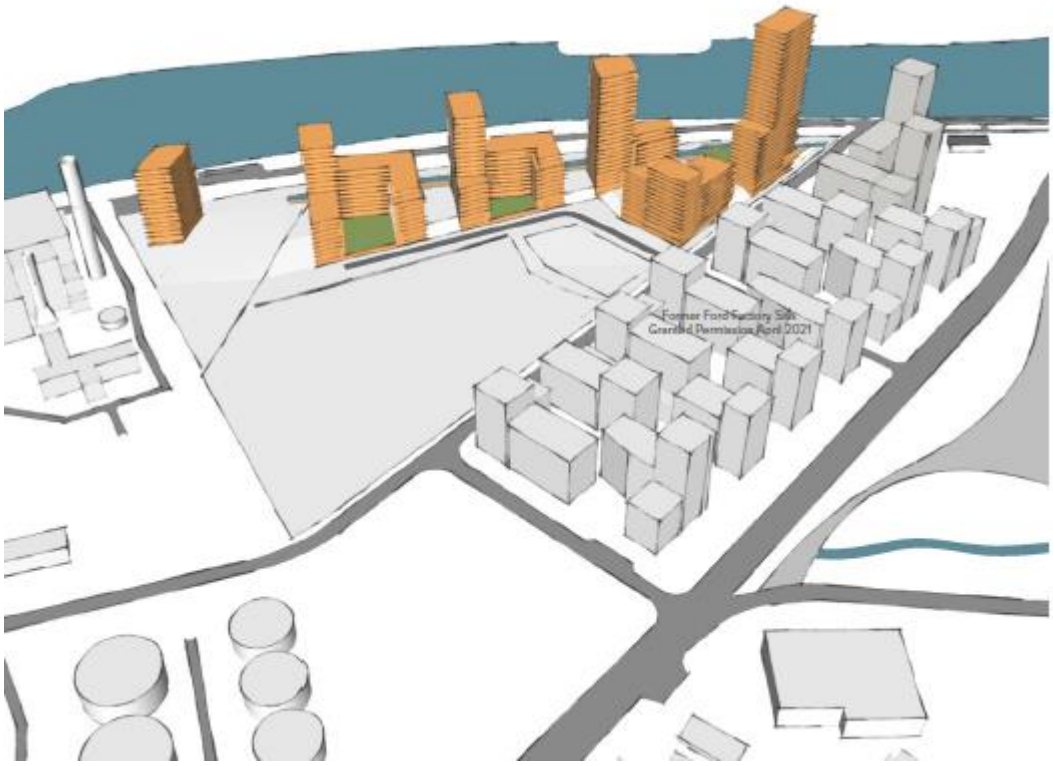

Figure 3.13: Option 3 | Not to Scale | Source: C+W O'Brien Architects

3.6.4 Option 4

Option 4 focused on refining the massing of Blocks within the site, this included creating more of a separation between Block D and F which would allow for greater connection between the site and Marina Park. This layout would have a neutral impact on Townscape and Visual, Air Quality and Climate and Traffic. Option 4 also developed the character areas of the proposed Ecology Park along the waterway, the proposed Village Plaza between Block A, B and C and City Park to the west of the site, all having a positive impact on Population and Human Health.

3.6.5 Option 5 & Option 6

Another element of the design that was developed iteratively and was informed by the desire to ensure a positive environmental outcome were the overall heights of the Blocks and their relationship within the proposed development and the city. Option 5 included the lowering the Blacks, B, D and F whilst Option 6 included the removal of Block K, both having a neutral effect on Townscape and Visual.

Option 6 included for the removal of the Centre Park link road which would have a positive effect on Traffic and Transportation as this removal would allow for increased flexibility for future development on the lands zoned for schools. Option 6 also re-introduced Block E and non-residential support services and amenities to number of neighbourhood centre uses as well as two creches. The neighbourhood centre uses deliver on the zoning requirements and will have positive effects on Population and Human Health in terms of meeting local

services needs and increased social interaction in the community. It will also provide additional employment in the area. The neighbourhood centre is proposed to be key meshing point within the existing area as it faces onto Centre Park Road and the permitted development at the Former Ford Factory site. This will assist in place making and enhance the amenity for future residents of the proposed development as well as other members of the public that will avail of these local services. The convenient location, adjacent to the proposed future location of a stop on the proposed light rail system, will also reduce the need to travel for these services and amenities which are also accessible on foot and bicycle from all parts of the site.

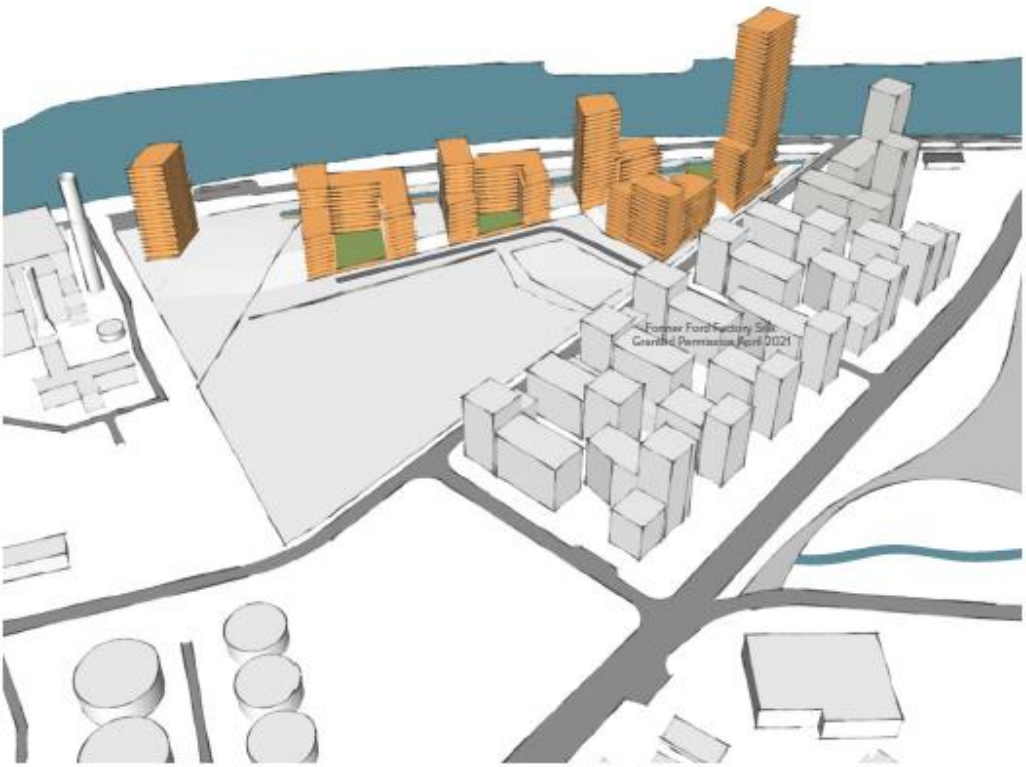

Figure 3.14: Option 5 | Not to Scale | Source: C+W O'Brien Architects

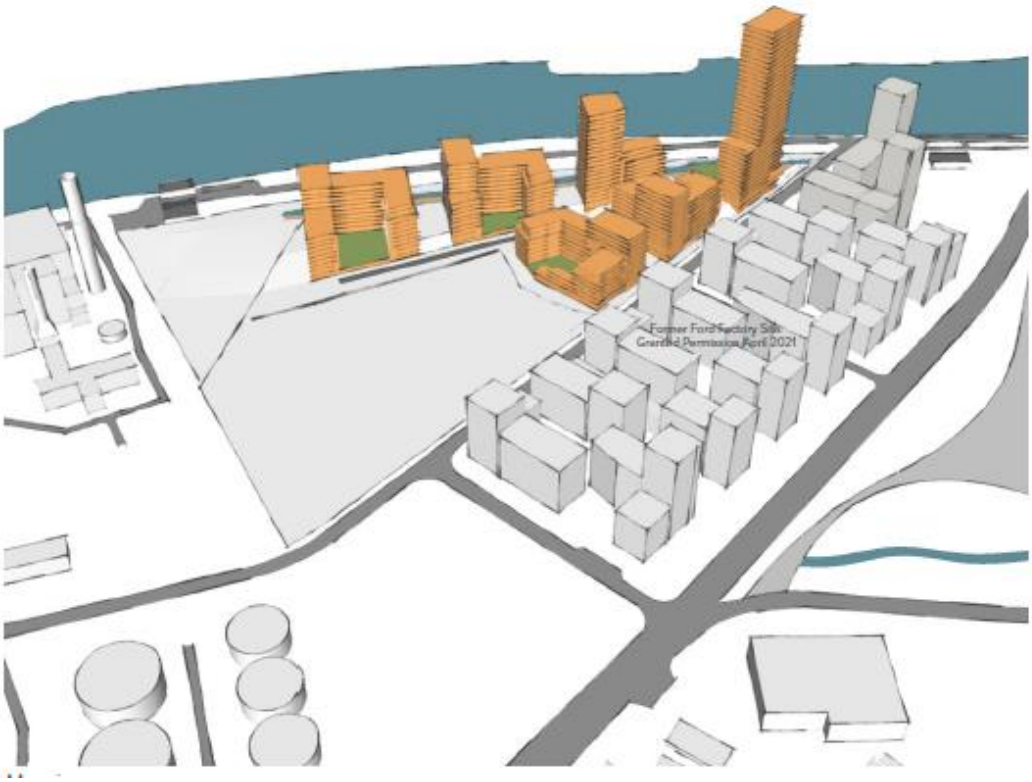

Figure 3.15: Option 6 | Not to Scale | Source: C+W O'Brien Architects

3.6.6 Option 7- Proposed Development

Option 7, which is the proposed development took into account all environmental considerations raised with respect to previous design iterations and ultimately provides for a development that has been optimised to amplify positive environmental effects whilst reducing negative environmental impacts wherever possible.

From a Townscape and Visual perspective the proposed development emphasises the desire for a tall building on the prow of the site while providing a calm, consistent height across the rest of the blocks that reduces the overall visual impact of the proposed development and breaks the blocks down to a more human scale. Given the industrial nature of the site careful consideration has been given to the choice of materials to ensure they respect the historical material palette of the surrounding environs.

Additionally, the landscape strategy for the proposed development has evolved significantly from the initial layouts. The strategy has been influenced by the existing open channel on the north edge of the site, which is being retained and improved to become the heart of a new ecological park between the subject site and the Marina Park. This is complimented by a series of smaller landscape additions such as pocket parks, play areas and green spaces as well as a significant public open space to the west of the site.

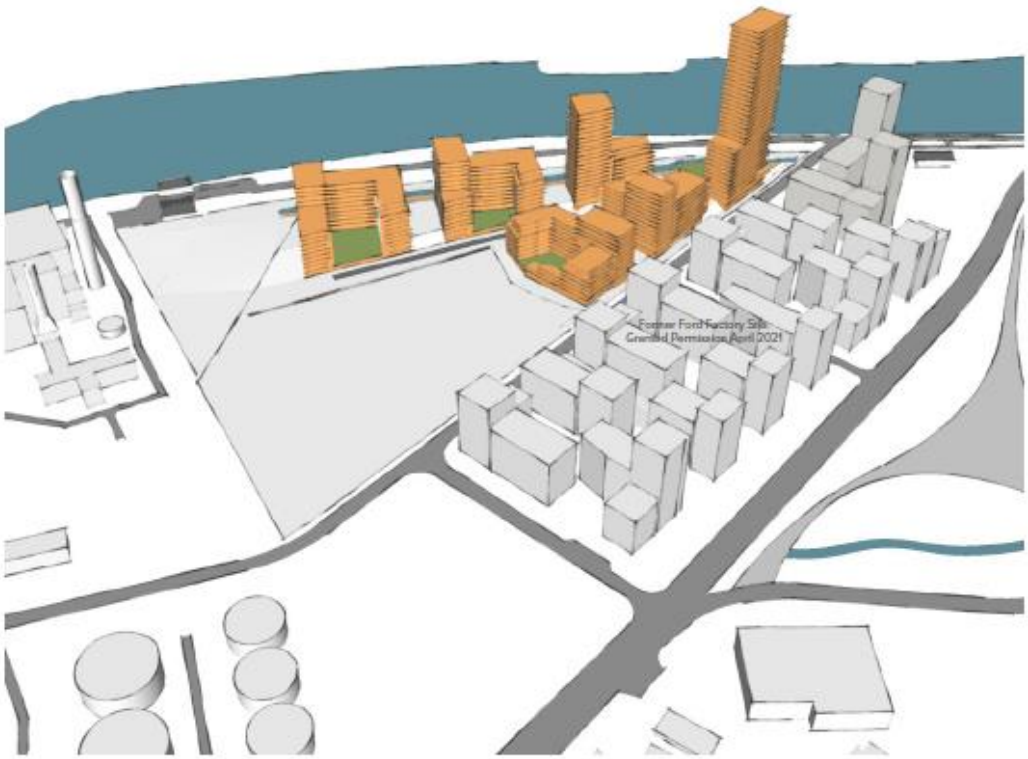

Figure 3.16: Proposed Development | Not to Scale | Source: C+W O'Brien Architects

3.7 Conclusion

The developer considered seven potential configurations for residential, open space and ancillary facilities on the site. Potential environmental effects considered included impacts on townscape and visual, air quality and climate, traffic and transportation and architecture. As summarised in **Table 3.1**, the proposed development includes for a suitable massing of buildings on site, the provision of open spaces and links to existing infrastructure and provides an attractive landscaped development which will be a beneficial addition to Cork City.

3.8 References

C+W O'Brien Architects (March 2022). *City Park South Docklands, Architectural Design Statement*

4 The Proposed Development

4.1 Introduction

This section of the EIAR describes the proposed development as it will be following completion of all construction activities. It includes a description of the proposed site layout and buildings, as well as the existing site and neighbouring land uses. A full description of the construction of the proposed development is presented in **Chapter 5** *Construction Strategy*.

4.2 Site Description

The Former Tedcastles Strategic Housing Development (SHD) site is located in Cork City. It lies on the grounds of the former Tedcastles site which is classified as *Artificial Surfaces – Industrial and Commercial Units* under the EPA Corine 2018 data.

The site is a brownfield site and is not currently in use.

This site lies within the area covered by the Cork City Development Plan 2015-2021, and is zoned as "*Mixed Use Development*", *"Public Open Space"* and "*Neighbourhood Centres*".

4.3 Neighbouring Land Uses

The EPA Corine (2018) data has classified the site of the proposed development as *Artificial Surfaces – Industrial and Commercial Units*.

The existing site is bounded by Centre Park Road to the southeast, by the Marina to the north and by the former ESB power station to the west. The site is a brownfield site containing several storage and ancillary buildings. There are two open drainage channels, one adjacent to the southern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

The proposed development site is approximately 30 metres south of the River Lee which flows eastwards to Cork Harbour.

A number of commercial facilities are located to the west of the site in the Marina Commercial Park along Centre Park Road, including the Office of Public Works (OPW) and the Marina Market amenity.

Páirc Uí Chaoimh GAA Pitch sports and leisure facility is located to the southeast of the proposed development.

The site is bordered by the Marina Greenway (north and east) and Centre Park Road (east and southeast).

The location of the proposed development is shown in **Figure 4.1.**

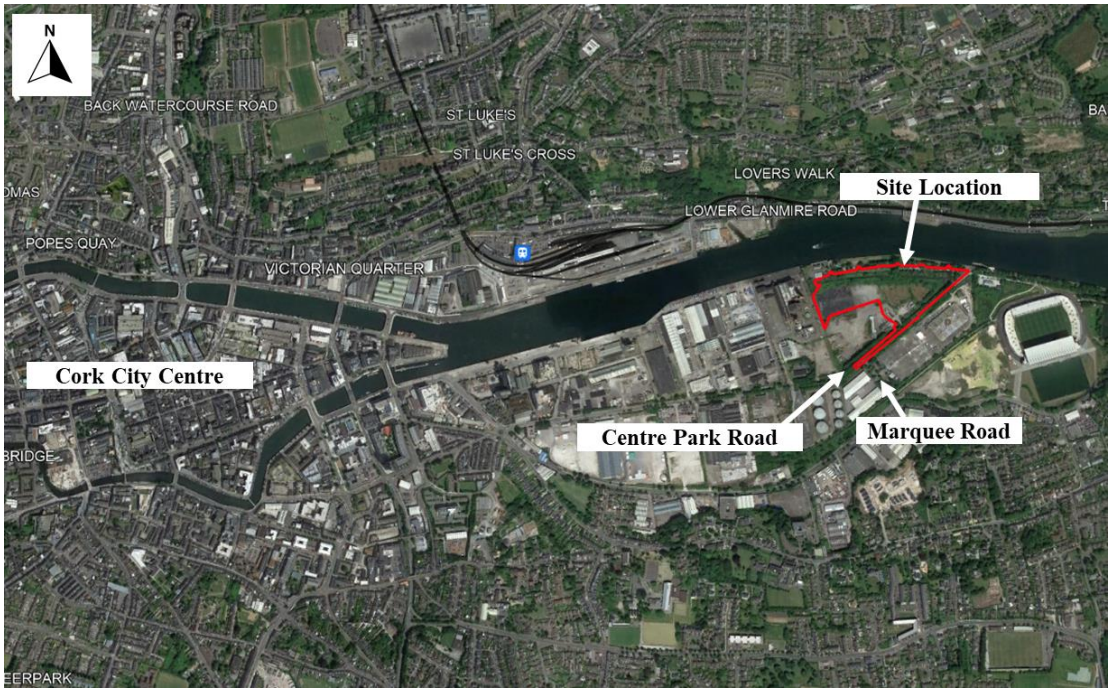

Figure 4.1: Location of the proposed development site | not to scale [Source: Google Earth © 2022].

4.4 Main Features of the Proposed Development

4.4.1 Overview of the Proposed Development

Tiznow Property Company Limited intend to apply to An Bord Pleanála (the Board) for planning permission for a Strategic Housing Development (SHD) with a total application site area of c. 4.86 ha, on lands located at the former Tedcastles site, Centre Park Road, Cork.

The development will consist of:

- The demolition of existing structures and the construction of a strategic housing development of 823 no. apartments in 6 no. buildings ranging in height from part-1 to part-35 no. storeys over lower ground floor level. The development will contain 282 no. 1 bedroom apartments, 414 no. 2 bedroom apartments and 127 no. 3 bedroom apartments.
- All blocks will contain ancillary commercial areas including: 3 no. café/restaurants and 2 no. public houses (1,089 sq m); 7 no. retail units, a convenience retail store which includes the sale of alcohol for consumption off premises, a library, medical centre, pharmacy, post office and dentist (2,484 sq m); and 2 no. childcare facilities (662 sq m). The development will also contain supporting internal resident amenity spaces (2,760 sq m) and external communal amenity spaces at podium and roof terrace levels.
- Block A is part-3 to part-35 no. storeys over lower ground and will contain a retail unit split over 2 no. levels, restaurant, convenience retail store, a public house over 2 no. floor levels, 174 no. apartments and ancillary internal and external resident amenity spaces.

- Block B is part-8 to part-10 no. storeys over lower ground containing a public house, café, retail unit and ancillary resident amenity at ground floor level. There are 95 no. apartments provided at upper levels.
- Block C ranges in height from part-1 to part-6 no. storeys over lower ground with a medical centre at lower ground and ground floor levels, a library over 2 no. floor levels, 2 no. retail units, ancillary resident amenity and 75 no. apartments.
- Block D is part-1 to part-10 no. storeys over lower ground and contains a creche, café/restaurant, retail unit and internal and external ancillary resident amenity spaces at lower ground and ground floor levels. 171 no. apartments are provided at the upper levels.
- Block E ranges in height from part-1 to part-6 no. storeys over lower ground and contains a pharmacy, post office, 2 no. retail units and dentist split over 2 no. levels and 95 no. apartments at upper levels.
- Block F is part-1 to part-10 no. storeys over lower ground and consists of a creche at ground floor level, ancillary resident amenity spaces and 213 no. apartments.
- Pedestrian bridges are provided from the Former Tedcastles Yard to the Marina which includes the removal of 13 no. existing car parking spaces on the Marina to facilitate pedestrian connections to existing pedestrian infrastructure.

The proposed development also provides for hard and soft landscaping, boundary treatments, public realm works on Centre Park Road, car parking, bicycle stores and shelters, bin stores, signage, lighting, sprinkler tank, plant rooms and all ancillary site development works above and below ground. Vehicular access to the proposed development will be provided via Centre Park Road.

An extract of the site plan of the proposed development are presented in **Figure 4.2**. Approximate building gross floor space has been summarised in **Table 4.1.**

Table 4.1: Approximate Building Gross Floor Space

Building	Dwellings	Internal Gross Floor Area (m^2)
Block A	174	22,076
Block B	95	10,694
Block C	75	9,119
Block D	171	17,698
Block E	95	10,897
Block F	213	20,706
Total	**823**	**91,193**

Figure 4.2: Extract of Site Plan | Not to scale.

4.4.2 Block Design

The proposed design includes six residential block buildings (A to F). Each of the blocks has been considered individually and as a part of the whole. Their overall form is staggered both horizontally and vertically to create a dynamic elevation that changes as you move through the development. This play of solid and void is informed not only by the interior layout, but by the location, aspect and orientation of the blocks.

By mixing and matching the selected materials and the various façade features, each block has its own distinctive character while still reading cohesively as a part of the whole. This palette of materials and features has been developed holistically to ensure harmony between each set of elements as they move from block to block.

4.4.2.1 Block A

Block A will be a 35-storey building with 174 dwellings. The tower element will be established as a key character area and focal point for residents and visitors within the proposed development. This will be achieved using distinctly different, yet complimentary elevations to that of the other blocks, and a change in stylistic expression through the introduction of fine detail elements including the use of bronze features in the window boxes and vertical fins of the façade.

Block A will include the following elements:

- Two retail units
- Convenience Store
- Restaurant
- Bar
- Communal lounges
- Co-working area
- Games room.

The building design will achieve 72% dual aspect.

4.4.2.2 Block B

Block B will be a ten-storey building with 95 dwellings. It will also include commercial areas, amenity areas and a café/bar.

The building design will achieve 40% dual aspect.

4.4.2.3 Block C

Block C will be a six-storey building with 75 dwellings. It will also include a neighbourhood centre, commercial units and amenity areas including a games room.

The building design will achieve 53% dual aspect.

4.4.2.4 Block D

Block D will be a ten-storey building with 171 dwellings. It will also include amenity areas including co-working areas, a games room and a lounge, a café/ restaurant, a creche and external play area, gym and retail areas.

The building design will achieve 34% dual aspect.

4.4.2.5 Block E

Block E will be a six-storey building with 95 dwellings. It will also include two retail units, workspaces and neighbourhood space.

The building design will achieve 45% dual aspect.

4.4.2.6 Block F

Block F will be a ten-storey building with 213 dwellings, a creche and external play area.

The building design will achieve 37% dual aspect.

4.4.3 Commercial Spaces

It is intended that the commercial spaces will include the following:

- Dry Cleaners
- Clothes Boutique
- Home Decor Shop
- Gym/ Fitness Centre for use by residents
- Off - License
- Chocolatier
- Book Shop
- Convenience Store
- Nail Bar
- Hair Salon.

4.4.4 Neighbourhood Centres

Neighbourhood centres will include pharmacy, medical centre, dentist, post office and library facilities.

4.4.5 Food + Beverage

Food and beverage will include cafes, restaurants and bars.

4.4.6 Amenity Space

4.4.6.1 Communal Facilities and Spaces

The provision of communal facilities and amenities will contribute to the creation of a shared community environment. There will be a large range of potential uses for these proposed communal amenity spaces. The following amenities are provided for within the proposed development design:

- Communal gym;
- Movie / Games room;
- Event / Co-Working / Incidental meeting space; and
- Concierge and reception area.

These communal spaces are located on the ground floor within the proposed development with a crèche spaces designed to first floor podium level. It is envisioned that these spaces will encourage interaction and a sense of community among the residents.

4.4.6.2 Open Communal Amenities

The proposed development will provide well-designed communal open amenity space. This space will be a secured area and will allow for all types of mobility within the residential users such as children and the elderly. These spaces will be provided with adequate daylight levels in order to function as a usable space.

The proposed development will contain an open landscaped communal garden / courtyard space at podium level. These spaces will provide the residents with active amenity spaces such as, but not limited to the following:

- Child playground facilities;
- Open grass space;
- Landscaped seating areas; and
- Communal gardening space.

The buildings proximity to the local public amenities such as the Marina Park and water sports clubs will offer a much wider range of spaces, walking routes and activities for the residents to avail of.

4.4.7 Public Realm

The proposed site layout maximises the permeability and connectivity to and through the site, prioritising the quality of open space within the development.

The public realm will include the following elements:

- Open spaces;
- An ecology park including bridges;
- Neighbourhood centre and Centre Park Road;
- Village Plaza;
- Pocket parks;
- City Park; and
- Roof gardens.

4.4.7.1 Open Space

The proposed development will provide approximately 4,695m^2 of public open space within the proposed development design. It will also include 5,452m^2 of communal outdoor space (including podium and roof terraces).

4.4.7.2 Village Centre

A village centre will be provided on the ground flood, level with Marina Park, under the base of the Tower (Block A) as well as Blocks B and C. These three blocks form a triangular zone which will be used to create a public centre for use by the residents of City Park, as well as other developments in the locality (including future schools and members of the public who use the surrounding open spaces and Pairc Uí Chaoimh).

4.4.8 Crèches

The Guidelines for Planning Authorities on Childcare Facilities issued in June 2001 recommend that new housing areas be provided with childcare facilities at a standard of one facility with 20 spaces for every 75 homes. Based on this, the proposed development should include a crèche for approx. 130 Children.

The proposed development contains two dedicated childcare facilities each with a total internal floor area of approximately 662m² and an additional 247m² of external play space. The proposed crèches are more than suitably sized in order to meet the demand of the development. The crèches will be located in Block D and Block F.

4.4.9 Car and Bicycle Parking

Car parking will be provided through the provision of undercroft spaces for residents and surface spaces for visitors. Bike Parking will be provided in excess of the requirements. In total, there are 2,130 bicycle spaces incorporated in the design. This includes 1,718 secure residential cycle spaces and 412 surface visitor cycle spaces.

4.4.10 Site Infrastructure

4.4.10.1 Surface Water Drainage

It is proposed to collect all surface water from the proposed development within a new dedicated surface water network. A network of primary carrier pipes will be provided, located predominantly within the development roads. Proposed roads and part of the proposed buildings will discharge to this pipe network with this pipe network ultimately discharging to existing open channels located adjacent to the site. Parts of the proposed buildings will also discharge directly to the open channels.

Where possible external levels will be designed to encourage surface water runoff towards soft landscaping features to reduce peak runoffs, provide additional attenuation and improve water quality.

There will be a requirement to make amendments to the existing channels where the proposed development interfaces with them. This will include re-profiling the channel located to the north and culverting sections of the channel to the south. The re-profiling of the northern channel will ensure the existing levels and storage volumes are maintained as per the CSDLS. Where the southern channel is proposed to be culverted, the culvert size will be agreed with CCC to ensure it meets the requirements set out in the CSDLS.

4.4.10.2 Foul Water Drainage

It is proposed to collect all foul water from the proposed development through a dedicated foul sewer network. There is an existing Irish Water sewer along Centre Park Road, east of the junction with Marquee Road. It is proposed that one connection point to this existing sewer will be made from the new foul water drainage network. It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

4.4.10.3 Proposed Potable and Fire Water Supply Strategy

It is proposed that a new potable watermain will be provided to serve the proposed development with a single new connection from the existing watermain located in Centre Park Road. Downstream of the connection point a bulk water meter will be

installed as per Irish Water requirements. The water metering strategy for the individual buildings within the site is to be confirmed and agreed with Irish Water during detail design. At this stage it's assumed water meter rooms to serve individual blocks will be provided. External fire hydrants are expected to be served from the potable water network. The location/number of fire hydrants shall be confirmed during the fire certification stage.

4.4.11 Sustainability

The following sustainable solutions will be implemented where relevant and practicable for the proposed development:

Building Energy Rating (BER) Certificates

A Building Energy Rating (BER) certificate will be provided for each apartment for the proposed development, which will provide detail of the energy performance and carbon emissions associated with each of the dwellings.

The design team intend to achieve building envelope and Heating Ventilation and Air Conditioning (HVAC) performance that is a significant improvement on the statutory requirements contained in the Irish Building Regulations. The design team will achieve Technical Guidance Document (TGD) Part L 2019 Nearly Zero Energy Buildings (NZEB) for the proposed development. A preliminary Dwelling Assessment Procedure (DEAP) analysis has been undertaken on the residential units within the development to inform the design strategy, demonstrate compliance with the domestic Building Regulations Part L and to ensure that the targeted Building Energy Ratings (BERs) of A2 (or better) will be achieved.

Fabric Energy Efficiency

In accordance with TGD Part L 2019 (current edition for Dwellings) the following checks are made to reduce the consumption of fuel and associated carbon emission and operating costs:

a) A compliance check will be carried out to ensure that the average U-value complies with the maximum permitted by the TGD standard;
b) Maximum elemental U-value Check will be carried out using SEAI approved software (DEAP);
c) The Energy Performance Coefficient (EPC) for the proposed dwellings will be calculated to ensure it is less than 0.3;
d) The Carbon Performance Coefficient (CPC) for the proposed dwellings will be calculated ensure it is less than 0.35;
e) Minimum level of renewable energy technology to be provided check will be carried out;
f) TM 59 Overheating analysis carried out on apartments; and
g) Airtightness to be under 3m³/m²/hr at 50Pa where Mechanical Ventilation is installed.

Energy Labelled White Goods

High standard white goods with high energy efficiency ratings will be supplied to all units to reduce the amount of electricity required for occupants. It is expected that appliances of the following ratings will be installed:

- Oven – A+
- Fridge Freezer – A+
- Dishwasher – AAA
- Washer / Dryer – B.

External Lighting

The external lighting for the development has been designed and specified with high-end, high efficiency LED light fittings throughout with required colour temperatures in accordance with the ecology constraints. Automatic daylight lighting control (automatic dimming) complete with combined Passive Infrared (PIR) detection will be specified where appropriate. This will minimise energy consumption and associated carbon emissions.

Electric Car Charging Points

It is the design intent to specify electric car charging points within the carpark, with electrical infrastructure provided to all parking spaces for the future upgrade to electric charging. This will offer an opportunity to reduce the carbon output of the transport sector, as they emit zero exhaust pipe emissions. Providing electric car charging points will encourage the buildings users towards this sustainable mode of transport.

Energy performance strategy commercial units

The commercial units will be completed to the shell and core stage. This means that the HVAC plant will be provided by the future tenants during the Fit-Out stage. The likely strategy will include heating and cooling being provided by Variable Refrigerant Flow (VRF) units, natural ventilation utilised where possible and artificial lighting provided by means of an energy efficient LED lighting design. Electrical and water connections will be provided to all retail units to enable the future Fit-Outs to be completed.

Exhaust Air Heat Pumps

The use of all-in-one units (heat recovery ventilation, heating and water) will be suitable for apartments that will be at a high level of airtightness and low heat loss. An Exhaust Air Heat Pump (EAHP) will also be considered as it extracts heat from the exhaust air and transfers the heat to domestic hot water and/or hydronic heating system (underfloor heating, radiators). These options allow for low emission heating system but are also future proofed for future grid improvements.

Low Energy LED Lighting

The design has allowed for lighting provided by LED luminaires. Automatic daylight lighting control (automatic dimming) complete with combined PIR detection will be specified where appropriate. This will allow for significant

electrical energy savings, as well as increasing the occupant's exposure to natural daylight – thereby promoting a healthier environment.

Biodiversity & Planting

The landscape spaces will be planted with a variety of species suited and adapted to the Irish climate, including a proportion of native plants. Pollinator-friendly plants will also be included to enhance insect populations. By encouraging wildlife, this will improve local biodiversity and animate the amenity spaces and wider urban landscape. Planting will also provide a contact with nature in the urban environment for the residents, and will have strong aesthetic characteristics, including tactile and aromatic qualities.

This will promote ecological enhancement of the local area and contribute to the wider environmental quality of the city, ultimately creating improved air quality and sensory environment.

Materiality

The materials selected are of a high quality and will enhance the feel and quality of the spaces. Materials are robust and will be sourced sustainably where feasible, with low-carbon products preferred. This will allow for environmental benefits through the sourcing and longevity of the specified landscape elements.

Maintenance and Management

Maintenance and management operations will follow sustainable practices, encouraging natural growth habits, and minimising chemical inputs. Plant species have been selected that will not require mechanical irrigation, which can be wasteful, as they are adapted to the Irish climate.

Roof Gardens

Roof gardens/ terraces will be incorporated into the proposed development design at Blocks A, C, D, E and F.

5 Construction Strategy

5.1 Activities, Duration and Phasing

It is intended that the building will be constructed as an in-situ reinforced concrete frame, however, pre-cast elements may also be used, depending on design development. The proposed development is anticipated to be constructed from East to West in 4 phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase.

The construction sequencing for each phase of the development is described in chronological order as follows:

- Phase 1: Lower Ground Floor to Podium Level (Blocks A, B, C, D, F)
  - Phase 1A: Enabling Works Phase
    - Phase 1A.1: Site Establishment (full site)
    - Phase 1A.2: Demolition and Site Clearance (full site)
    - Phase 1A.3: Utility Diversions (full site)
  - Phase 1B: Earthworks, Foundation and Podium Structure Works
- Phase 2: Blocks A, B & C (344 units)
  - Phase 2A: Superstructure Works
  - Phase 2B: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 2C: Landscaping Works.
- Phase 3: Blocks D & E (266 units)
  - Phase 3A: Earthworks, Foundation and Podium Structure Works (Block E)
  - Phase 3B: Superstructure Works
  - Phase 3C: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 3D: Landscaping Works.
- Phase 4: Block F (213 Units)
  - Phase 4A: Superstructure Works
  - Phase 4B: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 4C: Landscaping Works.

It is assumed construction will commence within 4-8 months of a final planning grant. This assumption relies on tender strategy, design progression and market factors, etc.

The specifics of the durations and sequence of works will be further informed by the appointed contractor during the tender period in due course. In the event that these are changes to the phasing of the proposed development, no material changes to the identified impacts in this EIAR are envisaged.

The phasing plan is outlined in **Figure 5.1.**

Figure 5.1. Phasing Plan | Not to scale

5.2 Site Establishment

The site establishment works, to be carried out by the appointed Contractor, will include erecting perimeter hoardings around the site, construction of the site compound and storage areas, forming site access and egress points, enacting the traffic management plan, providing site security and erecting cranes. These items are discussed further below.

5.3 Demolition and Site Clearance

5.3.1 Pre-Demolition and Condition Surveys

One structure currently remains on site which will require demolition.

A pre-demolition survey will be undertaken to provide sufficient information for the Main Contractor to prepare a detailed Demolition Management Plan (DMP), giving methodology and work sequences for the demolition phase.

This survey will inform the Design Team and Specialist Demolition Contractor of the structural framing, floor and wall construction of the remaining structures onsite so that measures can be put in place to ensure the safe deconstruction of these structures and to avoid uncontrolled collapse of a part of the structure.

This survey will also provide information on any non-structural elements that will form part of any initial soft strip out works. This information will also assist in the preparation of a detailed Waste Management Plan for these waste streams.

This survey will be accompanied by a detailed risk assessment to identify potential hazards, and necessary mitigation measures for safe demolition.

Dilapidation surveys will also be carried out in all adjoining properties, roads and footpaths and issued to the property owners and local authorities in advance of the demolition and excavation works.

5.3.2 Asbestos Audit

An asbestos audit will be undertaken on all structures to be demolished prior to demolition. Asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

5.3.3 Soft Strip Building Demolition

Any loose internal fixtures and fittings such as furniture, kitchen fittings and other unattached items shall be removed by hand and segregated on site, where practical, into skips to allow for collection and transport by an approved waste carrier. The approved Waste Contractor will provide appropriate skips to facilitate on-site segregation of waste materials.

Any fixed soft stripped material such as plasterboard, wood panelling and other waste materials will be removed by hand, brought to segregation points and

loaded into the skips and subsequently removed from site in skips or using haulage trucks. An exclusion zone shall be set up within the works area to provide a safe and operational area for skips and demolition waste and to prevent operatives from entering.

5.3.4 Structural Demolition

The strategy for structural demolition must ensure de-construction is undertaken in a carefully pre-planned sequence, using methodologies that ensure that buildings under demolition and any adjoining buildings are not affected in any way, weakened or de-stabilised during the works. All demolition works will be carried out with due consideration toward mitigating noise and vibration pollution to minimise disturbance to the surrounding area. Dust suppression systems, such as misters, will be used during the demolition operations, keeping air pollution to a minimum.

One structure currently remains on the site.

The proposed development includes the demolition of this structure, which is approximately 269 m^2, as identified in **Figure 5.2.**

Figure 5.2: Existing Buildings and Structures | not to scale

To comply fully with works specification, planning conditions, environmental and safety requirements and adhering to demolition best practice, the works should be undertaken by adopting a methodology that combines the following operations:

- Demolition by hand or using hand-held tools:

This method will be adopted in all sensitive locations. These works can be undertaken from, crash decks or from mobile elevated work platforms.

- Saw cutting and lifting:

  This method will be adopted in sensitive locations. These works can be undertaken from crash decks or from mobile elevated work platforms.

- Mini excavators and breakers:

  The use of mini excavators and breakers may be adopted in constricted locations around the site where larger machinery may not be appropriate.

- Hydraulic concrete breaking equipment:

  The use of breaking equipment will be employed to break out ground floor slabs and any external areas of hard-standing, such as car parking areas. The breaker will typically be fitted to a 20T excavator but there may be some hand-held tools utilised in isolated or constricted locations.

5.3.5 Site Clearance – Asbestos Survey

There may be unknown material on site that are presently not accessible due to overgrowth. Testing of material may be required prior to site clearance for the presence of asbestos or any other hazardous material.

5.4 Utility Diversions

Where the excavation strategy or temporary works require any diversions of local services or utilities within the site perimeter, this will be undertaken strictly with prior agreement of the relevant service providers and authorities. All diverted utility connections are to be put in place in advance of construction works.

5.5 Podium Structure Works

5.5.1 General

The proposed development requires the construction of single a storey podium structure to serve each of the apartment buildings. Level 00 finished floor level is +5.40mOD. The podium structures underpin the entire footprint of the buildings, and support podium landscaped courtyards and open spaces between the buildings.

5.5.2 Earthworks

The existing topography of the site is slightly sloped with levels generally decreasing in elevation from approximately +5.3mOD at the northern boundary to +0.2mOD at the southern boundary.

An assessment of the presence of contaminated soils was carried out in accordance with the Environmental Protection Agency and international guidance. The investigation included a preliminary assessment of the site history and a site

inspection to highlight potential sources of contamination. Subsequently a ground investigation was carried across the site at 50m spacing sufficient to identify any potential areas of contamination. Samples were collected every 1m from the made ground and a representative subset were sampled. The investigation considered risks to human health, groundwater, the surface water channels and the River Lee.

The ground investigation for the site has found in general that the site stratigraphy is as follows:

- Made ground (comprising of black sandy gravelly silt / silty sandy gravel with cobbles and boulders and typically 10% to 20% anthropogenic materials including brick, concrete blocks, pieces of glass and ceramics) from approximately 2.0 metres above Ordnance Datum, (mOD) up to -1.1mOD,
- Black becoming grey soft silt (reclaimed and natural) from approximately 0.4mOD up to a depth of -2.2mOD.
- Sand/Gravel from -0.2mOD and extending for several 10's of metres under the site.

During the construction of the foundations, site services and attenuation tanks the site level shall be lowered to approximately -1.30mOD. This will require the excavation of approximately 73,022m^3 of soil and hardstanding. Excavation will remove made ground and some of the silts and potentially some of the sand/gravels. This will require a dewatering strategy. Results indicate that the groundwater in the sand/gravel has an overall moderate quality, however there are elevated concentrations in some determinants which are likely linked to an off-site sources and background concentrations. The water quality in the drainage channels surrounding the site indicates brackish conditions with some elevated metals. A water sample collected from the drainage channel next to Centre Park Road detected per- and poly-fluoroalkylated substances (PFAS).

Once the foundations are constructed, fill materials will be required to build up the site to the required levels, in addition further fill will be required for under hard and soft landscaping areas.

Based on the results of the ground investigation, the soil between 0mbgl to 2mbgl is of poor quality in terms of risk to human health, with the presence of asbestos, polycyclic aromatic hydrocarbon (PAH), elevated metals, and benzene and toluene amongst others. Below 2mbgl, no significant risks were noted in relation to contaminants in the soil.

Water quality monitoring carried out at the site indicated that the water quality in the made ground could impact on the water quality in the drainage channels surrounding the site. However, there is no evidence that soil and water are impacting the water quality in the River Lee.

The soil to be excavated has been shown to contain asbestos fibres. The soil may have suitable engineering properties that could make it useful as a fill material. A detailed analysis shall be undertaken to consider the potential options for reuse of the soil. Should this highlight potential options and subject to any legal requirements such as environmental licensing, the contaminated soil will be

treated and retained on site for re-use where possible. Suitable potential re-use options include between pilecaps, under hard and soft landscaping areas such as public open space. This is likely to comprise a sustainable solution but will likely require some offsite disposal for excess soils.

Any made ground soil disposed of offsite (with or without treatment) is likely to be classified as either non-hazardous waste with trace level of asbestos or hazardous waste and will be exported and disposed of outside of Ireland.

Samples from the ground investigation are to be compared to the limits defined in the EU Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II to Directive 1999/31/EC, referred to as the Waste Acceptance Criteria (WAC). In addition, the results are to be compared to the contents of the EPA Hazardous Waste Classification Paper Tool (version WM3 V1) using the online tool HazWaste Online to determine if the materials are considered hazardous. Any natural soil and stone which has not been impacted by contamination will be considered for reuse on or offsite in preference to disposal.

The assessment criteria used to categorise the soils are based on Irish and European standard criteria. The operators of landfills may use their own discretion to set their own limits for materials.

Refer to the Construction and Demolition Resource and Waste Management Plan (**Appendix 5.2**) for details of the management of exported soils from site.

5.5.3 Foundations

It is proposed that the buildings are founded on Continuous Flight Auger (CFA) piles under pile caps. The piles shall be installed using a method that does not compromise the integrity of the low permeability silt layer between the made ground and the gravel. Where it is necessary for pile caps to penetrate the silt layer, the foundations will be detailed so that no new flow paths are created and that an equivalent aquitard function is maintained. This may be achieved by the use of a lean-mix fill or grout injection into the gravel to replace the low permeability layer around the foundations. The final pile length will be the subject to the detailed design but are likely to be advanced a significant distance into the gravel. A piling mat will be required at formation level to support the piling rig.

5.5.4 Ground Floor Slab and Substructure

The Ground Floor comprises of reinforced concrete suspended slab, spanning onto the pile caps, subject to design development. The exact depths of excavation required for the ground floor and foundation structures varies, depending on existing ground level, however it is generally in the region of 3-3.5m from existing ground level.

As part of the podium structure works the outer walls and first rise of internal core walls and columns will be constructed in in-situ concrete.

5.5.5 Podium Level Slab

Due to differing structural grids at superstructure and Ground Floor and substructure, a transfer structure is required at Level 01 (Podium Level) under each of the blocks. It is intended that this is to consist of a reinforced concrete flat slab, the thickness of which is dependent on the height of building supported. Structure supporting all other areas at Podium Level, including hard and soft landscaping areas will consist of flat slab construction.

5.6 Superstructure Works

It is envisaged that the proposed buildings are all to be a combination of in-situ and / or precast concrete construction.

Stability will be achieved through central RC cores in each building around stair and lift cores, extending to ground floor level, and diaphragm action of the slabs.

The concrete framing for all buildings will be constructed on a sequential basis with concrete pumping envisaged. The floor slabs will be supported using temporary props as necessary, to ensure the stability of the structure at all times during the construction process. Concrete will be delivered to site using a ‘just-in-time’ approach. This will help mitigate against traffic congestion as well as reducing the amount of space required for material storage on site.

5.7 Façade and Fit Out Works

Once the building structure has been well advanced, the completion of the facades and the installation of mechanical and electrical services and building finishes will commence.

It is proposed that fit-out, handover and occupation of the buildings is carried out on a phased basis. The proposed phasing may be subject to change as the project progresses.

Final drainage and utility connections will be completed towards the end of the construction programme for each phase. Where it is necessary for drainage or utilities to penetrate the silt layer, the drainage and utilities will be detailed so that no new flow paths are created and that an equivalent aquitard function is maintained.

This may be achieved by the or use of a lean-mix fill or grout injection into the gravel to replace the low permeability layer around the drainage and utilities.

5.8 Landscaping Works

Once the building fit-out, finishes and underground utility connections are substantially complete at the end of each construction phase, the completion of hard and soft landscaping of the Level 01 Podium areas and the Level 00 ground

level areas will commence, including all ties-ins to existing and surrounding roadways and paths and cycle lanes.

5.9 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

- Marina Park Development: Phase 2 (Design stage)
- Proposed BRT / LRT Corridor (Route selection stage)

The appointed Contractor will liaise with Cork City Council and any contractors appointed for the above works as required, to ensure co-ordination of construction works in the area.

5.10 Employment and Welfare

Throughout the construction phases there will be some variation in the numbers working on site. It is anticipated that the average number of construction workers employed during the construction phases including supervision will be in the region of 200, with a peak of up to 350 to 400 personnel at the most intensive phases.

Temporary offices and other construction facilities will be installed on site for the construction phase. All temporary units will be of a high standard, as a minimum in accordance with statutory regulations.

The co-ordination of people and materials on-site will be one of the key activities throughout the construction phases. A Construction Traffic Management Plan will be put in place prior to commencement of the works. This plan will designate the traffic routes, timings and parking arrangements.

Typical working hours during the construction phase will be:

Start	Finish	
07:00	19:00	Monday - Friday
07:00	16:30	Saturday

It is proposed that hours of work outside these times will be by agreement with the local authority.

5.11 Likely Significant Effects

5.11.1 General

This section addresses potential construction phase effects. Potential construction phase effects are also addressed in other chapters of this EIAR, as highlighted below. Potential effects represent the worst-case scenario in the absence of mitigation.

5.11.2 Do Nothing Scenario

If the proposed development did not go ahead, the proposed development site would continue to be underutilised and the condition of the site would likely deteriorate.

5.11.3 Dust and Debris

Construction activities have the potential to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with ambient conditions, including rainfall, wind speed and the distance to potentially sensitive locations.

There is potential for dust emissions from construction activities associated with the construction of the new buildings. In order to minimise dust nuisance, the developer will ensure that a dust minimisation plan will be implemented during the construction period, as outlined below in **Section 5.12.3** and **Section 5.12.4.**

5.11.4 Contaminated Soil

Contaminated soils will be excavated, managed and disposed of in full accordance with all relevant legislation and guidance, to ensure no significant risk to the surrounding population. Refer to **Chapter 13** *Land, Soils, Geology and Hydrogeology*.

5.11.5 Noise and Vibration

No significant noise and vibration effects are predicted during construction, and further details of this, with associated mitigation measures are addressed in **Chapter 9** *Noise and Vibration* of this EIAR.

5.11.6 Soils, Geology, Surface Water and Groundwater

The likely effects on land and soils and water during construction and associated mitigation measures are addressed in **Chapter 13** *Land, Soils, Geology and Hydrogeology* and **Chapter 14** *Water* respectively. With appropriate mitigation measures and standard construction environmental controls, no significant adverse effects on land, soils or water are predicted at construction stage.

5.11.7 Other Likely Significant Effects

Other effects arising from the construction phases of the project are addressed within the relevant sections of this EIAR. Townscape and visual impacts are addressed in **Chapter 12**. The assessment of likely effects on air quality during construction is addressed in **Chapter 8** *Air Quality and Climate*. There is an evaluation of the effects on biodiversity in **Chapter 10**. The evaluation of construction effects on archaeological, architectural and cultural heritage is addressed in **Chapter 11.**

5.12 Construction Mitigation Measures and Monitoring

5.12.1 General

It is the policy of the developer to minimise the environmental effects of the construction activities. The construction planning will be geared towards keeping disruption and nuisance to a minimum on-site and off-site.

The developer will liaise with neighbours and the general community during the construction phase to ensure that any disturbance is kept to a minimum.

The contractor will implement a neighbour information and liaison programme to ensure that all anticipated nuisances will be minimised, and that the construction activity will have the lowest possible effect on neighbours.

The developer will ensure that the appointed construction contractor will further develop and implement the construction environmental management plan (CEMP). This will include as a minimum, the implementation of regulatory and best practice requirements as well as all relevant measures outlined in the EIAR. The CEMP is included as **Appendix 5.1** to this EIAR.

5.12.2 Traffic and Transportation

5.12.2.1 Site Access

It is envisaged that access to the development site will be from Centre Park Road. The exact location is to be determined and agreed with Cork City Council as construction phasing develops, but it is expected that the site access will be from Centre Park Road.

Figure 5.3: Construction Vehicle Access Strategy | not to scale

5.12.2.2 Construction Traffic Mitigation

General Construction Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- During peak hours, ancillary, maintenance and other site vehicular movements will be discouraged.
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues.
- HGV routes to and from the site will be developed in agreement with Cork City Council and with the objective of minimising the impact in the local area for residents and businesses. HGV trips to and from the site for construction will only be via Centre Park Road from the Victoria Road Roundabout.
- Parking restrictions and management measures on adjacent streets/residential areas will be reviewed and implemented as necessary in agreement with the local residents and CCC to avoid any site parking overspill issues.
- It is likely that the unused portions of the site will be available as a compound/parking area, but the amount of construction personnel parking

available here will be limited. The contractor will be required to promote travel by sustainable modes of transport, Refer to Section 0 of the CEMP (**Appendix 5.1**).

Hours of Working

Construction operations on site are proposed to be between the hours of 07:00 and 19:00, Monday to Friday, and 07:00 to 16:00 on Saturdays. Similarly, deliveries of materials to site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 08:00 to 16:00 on Saturdays.

The construction shift times will ensure construction traffic will have limited impact on the peak periods of 07:30-08:30 in the morning and 17:15-18:15 in the evening as it is envisaged most construction staff will arrive to work before 07:00 in the morning and leave after 19:00 in the evening.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Cork City Council (CCC).

Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be developed by the Contractor and presented to CCC for approval prior to commencement of the construction works. The CTMP will contain detailed temporary traffic management drawings for each construction stage and will include the mitigation measures described in this section.

Mobility Management

The contractor will be required as part of the contract to introduce a Construction Stage Mobility Management Plan for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the measures the contractor will provide as part of the Mobility Management Plan.

The Construction Stage Mobility Management Plan will form part of the overall Construction Traffic Management Plan and will be agreed with Cork City Council prior to works beginning on site.

Walking: The pedestrian environment surrounding the site is considered to be good with footpaths provided along all roads. Good pedestrian routes exist between the site and nearby bus stops on the Monahan Road and on the Blackrock Road.

Cycling: Cycle parking spaces and associated showers and lockers will be provided on the site for construction staff.

Car Sharing: Car sharing among construction staff should be encouraged, especially from areas where construction staff may be clustered. The Contractor shall aim to organise shifts in accordance to staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to the site car parking facility and will minimise the potential traffic impact on the road network surrounding this facility.

Public Transport: The Contractor will issue an information leaflet to all staff as part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site, including bus routes that operate in the vicinity of the site. The Contractor will also offer the "Travel to Work Scheme" to employees.

5.12.3 Dust

A dust minimisation plan will be formulated for the demolition and construction phase of the project. The Main Contractor shall put in place a regime for monitoring dust levels in the vicinity of the site during works using the Bergerhoff Method (German Standard VDI 2119, 1972). The minimum criteria to be maintained shall be the limit specified by the Environmental Protection Agency (EPA) for licenced facilities in Ireland which is 350mg/m²/day as a 30-day average. The Main Contractor shall monitor dust during construction to ensure the limits are not breached throughout the project.

The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time. For instance, additional monitoring and mitigation such as damping down of earth mounds on site would be undertaken if the prevailing weather conditions are dry and windy.

The key aspects of controlling dust are listed below. In summary the measures which will be implemented will include:

- Prior to demolition buildings will be soft striped internally initially (walls and windows in the rest of the building to remain where possible, to provide a screen against dust).
- During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction will be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

The developer will ensure that a dust minimisation plan is prepared and implemented by the building contractor during the demolition and construction phase of the project. Construction activities are likely to generate some dust emissions, particularly during the site clearance, demolition and excavation stages.

5.12.4 Dirt

Given the volumes of traffic generated by aspects of the construction works, particularly during the earthworks, the Main Contractor shall ensure, where appropriate:

- Daily inspections will be undertaken to monitor tidiness.
- A regular program of site tidying will be established to ensure a safe and orderly site.
- If necessary, scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- Food waste will be strictly controlled on all parts of the site.
- Wheel wash facilities will be provided for vehicles exiting the project site. Wheel wash run off will be stored in an onsite storage tank and will be disposed of by a licensed waste haulage company and disposed of off-site at a licensed facility.
- The Main Contractor will endeavour to mitigate the risk of blockage of local gullies and drains due to construction materials and will carry out drain clearing as required.
- In the unlikely event that mud is carried over from the project site to the public roads, they will be cleaned regularly as required and will not be allowed to accumulate.
- Loaded lorries and skips will be covered as appropriate.
- Surrounding roads used by trucks for access to and egress from the site will be inspected regularly and cleaned, using an approved mechanical road sweeper, when required.

- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the normal manner.

5.12.5 Air Quality and Climate

Emissions to air during construction will occur, although the prevailing weather, the extent of the works and the distance from sensitive receptors will determine the extent of the effects. The focus of the control procedures will therefore be to reduce the generation of airborne material.

'Standard mitigation' measures will be implemented, as per guidance presented in the TII document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (TII, 2011). These will include the following:

- Spraying of exposed earthwork activities, temporary stockpiles and site haul roads during dry weather;
- Provision of wheel washes facilities at the site entrance;
- Covering of temporary stockpiles;
- Control of vehicle speeds, speed restrictions and vehicle access; and
- Sweeping of hard surface roads.

In addition, the following measures will be implemented. These measures are based on best practice as outlined in the British Research Establishment (BRE) document *Controlling particles, vapour and noise pollution from construction sites* (BRE, 2003) and the Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2016).

- Exhaust emissions from vehicles operating within the working areas, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery;
- During dry periods when dust generation is likely or during windy periods, working areas and vehicles delivering material with dust forming potential will also be sprayed with water, as appropriate;
- Areas where materials will be handled and stockpiled will be designed to minimise their exposure to wind – all temporary stockpiles shall be kept to the minimum practicable height with gentle slopes;
- There shall be no long-term stockpiling within the working areas and storage time will be minimised;
- Material drop heights from plant to plant or from plant to stockpile will be minimised;
- Dust screens will be implemented at locations where there is the potential for air quality effects during the construction phase e.g. mesh netting to be erected around the scaffolding to minimise dust emissions from the site; and
- Truck loads will be covered when carrying material likely to generate dust.

Employee awareness is also an important way that dust may be controlled on any site. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected. Further details on employee training has been provided in Section 5.1 of the CEMP (**Appendix 5.1**).

The following mitigation measures will be implemented during the construction phase of the development to minimise CO_2 emissions:

- A Construction Traffic Management Plan to be prepared by the contractor in advance of the commencement of the construction will be implemented in full. This will minimise congestion and encourage car sharing and the use of public transport, where practicable;
- Materials will be handled efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions;
- Engines will be turned off when machinery is not in use; and
- The regular maintenance of plant and equipment will be carried out.

5.12.6 Noise and Vibration

The developer will ensure that construction noise will be kept to a minimum in accordance with BS 5228. Construction-phase noise impacts are described in **Chapter 9** *Noise and Vibration* of this EIAR.

The contract documents will specify that the contractor, undertaking the construction of the works, will be obliged to take specific noise abatement measures and will comply with the recommendations of BS5228: Noise and Vibration Control on Construction and Open Sites, Part 1: Code of Practice for Basic Information and Procedures for Noise and Vibration Control (1997) and the NRA guidelines Good Practice Guideline for the Treatment of Noise during the planning of National Road Schemes (NRA 2014).

Similar to any large construction site, there is potential for noise generation associated with site clearance and construction activities. Currently, there are no works foreseen outside of normal working hours. It is anticipated that no significant vibration will be generated during the construction phases of the project.

Specific mitigation measurements for noise and vibration have been outlined below.

Refer to **Appendix 5.1** for further mitigation measures to be employed.

A Noise and Vibration Management Plan (NVMP) will be formulated for the demolition and construction phase of the project. The main contractor is required to follow and implement where required, the procedures set out in the NVMP. The main contractor will have responsibility for managing construction noise and vibration in accordance with the procedures outlined in the NVMP. Where required, appropriate mitigation measures shall be implemented to minimise significant impacts at receptor locations.

A noise monitoring programme will be implemented on site for the duration of the construction works. Noise monitors shall be maintained and operated as per the methods set out in the NVMP.

The main Contractor will be required to assess and monitor vibration levels during critical work activities to identify any risks of vibration impacts at nearby receptors in accordance with the procedures outlined in the NVMP.

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites: Noise and vibration (BSI, 2014) and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 (EC, 2001).

The following specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised:

- Site representatives shall be appointed to be responsible for matters relating to noise and vibration;
- Equipment will be switched off when not required;
- Internal haul routes will be well maintained;
- Rubber linings shall be used in chutes and dumpers etc. to reduce impact noise;
- Plant and vehicles will be started sequentially rather than all together;
- Construction plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Generators will be located away from sensitive receivers and will be enclosed;
- Where required, improved sound reduction methods e.g. enclosures shall be used;
- For all construction works likely to generate off-site vibration, the contractor will be required to meet the vibration limits set out in BS 5228.
- Acoustic barriers will be provided around construction works to minimise the effects of noise and vibration generating activities in the vicinity of sensitive locations;
- Typically, site activities will be limited to 7:00am – 7pm, Monday to Friday; and 7am – 4pm on Saturdays. It may also be necessary in exceptional circumstances to undertake some other types of activities outside of normal construction core working hours. Any such working hours outside the normal construction core working hours will be agreed with Cork City Council. The planning of such works will have regard to nearby sensitive receptors;
- A Community Liaison Plan shall be prepared to provide for effective community liaison to help ensure the smooth running of construction activities and to address any issues that may arise.
- Avoid unnecessary revving of engines and switch off equipment when not required;

- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials; and
- The following more specific measures will also be implemented where practicable:
- In accordance with Best Practicable Means, plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Where required, improved sound reduction methods, e.g. enclosures should be used;
- Site equipment should be located away from noise sensitive areas, as much as is feasible;
- Regular and effective maintenance by trained personnel should be carried out to reduce noise and/or vibration from plant and machinery;
- A 2.4 metre high hoarding will be provided around the construction site;
- Limiting the hours during which site activities likely to create high levels of noise or vibration are carried out;
- Establish channels of communication between the contractor/developer, Local Authority and residents;
- Appointing of a site representative responsible for matters relating to noise and vibration.

5.12.7 Biodiversity

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage and mitigation measures will function effectively in preventing significant ecological impacts. Further details can be found in **Chapter 10** *Biodiversity* and the CEMP (**Appendix 5.1**).

The following mitigation measures will be implemented:

A Construction Environmental Management Plan (CEMP) has been prepared (included as **Appendix 5.1** of this EIAR). The CEMP contains the construction mitigation measures, which are set out in this EIAR.

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority, Dublin (2010).

- *Control of water pollution from construction sites. Guidance for consultants and contractors (*C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the River Lee and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding on-site impacts, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the site manager;
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and
- Co-operate as required, with site inspections.

An invasive species management plan for the site has been prepared, and this is included as part of the CEMP (**Appendix 5.1**). This outlines specific measures that will be taken to treat and manage the known infestation of Japanese Knotweed on site.

5.12.8 Archaeology, Architecture and Cultural Heritage

Archaeological monitoring of ground excavation works during the construction phase will be carried out by a suitably qualified archaeologist, licensed by the National Monument Service, in accordance with Section 4.7.2.3 (Archaeological Monitoring) of the South Docks Local Area Plan 2008.

In the event that any archaeological remains, or other buried features of cultural heritage interest, are identified they will be recorded and left to remain securely in situ while the National Monuments Service and the Cork City Council Archaeologist are consulted to determine further appropriate mitigation measures, which may entail preservation in situ by avoidance or preservation in record by archaeological excavation.

There are a number of mandatory processes to be completed as part of applications to the National Monuments Service (NMS) for archaeological licences, and these will allow for monitoring of the successful implementation of the archaeological mitigation measures.

- A method statement detailing the proposed strategy for the archaeological supervision of the construction phase will accompany the licence application and will clearly detail the extent of ground works and outline the consultation process to be enacted to determine further required mitigation measures in the event that any sub-surface archaeological remains are identified.
- Reports on all archaeological site investigations will be submitted to the NMS and the planning authority and will detail the results in written, drawn and photographic formats.

5.12.9 Townscape and Visual

The proposed measures relate to implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc.

- Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.
- Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate.
- To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound, and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

5.12.10 Land, Soils, Geology and Hydrogeology

The following measures will be implemented in relation to land and soils during construction:

- Potential pollutants shall be adequately secured against vandalism and will be provided with proper containment according to the relevant codes of practice. Any spillages will be immediately contained and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility.
- Dust generation shall be kept to a minimum through the wetting down of haul roads as required and other dust suppression measures.
- Any stockpiles of earthworks and site clearance material shall be stored on impermeable surfaces and covered with appropriate materials where necessary.
- Silt traps shall be placed in gullies to capture any excess silt in the run-off from working areas.
- Soil and water pollution will be minimised by the implementation of good housekeeping (daily site clean-ups, use of disposal bins, etc.) and the proper

use, storage and disposal of these substances and their containers as well as good construction practices as described the CIRIA guidance.

- A contingency plan for pollution emergencies will also be developed by the appointed contractor prior to the commencement of works and regularly updated. The contingency plan will identify the actions to be taken in the event of a pollution incident in accordance with the CIRIA guidance which requires the following to be addressed:
    - Containment measures;
    - Emergency discharge routes;
    - List of appropriate equipment and clean-up materials;
    - Maintenance schedule for equipment;
    - Details of trained staff, location and provision for 24-hour cover;
    - Details of staff responsibilities;
    - Notification procedures to inform the relevant environmental protection authority or Cork City Council
    - Audit and review schedule;
    - Telephone numbers of statutory water undertakers and local water company; and
    - List of specialist pollution clean-up companies and their telephone numbers.

Loss of crushed rock aggregate and granular aggregate potential area

Excavated material will be removed during the construction phase. Where possible, excavated material will be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled located within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications.

Ground movements

Ground movement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations.

Ground movements will be controlled through the selection of a foundation type and method of construction which are suitable for the particular ground conditions.

Pollution from construction activities

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, adjacent watercourses and groundwater. The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures;
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA, and will be fully bunded;
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site;
- Ensure that all areas where liquids are stored or cleaning is carried out are in designated impermeable areas that are isolated from the surrounding area e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Minimise the use of cleaning chemicals; and
- Use trigger-operated spray guns, with automatic water-supply cut-off.

Earthworks haulage

Earthworks haulage will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided.

Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water impacts in outfall areas. Care will be taken to ensure that the bank surfaces are stable to minimise erosion.

Removal of soils

Excavations in made ground will be monitored by an appropriately qualified person to ensure that any spots of contamination encountered are identified, segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure no cross-contamination with clean soils elsewhere throughout the site.

Where possible, excavated material will be retained and reused on site as construction fill or off site as a by-product under an Article 27 notification.

The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled within the working area where possible, using an appropriate method to minimise the impacts of weathering. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications (e.g., Article 27).

Contaminated Soil Exposure Mitigation

Several likely adverse effects which without mitigation could have potentially significant impacts. These include:

- contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- site workers being exposed to contamination in soil; and
- site workers being exposed to ground gas.

Proposed mitigation measures include the following:

- During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

  "*Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed*."

  And

  "*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies*."

- Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

5.12.11 Water

The following best practice water management measures will be implemented during the construction phase:

- Specific measures to prevent the release of sediment over baseline conditions to Atlantic Pond and Lee Estuary Lower during the construction work, which will be implemented as the need arises. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. This is particularly important when undertaking any works/upgrading to the surface and foul water drainage networks at the proposed development site;

- Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment;
- Provision of temporary construction surface drainage and sediment control measures to be in place before earthworks commence;
- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site. Topsoil and subsoil will not be mixed together;
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area to prevent any seepage of into the local surface water network or groundwater. These will be designed in accordance with guidelines produced by CIRIA;
- All mobile fuel bowsers shall carry a spill kit and operatives will have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked;
- Implementation of response measures to potential pollution incidents;
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages;
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points;
- Any seepage/infiltration and surface ponding from rainfall events will be gathered locally to facilitate pumping with subsequent discharge, under licence, to the local sewerage drainage network. For example, prior to any discharge, the water will be passed through silt traps and hydrocarbon/oil interceptors within the construction site confines. This will result in the separation of sediment from the water prior to its discharge and will ensure that the water is of adequate quality before it enters the local authority drainage system. The use of silt traps and interceptors will be supplemented by proper housekeeping and control measures such as regular testing and monitoring of water quality to ensure compliance;
- Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to the receiving Atlantic Pond and Lee Estuary Lower and implementation of good housekeeping (site clean-ups, use of disposal bins, etc.) at working areas;
- When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from flowing water or water that may enter the watercourses bounding the site for a period sufficient to ensure no leachate from the concrete;
- All hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents;

- Mobile plant will be refueled in a designated area, on an impermeable base away from drains or watercourses;
- Safe materials handling of all potentially hazardous materials will be implemented by all construction personnel employed;
- The pumping of groundwater may be required during excavation for foundation and attenuation tank construction, with the proposed locations of pump wells selected so as to minimise the volume of pumping;
- Water supplies shall be recycled for use in the wheel wash. All waters shall be drained through appropriate filter material prior to discharge from the construction sites;
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase to ensure no contaminated material enters the watercourse;
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt);
- Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at an appropriate facility offsite or at the location where concrete was sourced;
- Damaged, leaking or empty drums will be removed from site immediately and disposed of via a registered waste disposal contractor;
- A wheel-wash will be installed for use by all construction vehicles leaving site; and
- A road-sweeper will be used to remove dirt and debris from roads.

A summary of the best practice measures relevant to hydrology are provided as follows and are in accordance with CIRIA guidance, and will be implemented by the contractor:

- Construction compound will be located in areas that are at minimal risk of flooding (outside 1:100-year flood zone);
- A monitoring regime/programme for water quality will be put in place;
- There will be no tracking of machinery within watercourses;
- Silt fences/swales shall be provided at all locations where surface water run-off may enter/leave the working areas, and adjacent to the haul roads; and
- All works undertaken will be fully consolidated to prevent run-off of silt.

Flood Risk Mitigation

The following site-specific flooding mitigation measures will be implemented:

- Where pipe culvert construction is proposed, a temporary by-pass channel or other appropriate measures (i.e. pumping to downstream drainage) will be put in place to avoid obstruction of flow.
- Any surface ponding from rainfall events will be gathered locally to facilitate pumping with subsequent discharge, under licence, to the local sewerage drainage network. The CEMP will cover all potentially polluting activities from this process and include an emergency response procedure.
- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding.

5.12.12 Resource and Waste Management

Construction – General

In addition to the inherent design measures which will be implemented during the construction phase, the following mitigation measures will be implemented:

- Waste disposal will be minimised so far as is reasonably practicable;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- Waste from the proposed development will be transported by authorised waste collectors in accordance with the relevant Irish waste legislation (Waste Management (Collection Permit) Regulations, 2007 as amended;
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the relevant Irish waste legislation (Waste Management Acts 1996-2016) as amended;
- Source segregation: Where possible, metal, timber, glass and other recyclable material will be segregated on site in a designated area within the construction compound during construction works and will be removed off site to a permitted/licensed facility for recycling. Where required waste stream colour coding, and photographs of wastes will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;
- Material management: ‘Just-in-time’ delivery will be used so far as is reasonably practicable to minimise material wastage;
- Supply chain partners: The contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;

- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a Contractor who holds the appropriate waste collection permit;
- Possibilities for re-use of excess uncontaminated soil and stone only as fill or in landscaping works within the site will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excess excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed of;
- The contractor will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place;
- Office and food waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual wastes;
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate;
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site;
- Excessive temporary works will be avoided, existing facilities will be reused as appropriate;
- Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations;
- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder;
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility; and
- If asbestos/contaminated material is encountered during construction, a risk assessment will be carried out to determine its suitability for re-use. If re-use within the site is not possible, contaminated material will be removed offsite to an appropriately licenced facility.

5.12.13 Population and Human Health

Measures which will be implemented to minimise effects on the general amenity of residents will include:

- The erection of directional and information signage for members of the public to indicate alternative routes and paths to be taken and convey "Business As Usual" for adjoining businesses;
- The provision of information to local residents and businesses during the construction phase;
- The provision of community liaison and nomination of personnel to manage community relations; and
- The preparation of an emergency response plan to cover foreseeable risks.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions. Refer to **Section 5.12.2** for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Section 5.12.3 and 5.12.5** for details of dust mitigation measures.

Noise and vibration disturbance will also be minimised. Best practice measures for noise control on construction sites will be adhered to during construction. Refer to **Section 5.12.6** for further details of noise and vibration mitigation measures.

As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

5.12.14 Material Assets

The following measures in relation to material assets during construction will be implemented:

- The contractor will undertake their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications
- Put measures in place to ensure that there are no interruptions to existing utilities and services unless this has been agreed in advance with the relevant service provider
- All utilities and services diversions will be agreed and undertaken as part of the enabling works and in advance of the commencement of construction activities
- All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.

- Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements;
- All construction activities in the vicinity of existing services and utilities will be carried out with ongoing consultation with the relevant service provider and undertaken in compliance with any requirements or guidelines they may have.
- If asbestos is uncovered on site, the Asbestos Containing Material will be double-bagged, stored, collected and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation.

5.12.15 Major Accidents and Disasters

The proposed development will be designed and built in line with best international current practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded throughout the design.

The contractor will be required to ensure that all fire safety requirements are provided for in co-ordination with Cork City Council. Appropriate site personnel will be trained as first aiders and fire marshals. The contractor will also be required to maintain an emergency response plan which will cover all foreseeable risks i.e. fire. In preparing this plan the contractor will be required to liaise with the emergency response services.

The mitigation measures, which will limit the likelihood and consequence of a vehicle collision, include a Construction Traffic Management Plan (CTMP). Prior to the commencement of works the appointed contractor will prepare a CTMP, which will be agreed with Tiznow Property Company Limited and Cork City Council. This will be a live document which will be updated/added to as construction progresses and will be implemented for the duration of the proposed works.

A review was undertaken to identify the closest Seveso site in relation to the proposed development site. Goulding Chemicals Limited is located circa. 550m west of the site along Centre Park Road and is classed as a Lower-Tier site, under The Chemical Act (Control of major Accident Hazards Involving Dangerous Substances Regulations, 2015 (which transpose the Seveso III Directive (2012/18/EU) into Iris law). The proposed development is not located in the consultation zone of this Seveso site and therefore, no consultation with the Health and Safety Authority was necessary with regard to the proposed development.

The nearest Seveso site in proximity to the proposed development is Goulding Chemicals Ltd. In accordance with the Regulations operators of a ‘Lower Tier Establishment’ are required to develop a site-specific Major-Accident Prevention Policy (MAPP) which is implemented by site specific procedures and systems. Due to the nature of the proposed development, and the distance between the Goulding facility and the proposed development, it is not predicted that the risk of major accidents relating to the facility will constrain the proposed development,

and the provisions of the Directive have been appropriately considered with regard to the proposed development.

5.12.16 Construction Safety

Hoarding/security fencing will be erected along all boundaries adjacent to public areas with the purpose of restricting access to the work area for health and safety reasons.

As required by the Safety, Health and Welfare at Work (Construction) Regulations 2013, a Health and Safety Plan will be prepared which will address health and safety issues from the design stages through to the completion of the construction and maintenance phases. This plan will be reviewed as the development progresses. The contents of the Health and Safety Plan will comply with the requirements of the Regulations.

Safety on site will be of paramount importance. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated. Only contractors with the highest safety standards will be selected.

Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.

Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.

All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.

Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

At any time that a potentially unsafe practice is observed, the site safety manager will have the right as well as the responsibility to halt the work in question, until a safe system of working is again put in place.

5.13 Decommissioning Methods

Following construction, all construction plant, materials, signage etc. will be removed from site, with all relevant mitigation measures described above implemented as required.

5.14 Cumulative Effects

Cork City is experiencing an increase in construction activity in recent years, and there are several permitted and ongoing construction sites which have programmed work over the coming years. The potential for cumulative effects for

construction activities will be greatest when large construction sites are near each other. **Chapter 20** *Cumulative and Interactive Effects* addresses these potential impacts (if any). Potential cumulative effects on traffic and transportation are addressed in **Chapter 7**.

5.15 Residual Effects

It is anticipated that with proper management, there will be no significant environmental effects as a result of the construction of the proposed development. Any effects likely to occur will be of a temporary nature.

5.16 References

British Standards BS5228: *Noise and Vibration Control on Construction and Open Sites, Part 1: Code of Practice for Basic Information and Procedures for Noise and Vibration Control (1997).*

British Standards BS6187*: Code of Practice for Full and Partial Demolition (2011)*

Daire Byrne & Associates (2021) *Part B (Fire Safety) of the Building Regulations Compliance Report.*

DHLGH (2020) *Building Regulations (2006): Technical Guidance Document B Fire Safety (as amended, 2020).*

Masters-Williams et al (2001) *Control of Water Pollution from Construction Sites, guidance for consultants and contractors CIRIA UK.*

Murnane E. Heap A. and Swain A. (2006) *Control of Water Pollution from Linear Construction Projects CIRIA UK.*

National Construction and Demolition Waste Council (July 2006): *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects.*

National Roads Authority (2010): *Good Practice Guideline for the Treatment of Noise during the planning of National Road Schemes*

Safety, Health and Welfare at Work (Construction) Regulations 2013,

Waste Management (Collection Permit) Regulations 2001 (as amended).

Waste Management Act 1996 (as amended)

6 Planning Policy

6.1 Introduction

This chapter has been compiled in a hierarchy according to National, Regional and Local Planning Policy. It is intended to be clear and concise in its demonstration that the proposed development is consistent with these policies. A summary of the relevant policy from each publication has been provided in tabular format with associated comments on how the proposed development is consistent with these. The chapter was prepared by Ciara Cosgrave of Harry Walsh Planning. Details of Ciara's qualifications and experience are included in **Chapter 1** of the EIAR *Introduction*.

6.2 National Planning Policy

6.2.1 Housing for All - A New Housing Plan for Ireland

Housing for All – A new Housing Plan was published by the Department of Housing, Local Government and Heritage in September 2021 as an overarching housing plan to 2030. It is estimated that 33,000 no. new dwelling units will need to be delivered per year between 2021 to 2030 to meet current demand.

Relevant Principles and Guidelines	Consistency
The government guidance identifies four key pathways for achieving housing for all: 1. Supporting home ownership and increasing affordability; 2. Eradicating homelessness, increasing social housing delivery and supporting social inclusion; 3. Increasing new housing supply; and 4. Addressing vacancy and efficient use of existing stock.	The proposed development which will consist of 823 no. residential units will contribute to increasing the supply of new housing to meet the needs of people in a wide variety of circumstances.

6.2.2 Project Ireland 2040: National Planning Framework

The National Planning Framework (NPF) outlines the policies and objectives for development in Ireland up to 2040 given the expected population growth of one million people. The Framework is underlined by a number of strategic outcomes

including compact growth, sustainable mobility and the transition to a low carbon and climate resilient society. The purpose of the NPF is to successfully accommodate growth and change, by facilitating a shift towards Ireland's regions and cities other than Dublin, while also recognising Dublin's ongoing role.

<table>
<tr><th>Policy</th><th>Consistency</th></tr>
<tr><td>National Policy Objective 2A - A target of half (50%) of future population and employment growth will be focused in the existing five cities and their suburbs.

National Policy Objective 3B - Deliver at least half (50%) of all new homes that are targeted in the five Cities and suburbs of Dublin, Cork, Limerick, Galway and Waterford, within their existing built-up footprints.

National Policy Objective 4 - Ensure the creation of attractive, liveable, well designed, high quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being.

National Policy Objective 8 - Ensure that the targeted pattern of population growth of Ireland's cities to 2040 is in accordance with the targets set out in Table 4.1.

Table 4.1 | Ireland 2040: Targeted Pattern of City Population Growth
<table><tr><th>City</th><th>Population 2016</th><th colspan="2">Population Growth to 2040[27]</th><th>Minimum Target Population 2040</th></tr><tr><th></th><th></th><th>% Range</th><th>People</th><th></th></tr><tr><td>Dublin - City and Suburbs</td><td>1,173,000</td><td>20-25%</td><td>235,000 - 293,000</td><td>1,408,000</td></tr><tr><td>Cork - City and Suburbs</td><td>209,000</td><td>50-60%</td><td>105,000 - 125,000</td><td>314,000</td></tr><tr><td>Limerick - City and Suburbs</td><td>94,000</td><td>50-60%</td><td>47,000 - 56,000</td><td>141,000</td></tr><tr><td>Galway - City and Suburbs</td><td>80,000</td><td>50-60%</td><td>40,000 - 48,000</td><td>120,000</td></tr><tr><td>Waterford - City and Suburbs</td><td>54,000</td><td>50-60%</td><td>27,000 - 32,000</td><td>81,000</td></tr></table>
National Policy Objective 11 - In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth.</td><td>The proposed development is consistent with all strategic aims and objectives contained in the NPF. In particular, the development is in accordance with National Policy Objectives 2a, 3b, 4, 8 and 11 which aim to increase Cork City and its suburbs to a minimum population of 314,000 by 2040 and which will require a growth rate of 50-60%.

The proposed development will provide the opportunity for an uplift in population in this area by 2,942 no. people (based on the number of bedspaces provided). The proposed development will provide a mix of unit sizes and typologies to meet the needs of a range of household formations. The architecture and landscape architecture proposals will ensure the creation of a well-designed urban environment for future residents.

The Design Team have carefully considered the integration of the proposed development as part of a wider masterplan for adjacent lands, in addition to the recently permitted mixed-use scheme on the Former Ford Site (ABP Ref: APB-309059-20). In combination with the neighbouring permitted scheme, the proposed mixed-use development will act as a catalyst for the delivery of further residential development in the south docklands therefore supporting the viability of Cork City Centre, by providing a choice in tenure for employees to live.</td></tr>
<tr><td>National Policy Objective 13 – In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high-quality outcomes in order to achieve targeted growth. These standards will be subject to a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected.</td><td>The proposed development is part one to part thirty-five storeys in height. The tallest element of the proposed development will be located at the eastern corner of the site acting as key landmark building. The proposed heights have been designed having regard to the assessment of the permitted part four to part 14 no. storey scheme on the Former Ford Site (ABP Ref: APB-309059-20) where the Inspector was of the opinion that ''Having regard to the setting and context of the site, the proposed building heights do not impact on surrounding lands or sensitive uses and I do not consider that the proposed heights would impact on</td></tr>
</table>

Policy	Consistency
	the quality of residential amenity…I regard the proposed building heights as acceptable for this location''. Some 278 No. car parking spaces (including 10 no. visitor spaces) are provided which represents a 0.33 car parking ratio per unit. The adjacent scheme (ABP Ref: APB-309059-20) was permitted with a similar parking ratio of 0.39 car parking spaces per unit. The Inspector in their assessment of the scheme was of the opinion that *"Reduced levels of car parking are provided in line with emerging policy for the area, as a measure to encourage modal shift."*
National Policy Objective 27 - Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritizing walking and cycling accessibility to both existing and proposed developments and integrating physical activity facilities for all ages.	The proposed scheme will provide 2,130 no. cycle parking spaces comprising 1,718 no. secure resident cycle spaces and 412 no. visitor cycle spaces. Sustainable transport modes are available from the subject site and details of the proposed access strategy are described in Chapter 7 of this EIAR, Traffic and Transportation. An Outline Mobility Management Plan has also been prepared as part of the proposed application – refer to Appendix 7.1.
National Policy Objective 32 - To target the delivery of 550,000 additional households to 2040. National Policy Objective 33 - To prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location. Key Future Growth Enablers for Cork Include; The development of a much-enhanced Citywide public transport system to incorporate subject to further analysis, proposals for an east-west corridor from Mahon, through the City Centre to Ballincollig and a north-south corridor with a link to the Airport.	The proposed development has a density of 294 no. units per hectare on an excellently accessible brownfield site. The adjacent scheme recently permitted to the north (ABP Ref: APB-309059-20) has a density of 275 no. units per hectare. The proposed density will support the consolidation of development along key transport corridors as set out in Cork Metropolitan Area Transport Strategy. This includes an east-west corridor from Mahon through the city centre to Ballincollig via Centre Park Road where the subject lands are situated.
National Policy Objective 35 - Increase residential density in settlements, through a range of measures including reductions in vacancy, reuse of existing buildings, infill development schemes, area or site-based regeneration and increased building heights.	The proposed development represents the proper planning and sustainable development of appropriately zoned brownfield lands in the south docklands.
National Policy Objectives 64: Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green	The proposed development is located within close proximity of Marina Park (within c. 5 minute walk) which provides direct access to the Passage West Greenway. The proposed development aspires to encourage future residents to use walking, cycling and public transport as their dominant modes of travelling given the accessible location of the subject lands.

Policy	Consistency
infrastructure planning and innovative design solutions.	

6.3 S.28 Ministerial Guidelines

6.3.1 Sustainable Urban Housing Design Standards for New Apartments: Guidelines for Planning Authorities, 2020

The updated 2020 Guidelines refer to the need to significantly increase supply as a key pillar of the overarching Rebuilding Ireland Housing Action Plan. Urban Areas are identified as the most suitable locations for apartments and are divided into three categories: 1. Central and/or Accessible Urban Locations, 2. Intermediate Urban Locations, 3. Peripheral and/ or Less Accessible Urban Locations.

Policy	Consistency
Section 2.4 of the Guidelines define Central and/or Accessible Urban Locations' as: • Sites within walking distance (i.e. up to 15 minutes or 1,000-1,500m), of principal city centres, or significant employment locations, that may include hospitals and third-level institutions; • Sites within reasonable walking distance (i.e. up to 10 minutes or 800- 1,000m) to/from high capacity urban public transport stops (such as DART or Luas); and • Sites within easy walking distance (i.e. up to 5 minutes or 400-500m) to/ from high frequency (i.e. min 10-minute peak hour frequency) urban bus services. These definitions are meant to be interpreted as typical rather than 'exhaustive' and the Guidelines indicate that the full range of locations '*will require local assessment that further considers these and other relevant planning factors'.* The Guidelines contain various Specific Planning Policy	The proposed development site can be defined as a Central and/or Accessible Urban Location that is suitable for high-density, large-scale development comprising wholly of apartments. The site is located within walking distance of significant employment locations including established commercial and industrial uses in the south docklands including Southern Milling, Culture Co-Working, and Goulding Chemicals. The edge of the city centre including Navigation Square office development is located c.1.5 kilometres from the proposed development site. Albeit north of the river, it is noted that Tivoli Docks, Kent Station, Penrose Wharf and Horgan's Quay are located less than 1.5 km from the proposed development site (as the crow flies). – refer to Figure 6.1. The proposed development site is served by an existing hourly bus service on Centre Park Road (less than 300m from the proposed development site) from Horgan's Quay to Mahon Point shopping centre (Route no. 212). In the assessment of the Former Ford Site, the Inspector noted the more frequent bus services available along Blackrock Road (Route no. 202 and 202A Hollyhill (Apple) to Mahon which operates a c. 20 no. minute frequency. The Blackrock bus stop is located c. 800 m to the south-west, a 10 minute walk. The high capacity light rail public transport corridor from Mahon to Ballincollig via Centre Park Road would further enhance the suitability of the docklands for high density development.

Policy	Consistency
Requirements and objectives that apply to the proposed development.	
Specific Planning Policy Requirement 3 Minimum Apartment Floor Areas •1-bedroom apartment (2 persons) – 45 sq m •2-bedroom apartment (3 persons) – 63 sq m •2-bedroom apartment (4 persons) – 73 sq m •3-bedroom apartment (5 persons) – 90 sq m	The proposed 823 no. apartments (282 no. one bed, 414 no. two bed and 127 no. three bed units) are in accordance with the space standards set out in SPPR 3. There are 4% two-bed three person units proposed therefore the unit mix is in accordance with the guidelines.
Specific Planning Policy Requirement 4 In relation to the minimum number of dual aspect apartments that may be provided in any single apartment scheme, the following shall apply: (i) A minimum of 33% of dual aspect units will be required in more central and accessible urban locations, where it is necessary to achieve a quality design in response to the subject site characteristics and ensure good street frontage where appropriate.	46.5% of the proposed units are dual aspect therefore in excess of the 33% minimum for central/ accessible locations as outlined in the Apartment Guidelines.

Policy	Consistency
Specific Planning Policy Requirement 5 Ground level apartment floor to ceiling heights shall be a minimum of 2.7m and shall be increased in certain circumstances, particularly where necessary to facilitate a future change of use to a commercial use. For building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25ha , planning authorities may exercise discretion on a case-by-case basis, subject to overall design quality.	The proposed floor to ceiling heights at ground floor level are 2.7 m and 2.4 m at upper levels therefore the development is fully in accordance with SPPR 5.
Specific Planning Policy Requirement 6 A maximum of 12 apartments per floor per core may be provided in apartment schemes. This maximum provision may be increased for building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25ha, subject to overall design quality and compliance with building regulations.	The proposed development does not exceed the maximum of 12 no. apartments per floor per core.
Section 4.13 of the Guidelines state: Children's play needs around the apartment building should be catered for: • within the private open space associated with individual apartments (see chapter 3); • within small play spaces (about 85 – 100 sq. metres) for the specific needs of toddlers and children up to the age of six, with suitable play equipment, seating for parents/guardians, and within sight of the apartment building, in a scheme that includes 25 or more units with two or more bedrooms; and • within play areas (200–400 sq. metres) for older children and young teenagers, in a scheme that includes 100 or more	The Landscape Design Strategy prepared by Park Hood Landscape Architects provides details on the play area (1,233 sq m) provided throughout the development. In addition, natural play has been incorporated into the design through the use of logs and boulders. Table tennis has been included for older children with larger 'kickabout' play areas accessible within a 5 no. minute walking distance of the subject site. A Play area approximately 133m2 has been provided on the 1st and 6th floor of Block E for young children with equipment for toddlers up to the age of six as per the Design Standards for New Apartments & Cork City Development Plan.

<table>
<tr><th>Policy</th><th>Consistency</th></tr>
<tr><td>apartments with two or more bedrooms.</td><td></td></tr>
<tr><td>Section 4.17:

A general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units.</td><td>The Apartment Guidelines require bicycle parking spaces as set out below.

Type | No Units | Bike Space Required
1 bed | 282 | 282
2 bed | 414 | 828
3 bed | 127 | 381
Visitor | | 412
Total | 823 | 431

The proposed development provides for 2,130 no. bicycle spaces including 1,718 no. secure resident spaces and 412 no. visitor spaces which is significantly in excess of the general minimum standard.</td></tr>
<tr><td>Appendix 1:

Minimum Apartment Floor Areas, minimum aggregate floor areas, minimum bedroom floor areas/widths, minimum aggregate bedroom floor areas, minimum storage space requirements and minimum floor areas for private amenity space.</td><td>The proposed development meets and in certain instances exceeds the standards set out in the guidelines.</td></tr>
<tr><td>Minimum floor areas for communal amenity space:

One bedroom - 5 sq m

Two bedroom (3 person) - 6 sq m

Two bedroom (4 person) - 7 sq m

Three bedroom - 9 sq m</td><td>The development has a requirement to provide 5,420 sq m of communal space based on the proposed unit mix. The proposed development provides for 5,452 sq m of communal open space at podium and roof terrace levels, in addition to 2,760 sq m internal community amenity area therefore exceeding the minimum quantum set out in the guidelines.</td></tr>
</table>

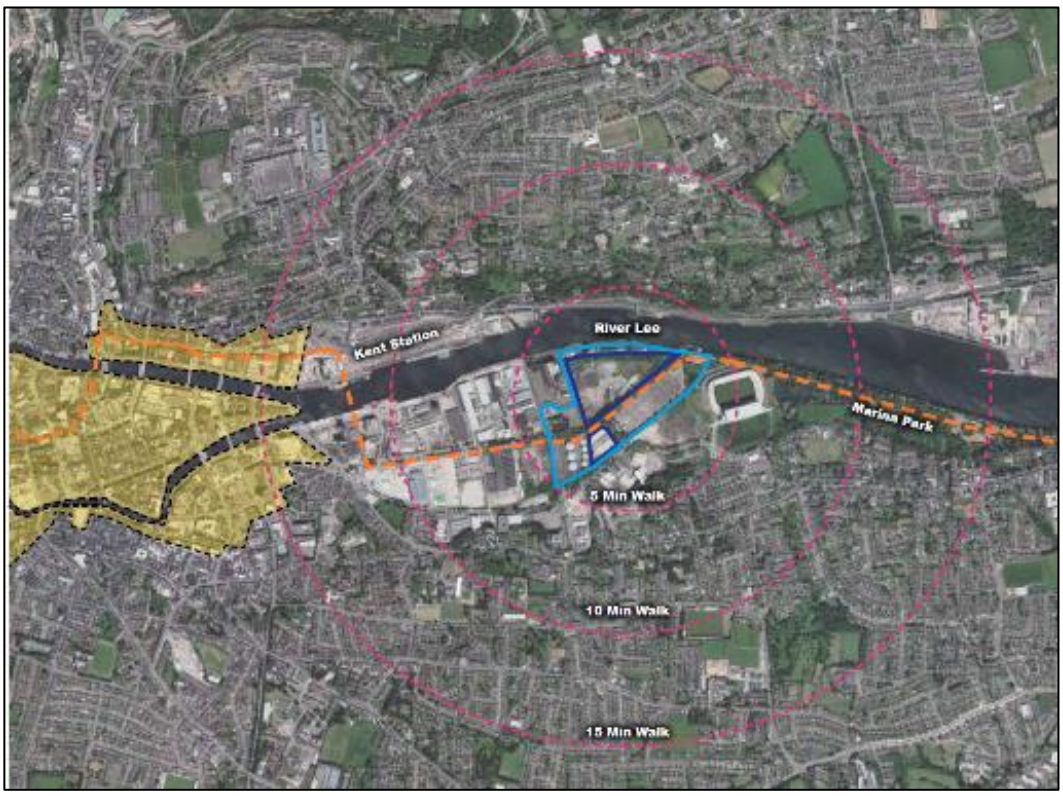

Figure 6.1 Walking Distance from the Subject Site in 5 no. minute intervals (C + W O'Brien Architects).

6.3.2 Building Height Guidelines for Planning Authorities, 2018

The Building Height Guidelines have arisen from a recognition that the ambitious targets contained within the NPF, particularly in relation to accommodating 50% of future growth within the existing footprint of our cities, will not be met unless developments of greater height and scale are supported by the Planning Authorities. The guidelines refer to the traditional building heights in our urban areas which have been limited and generally low rise in terms of height. The need to secure compact and sustainable urban growth forms will require the reuse of brownfield infill sites that are located in well serviced urban locations and are served by good public transport links.

Policy	Consistency
The guidelines refer to locations that would be considered City and town centres, such as within the ring in Dublin and other analogous areas in other cities. In such areas, the guidance suggests that building heights of at least 6 storeys should be supported at street level, particularly where there are concentrations of enabling infrastructure to cater for such development and where architectural, urban	The South Docks Local Area Plan, 2008 indicates a general building height of 5-6 no. storeys for the area. It should however be noted that 4 to 14 no. storeys were recently permitted on the site to the north by An Bord Pleanála (APB-309059-20). The existing and proposed infrastructure including the planned public transport upgrade for a light Rail Transit corridor (LRT) from Mahon to Ballincollig

Policy	Consistency
design and public realm outcomes would be of very high quality.	as outlined in the CMATS demonstrate that the proposed development lands are capable of accommodating the proposed development.
SPPR1 - In accordance with Government policy to support increased building height in locations with good public transport accessibility, particularly town/City cores, planning authorities shall explicitly identify, through their statutory plans, areas where increased building height will be actively pursued for both redevelopment and infill development to secure the objectives of the National Planning Framework and Regional Spatial and Economic Strategies and shall not provide for blanket numerical limitations on building height.	The proposed development site is considered ideally located adjacent to a future high frequency public transport corridor which will provide strong connectivity to the wider Cork metropolitan.
The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport. Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views. Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect. On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape.	The proposed development site is served by an hourly bus service on Centre Park Road (less than 300m from the subject site) from Horgan's Quay to Mahon Point shopping centre (Route no. 212). In addition to more frequent bus services available along Blackrock Road (Route no. 202 and 202A Hollyhill (Apple) to Mahon which operates a c. 20 no. minute frequency. The Blackrock bus stop is located c. 800 m to the south-west, a 10 minute walk. The proposed high capacity light rail public transport corridor (as outlined in the CMATS) from Mahon to Ballincollig via Centre Park Road will further enhance the frequency of public transport from the docklands (c. 5 no. minute frequency). The Inspector in the assessment of the scheme at the adjacent Former Ford Site (APB-309059-20) was of the opinion that it was *''located in an area which is less sensitive in terms of its visual amenity context. The proposed development will improve the urban character of this area and integrate and address public realm improvements occurring at Marina Park.''* A Townscape and Visual Impact Assessment by Park Hood Landscape Architects is provided in Chapter 12 of this EIAR. The 1 – 35 no. storey development will provide an appropriate higher density development on a strategically located brownfield site that will integrate with adjoining sites as demonstrated in the masterplan document prepared by C+W O'Brien Architects.
At the scale of district/ neighbourhood/ street	The proposed development appropriately responds to its receiving environment by providing a vertical

Policy	Consistency
• The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape • The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered. • The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management – Guidelines for Planning Authorities" (2009). • The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner. • The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood.	and lateral mix of uses that will address the surrounding streetscape. The proposed design will use quality materials and finishes in the redevelopment of this brownfield site will significantly improve the urban landscape. The Planning System and Flood Risk Management – Guidelines for Planning Authorities" (2009) are discussed at section 6.3.8. The proposed scale, height and massing of the proposed development will create keyway finding measures in the locale particularly along Marquee Road. The proposed mix of units has been designed having regard to the Apartment Guidelines and will provide a range of unit sizes to meet the housing needs for a range of people.
At the scale of the site/building • The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.	The Design Team have developed the current proposed scheme having regard to natural daylight, ventilation and views and to minimise overshadowing and loss of light. We note that 45.6% of units are dual aspect providing greater daylight, views, and ventilation.
Specific Assessments To support proposals at some or all of these scales, specific assessments may be required and these may include: • Specific impact assessment of the micro-climatic effects such as downdraft. Such assessments shall include measures to avoid/ mitigate such micro-climatic effects and, where appropriate, shall include an assessment of the cumulative micro-climatic effects where taller buildings are clustered. • In development locations in proximity to sensitive bird and / or bat areas, proposed developments need to consider the potential interaction of the building location, building materials and artificial lighting to impact flight lines and / or collision. • An assessment that the proposal allows for the retention of important telecommunication channels, such as microwave links.	An Appropriate Assessment Screening and Natura Impact Statement have been prepared by Dixon Brosnan and are enclosed with this application. A Daylight and Sunlight Assessment and Wind Study have also been prepared. O'Dwyer & Jones Design Partnership Aviation Planning & Architecture Consultants have carried out an Aeronautical Assessment of the proposed scheme and conclude that the proposed development complies with all aviation and aeronautical requirements affecting the site.

Policy	Consistency
• An assessment that the proposal maintains safe air navigation. • An urban design statement including, as appropriate, impact on the historic built environment. • Relevant environmental assessment requirements, including SEA, EIA, AA and Ecological Impact Assessment, as appropriate.	

6.3.3 Guidelines for Planning Authorities: Sustainable Residential Development in Urban Areas (Cities, Towns and Villages), 2009

The Sustainable Residential Development in Urban Areas, 2009 provides statutory guidelines which will assist planning authorities, developers, architects and designers in delivering high quality residential development. The objective of the document is to produce high quality and crucially sustainable developments. The guidelines mentioned in the table below are aimed at assisting planning authorities, developers, architects and designers to create quality homes and neighbourhoods at places where people want to live, work and raise families.

Policy	Consistency
The guidelines outline the common goals of housing developers, their design teams, the planning system and the community as follows: • Prioritise walking, cycling and public transport, and minimise the need to use cars; • Deliver a quality of life which residents and visitors are entitled to expect, in terms of amenity, safety and convenience; • Provide a good range of community and support facilities, where and when they are needed and that are easily accessible; • Present an attractive, well-maintained appearance, with a distinct sense of place and a quality public realm that is easily maintained; • Are easy to access for all and to find one's way around; • Promote the efficient use of land and of energy, and minimise greenhouse gas emissions;	The proposed development has been designed in accordance with the best practice principles outlined in the guidelines to create a sustainable neighbourhood where people want to live and work. The proposed development is located on appropriately zoned mixed use lands and will represent the appropriate sequential development of lands having regard to the scheme permitted at the Former Ford Site to the north (APB-309059-20).

• Provide a mix of land uses to minimise transport demand; • Promote social integration and provide accommodation for a diverse range of household types and age groups; • Enhance and protect the green infrastructure and biodiversity; and • Enhance and protect the built and natural heritage.	

6.3.4 Urban Design Manual: A Best Practice Guide, 2009

The proposed mixed-use development has been designed in accordance with best practice as outlined in the 2009 Urban Design Manual. The Manual outlines 12 criteria that should guide urban residential development in the context of the individual homes, the site on which they are located and the wider neighbourhood. The proposed development responds to the each of the criteria set out in the guidelines and demonstrates that the proposed development represents the proper planning and sustainable development of the proposed development site.

6.3.5 Design Urban Manual for Urban Roads and Streets, 2013

The Design Manual for Urban Roads and Streets provides guidance relating to the design of urban roads and streets. The document presents a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets. The relevant principles, approaches and standards listed in the table below are intended for use by suitably qualified and experienced designers who work within the built environment professions in order to create attractive streets and roads which facilitates a broad range of users.

Relevant Principles and Guidelines	Consistency
5. Integrated Street Networks 6. Movement and Place 7. Permeability and Legibility 8. Management 9. Movement, Place and Speed 10. Streetscape 11. Pedestrian and Cyclist Movement 12. Carriageway Conditions	The proposed development has been designed in accordance with the relevant policies and principles listed in the Design Manual for Urban Roads and Streets, 2013 in order to create a balanced and attractive street and road network for the proposed development.

6.3.6 Childcare Facilities: Guidelines for Planning Authorities, 2001

The National Childcare Guidelines for Planning Authorities provide a framework to guide both local authorities in preparing development plans and assessing applications for planning permission, and developers and childcare providers in formulating development proposals.

Policy	Consistency
Appendix 2: In new communities/ new housing areas, planning authorities should require the provision of at least one childcare facility for new housing areas and other areas of residential development unless there are significant reasons to the contrary. An indicative standard of one childcare facility per 75 dwellings is recommended. One facility providing a minimum of 20 childcare spaces is considered to be a reasonable starting point The threshold for provision should be established having had regard to the existing geographical distribution of childcare facilities and the emerging demographic profile of areas	The proposed mixed-use development comprises 823 no. residential units. However, the requirement for a childcare facility is calculated based on the number of 2+ bed units proposed in accordance with the guidelines. The childcare facility will have the capacity for c. 130 no. childcare spaces (662 sq m internal and 247 sq m external). The provision is in accordance with the indicative standard recommended in the 2001 childcare guidelines for Planning Authorities.
Circular PL 3/2016: In March 2016, the Department of the Environment, Community and Local Government issued a circular in relation to childcare facilities under the early Childhood Care and Education (ECCE) Scheme. Planning Authorities are requested to exclude matters relating to childcare facility standards outlined in Appendix 1 of the Childcare Facilities Planning Guidelines 2001 – including the minimum floor area requirements per child- from their consideration of planning applications relating to childcare facilities and to solely focus on planning related considerations that fall within the remit of the Planning and Development Act 2000, as amended, in the determination of such planning applications.	The proposed development has taken cognisance of this letter in relation to development of the creche on the site.

6.3.7 Universal Design Guidelines for Early Learning and Care Settings, 2019

In 2019, the Minister for Children and Youth Affairs launched the Universal Design Guidelines for Early Learning and Care Settings. These guidelines are an important step in making all Early Learning and Care services accessible to all children. This publication offers guidance on the refurbishment, renovation and building of centres for Early Learning and Care (ELC) in Ireland. The guidelines apply to both new-build and retrofit projects and provide a flexible Universal Design framework to ensure that settings are accessible, understandable and easy to use for all children, staff, families and visitors.

Policy	Consistency
An ELC setting should be well integrated with the local community and set within a high-quality public realm where the adjacent footpaths, streets and roads are accessible, understandable and easy to use for all families and ELC practitioners. The approach to the site should create a positive relationship between the setting and the community. The site design should provide a safe, comfortable and stimulating environment with high-quality pedestrian, cycling, parking, and pick-up and drop-off facilities	The proposed creche is situated in a well-integrated location within a high-quality public realm and complies fully with this requirement.

6.3.8 Planning System and Flood Risk Management Guidelines 2009

Planning Authorities must implement these Guidelines in ensuring that, where relevant, flood risk is a key consideration in preparing development plans and local area plans and in the assessment of planning applications. The Guidelines will also assist regional authorities in preparing regional planning guidelines and should be utilised by developers and the wider public in addressing flood risk in preparing development proposals.

Policy	Consistency
Among the core objectives of the Guidelines are to: ▪ Avoid inappropriate development in areas at risk of flooding. ▪ Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off. ▪ Avoid unnecessary restriction of national, regional or local economic and social growth. There are three types or levels of flood zones defined for the purposes of these Guidelines: ▪ Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding); ▪ Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and ▪ Flood Zone C– where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C	A site-specific Flood Risk Assessment (FRA) has been prepared by Arup for the proposed development and is included as **Appendix 14.1** to this EIAR. In summary, the FRA outlines that: • The site benefits from flood defences against fluvial and tidal flooding • The risk of pluvial ad groundwater flooding is considered low. • The site is located in Flood Zone A. • To mitigate the residual risk to the development, the development will incorporate appropriate flood resistant and resilient construction, measures and finishes. • A justification Test has been carried out and demonstrates that the proposed development satisfies the criteria of the Development Management Justification Test.

Policy	Consistency
covers all areas of the plan which are not in zones A or B. Key Messages of Flooding and Development Management are: ▪ Planning authorities should apply the sequential approach in aiming to avoid development in areas at risk of flooding, through the development management process. ▪ Planning applications will, where appropriate, need to be accompanied by a detailed flood risk assessment to be considered by planning authorities in determining applications. ▪ Development within flood risk areas, that would be defined as inappropriate as set out in chapter 3, but which are considered to be necessary to meet the objectives of proper planning and sustainable development, will be subject to the Justification Test. ▪ Most flood risk issues should be raised within strategic assessments undertaken by local authorities at the plan-making stage. Therefore, as more plans are reviewed and zoning reconsidered, there should be less need for development management processes to require detailed flood risk assessment.	

6.3.9 Appropriate Assessment Plans and Projects in Ireland - Guidelines for Planning Authorities

Appropriate Assessment is a focused and detailed impact assessment of the implications of the plan or project, alone and in combination with other plans and projects, on the integrity of a Natura 2000 site in view of its conservation objectives.

Policy	Consistency
<u>Stage 2. Appropriate Assessment</u> This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional	The application is accompanied by an Appropriate Assessment Screening and a Natura Impact Statement prepared by Dixon Brosnan Environmental Consultants. The application site is potentially hydrologically connected to two Natura 2000 sites i.e., Cork Harbour SPA and Great Island Channel SAC. The application site is not directly connected with or

Policy	Consistency
scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 4, or the plan or project should be abandoned. The AA is carried out by the competent authority and is supported by the NIS.	necessary to the management of these or any other European site. The Appropriate Assessment Screening report concluded that although the likelihood of effects on the Cork Harbour SPA is low, applying the precautionary principle, potential impact pathways have been identified and a NIS should be prepared for the proposed development. No significant impacts were identified for Great Island Channel SAC. The NIS concludes that: *''the construction and operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion.''*

6.4 Regional Planning Policy

6.4.1 Southern Regional Assembly: Regional Spatial and Economic Strategy

The Regional Spatial and Economic Strategy (RSES) sets out a 12-year strategic development framework for the Southern Region. The purpose of the Regional Spatial and Economic Strategies (RSES) is to support the implementation of the National Planning Framework while facilitating choices that reflect the differing needs of the regions. The strategies are proposed in the context of a renewed focus on "Regional Parity" in the NPF, being promoted to address anti-competitive pressures on Dublin by offering more sustainable choices and options for people, businesses and communities that can positively influence more sustainable patterns of living and working which benefit our entire society and make our economy more equitable and resilient.

The vision for the Southern Region is outlined in the RSES as follows:

- Nurture all our places to realise their full potential;
- Protect and enhance our environment;
- Successfully combat climate change;
- Achieve economic prosperity and improved quality of life for all our citizens;
- Accommodate expanded growth and development in suitable locations; and
- Make the Southern Region one of Europe's most creative, innovative, greenest and liveable regions.

Policy	Consistency
RPO 5 – Population Growth and Environmental Criteria Increased population growth should be planned with regard to environmental criteria including: • The assimilative capacity of the receiving environment. • The proximity of Natura 2000 Sites and the potential for adverse effects on these sites and their conservation objectives. • Areas that have potential to flood.	As previously iterated in respect of National Planning Policy, the proposed development will result in the uplift in population in this area by 2,942 no. persons. This application is accompanied by an AA Screening and Natura Impact Statement assessing the impacts of the development on European Sites. A Site-Specific Flood Risk Assessment has also been prepared by Arup and recognises that residential development has been located at first floor level as a flood risk mitigation measure.
RPO 9 - Holistic Approach to Delivering Infrastructure It is an objective to ensure investment and delivery of comprehensive infrastructure packages to meet growth targets that prioritise the delivery of compact growth and sustainable mobility as per the NPF objectives.	The proposed development will provide for increased population growth in an area that is well connected by pedestrian and cycle linkages and will hence promote non-car modes of transport. The proposed Light Rail Tram Corridor from Ballincollig to Mahon will significantly increase the connectivity of the subject site to wider surrounding areas in Cork. The proposed public realm improvements will provide an enhanced level of amenity in the area and will improve the overall pedestrian and cyclist experience.
RPO 10 – Compact Growth in Metropolitan Areas The prioritisation of housing and employment development in locations within and contiguous to existing city footprints where it can be served by public transport, walking and cycling. The identification of public realm and site regeneration initiatives which combine, on an area wide basis, opportunities for regeneration of private owned underutilised sites, public owned underutilised sites, private and public buildings and upgrade of parks, streetscapes and public realm area.	The proposed development is located on a brownfield site and is appropriately zoned for mixed-use development where residential uses are permitted in principle. The client's currently vacant and significantly underutilised site presents an opportunity for suitable infill development within an area envisaged for significant regeneration. The proposed development site is excellently located within reasonable distance of a range of employment nodes by walking, cycling and public transport.
Section 5.0: Housing and Regeneration Section 5.0 identifies strategic housing and regeneration locations within the Cork Metropolitan area. Achieving NPF growth targets will require in depth consideration for new locations. The RSES specifies the following objectives and infrastructure priorities for the South Docklands: - Potential Residential Yield: 9,500 residential units, 9,500 jobs based on 920,000 sq m office	The proposed development at this brownfield site will assist in achieving the targets set out by the RSES through the delivery of 823 no. residential units, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities. The proposed development and associated masterplan have been cognisant of the objectives and infrastructure priorities for the south dock lands throughout the design process. The proposed application has the capacity to deliver a significant uplift in population (c. 2,942) in the South Docklands Area. We submit that the currently proposed development and future delivery of the masterplan lands will contribute to

Policy	Consistency
space and additional jobs from services, retail, restaurants etc. - Delivery of a Light Rail system to unlock the potential for high-density development. - River Crossings. - Upgrades to Monahan Road, Centre Park Road, and bridge approach roads. - Flood Relief Measures. - Brownfield site remediation. - Cross-river watermain to serve South Docklands.	the viability and delivery of the infrastructure priorities set out in the RSES for this area.

6.4.2 Cork Area Strategic Plan, 2020 (CASP) and CASP Update 2008

The Cork Area Strategic Plan sought to provide a framework for the development of Cork over a 20-year period from 2000 – 2020 and outlined a number of key concepts including the following:

Policy	Consistency
• To move towards a more sustainable form of development for the Cork Area; • To improve access and accessibility; • To promote integrated land use /public transport strategy; • To match the location of new housing as closely as possible with the location of employment growth centres; and • To require an overall rise in housing densities and development that is concentrated rather than dispersed.	The proposed development is located in a strategically accessible location in the Cork Metropolitan Area. The proposed development has been designed in accordance with the concept of improving access and accessibility for all and will promote the integration of public transport and land-use planning. The proposed development represents the sequential development of lands to the south of a recently permitted mixed-use scheme on the Former Ford Site and will create consolidated development. The proposed development in addition to the permitted scheme to the north will act as a catalyst for further development of the docklands and support the city centre as a key employment node. The proposed development has been designed having regard to the principles of compact growth and as such proposes a net density of 294 no. units per hectare on the currently vacant brownfield site.

6.4.3 Cork Metropolitan Area Transport Strategy (CMATS), 2040

The Cork Metropolitan Transport strategy (CMATS) has been published in the context of the National Planning Framework which envisages that Cork will

become the fastest growing city region in Ireland in the coming years. This projected population and associated economic growth will result in a significant increase in the demand for travel. This demand needs to be managed and planned for carefully to safeguard and enhance Cork's attractiveness to live, work, visit and invest in.

Policy	Consistency
Key outcomes for walking in the strategy include: An increase in walking levels for work, education and leisure across the CMA, particularly for short journeys (less than 2-3km); • Addressing the safety issues and barriers that prevent citizens and visitors from walking more in Cork; • Supporting a high quality and fully accessible environment for all abilities and ages by continuing to develop a safe, legible and attractive public realm; • Facilitate walking's role as part of linked trips, particularly with rail and bus journeys; and • Promote a far higher standard of urban design in new developments, and in highway design, in a fashion that consistently prioritises pedestrian movement and safety over that of the private car.	The proposed development has been designed to encourage walking and cycling as a primary mode of travel to and from the proposed development by providing pedestrian and cycle linkages along strong desire lines, providing multiple building access points on all boundaries, and providing break off amenity/seating areas for rest. The proposed design will allow for residents and visitors to utilise existing and proposed public transport services from Centre Park Road and the wider surrounding area.
The provision of a LRT system will be a focal point to enable the growth of population, employment health and education uses as envisaged by the NPF 2040. The LRT system is a key enabler in CMATS. The LRT is required to: • Unlock strategic development areas in its catchment area including the Cork City Docks, Curraheen, Ballincollig and Mahon; • Maximise the development potential of windfall sites; • Provide greater certainty for future Planning and development, to pursue higher densities required to meet NPF population and employment targets for Cork City.	Based on CMATS, the LRT will serve the south docklands via Centre Park Road with a number of indicative stops identified. The planned development of the LRT therefore underpins the development of a high density scheme on the subject lands. In order to maximise its sustainable location adjacent to the infrastructural investment in the LRT minimal parking is provided within the development (0.33 car parking ratio) to encourage residents to avail of other modes of transport.

6.5 Local Planning Policy

6.5.1 Joint Housing Strategy: Cork Planning Authorities

The Joint Housing Strategy was produced in accordance with the adopted County and City Development Plans for the respective planning authorities in 2014-2015. The purpose of the housing strategy is to ensure that the proper planning and sustainable development of Cork City and County provides for the housing of the existing and future population of the area in an appropriate manner. The housing strategy sets out an overall framework for the supply of land to meet the housing needs arising in the county. Four key principles underpin the strategy with the relevant principles applicable to the proposed development illustrated in the table below.

Policy	Consistency
Principle 1: To provide for a diverse range of housing needs to suit varying income levels and social circumstances	The proposed development has been designed to cater for a range of household sizes by providing a mix of different units including 1, 2 and 3 bed apartments.
Principle 2: To promote a socially balanced and inclusive society in all housing areas within Cork City and County	The proposed layout has been designed to enable easy access by all and complies with Part M of the Building Regulations. Building for Everyone: A Universal Design Approach. The design of the proposed development is in accordance with the 12 criteria for residential development as outlined in the 2009 Urban Design Manual: A best practice guide.
Principle 3: To promote high quality and sustainable communities in the Urban and Rural Environment, though the implementation of the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas published in May 2009.	

6.5.2 Cork City Development Plan 2015-2021

The Cork City Development Plan is Cork City Council's main strategic planning policy document intended to guide the development of the city up to 2022. The Plan outlines the vision for Cork over the lifetime of the Plan and beyond to *"be a successful, sustainable regional capital and to achieve a high quality of life for its citizens and a robust local economy"*

Among the main goals outlined in the Core Strategy of the Plan are to:

- Increase population and households to create a compact sustainable city;
- Achieve a higher quality of life, promote social inclusion and make the city an attractive and healthy place to live, work, visit and invest in; and
- Promote sustainable modes of transport and integration of land use and transportation.

Table 2.3 of the Development Plan provides the '*indicative capacity of key development areas…*' and states that the Docklands has capacity to accommodate an estimated 8,227 no. residential units. The proposed delivery of 823 no. residential units is consistent with the core strategy. The vision for the Docklands set out in the Development Plan is provided below:

"Cork City Docklands represent the biggest development opportunity for Cork City and the CASP (Cork Area Strategic Plan) area over the Plan period and beyond, its redevelopment and renewal being of regional and national significance. The vision for Docklands is that of a vibrant mixed use and socially inclusive urban quarter that will capitalise on the intrinsic advantages of the area:"

Chapter 16 of the development plan outlines the various development management standards that will need to be adhered to when assessing a planning application including zoning objective.

Zoning Objective	Consistency
Z0 16: Mixed Use Development - To promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency.	The proposed development will provide 823 no. apartments in 6 no. buildings containing 282 no. 1 bedroom apartments, 414 no. 2 bedroom apartments and 127 no. 3 bedroom apartments. Ancillary commercial uses will be provided at the lower levels of the development to deliver active and vibrant frontages, particularly fronting Centre Park Road. The mix of commercial uses proposed comprise food and beverage, local retail and neighbourhood centre uses including 2. no café/restaurants, 2 no. public houses, 7 no. retail units, a convenience retail store, a library, medical centre, pharmacy, post office, dentist and 2 no. creches. The lands zoned public open space (15,000 sq m) are not counted as part of the provision of public open space serving the development and are located outside the net developable area. It should also be noted that the delivery of development is not dependent on the zoned public open space but is included within the site boundary as a planning gain serving the wider South Docklands. The Area of High Landscape Value has been included to provide sustainable pedestrian connections and facilitate anticipated desire lines towards the Marina, Marina Park and Passage West Greenway. The proposed development will not negatively impact on the character and visual amenity of the Area of High Landscape Value.
Zo 9: Neighbourhood Centre - To protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services.	
Zo 14: Public Open Space -To protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.	
Area of High Landscape Value To conserve and enhance the character and visual amenity of Areas of High Landscape Value (AHLV) through the appropriate management of development, in order to retain the existing characteristics of the landscape, and its primary landscape assets. Development will be considered only where it safeguards to the value and sensitivity of the particular landscape. There will be a presumption against development where it causes significant harm or injury to the intrinsic character of the Area of High Landscape Value and its primary landscape assets, the visual amenity of the landscape; protected views; breaks the existing ridge silhouette; the character and setting of buildings, structures and landmarks; and the ecological and habitat value of the landscape.	

The table below lists all of the relevant standards and assesses the proposed development against them.

Policy	Consistency
Objective 4.5: To support and facilitate the development of district centres at Ballyvolane, Hollyhill and South Docklands in order to meet the day to day needs of their existing and/ or planned catchment populations.	The proposed development will contribute to the acute demand for residential development and will support the viability of a district centre in the south docklands.
Objective 5.1: Strategic Transport Objectives: • Provide for the greater consolidation of development within the City Centre, Docklands, Key Development Areas and Strategic Corridors, facilitated through the integration of land use and transport planning, investment and service provision; • To reduce the percentage of persons who drive to work to 60% by 2021; • To encourage and facilitate cycling and walking for short/local trips by providing appropriate infrastructure, promoting "soft-measures" that influence change in transport behaviour, and by encouraging proximate, compact land uses; • To encourage increased use of rail services, bus, and carpooling/ car sharing for longer journeys by providing local access infrastructure to key transport nodes, by using information, pricing mechanisms and other "soft-measures" to influence change in transport behaviour, and by encouraging public transport orientated development; • To encourage the use of innovative measures to reduce the requirement for car parking; • To support actions aimed at improving the fuel efficiency of motorised transport; • To facilitate operation (and expansion) of Cork Airport and Port of Cork, recognising their significant role in the economic vitality and quality of life of the region.	The proposed development has been designed with due regard of best practice guidance and through encouraging sustainable means of travel to and from the site by residents and visitors. In order to achieve the objectives of the Development Plan, a surplus of cycle parking spaces and reduced car parking spaces are provided. The Light Rail Transit (LRT) east-west corridor from Mahon to Ballincollig via Centre Park Road provides a significant opportunity for high density development on a future high frequency public transport corridor. The combination of sustainable design principles implemented in the scheme in addition to the investment in public transport in the south docklands will contribute to changing transport behaviours, where the predominant means of travel are walking, cycling and public transport.
Objective 5.2: Transport Assessment	Traffic and Transport is assessed in Chapter 7 of this EIAR, highlighting how the

Policy	Consistency
Planning applications for substantial developments (i.e. those that Cork City Council considers may have significant travel implications) shall include a Transport Assessment; the assessment shall demonstrate how sustainable transport patterns can be achieved by the development.	proposed development would address traffic and transportation issues, traffic generation, pedestrian and cycle linkages and safety and public transport availability and capacity.
Objective 5.6: To develop land use strategies that provide for the consolidation of development at higher densities along key public transport corridors.	The proposed development will provide a high density development along the future high frequency public transport corridor on Centre Park Road.
Objective 5.10: The design of pedestrian and cycling infrastructure will be in accordance with the principles, approaches, and standards set out in the National Cycle Manual, the Design Manual for Urban Roads and Streets and international best practice.	The proposed development has been designed having regard to the National Cycle Manual, the Design Manual for Urban Roads and Streets and international best practice.
Objective 6.1: Residential Strategic Objectives a. To encourage the development of sustainable residential neighbourhoods; b. To provide a variety of sites for housing to meet the various needs of different sections of the population; c. To continue to work with the Approved Housing Bodies and to actively engage with all key stakeholders in the provision of housing; d. To continue to regenerate and maintain existing housing; e. To encourage the use of derelict or underused land and buildings to assist in their regeneration; f. To promote high standards of design, energy efficiency, estate layout and landscaping in all new housing developments; g. To protect and, where necessary, enhance the amenities and the environment of existing residential areas.	The proposed development will provide a mix of residential unit sizes to cater for a range of household formations that will encourage a sustainable residential neighbourhood. Albeit the surrounding area is currently industrial and commercial in nature, it should be highlighted that 1,002 no. residential units have been granted on lands to the north (APB-309059-20). The regeneration of the underutilised lands in the south docklands will provide much needed housing to meet population demands.
Objective 6.3: Objective 6.3 Social Housing under Part V To require that 14% of units on all land zoned for residential uses (or for a mix of residential and other uses) to be reserved for the purpose of social housing and specialised housing needs. Each application subject to Part	In accordance with the Planning and Development Regulations, 2021(as amended), and Part V, Section 96 of the Planning and Development Act 2000 (as amended), the relevant social housing allocation is 10%.

Policy	Consistency
V requirements will be considered on an individual basis to the prior agreement of the Local Authority.	
Objective 6.8: Housing Mix To encourage the establishment of sustainable residential communities by ensuring a mix of housing and apartment types, sizes and tenures is provided. Planning applications for multiple housing units shall submit a Statement of Housing Mix detailing the proposed mix and why it is considered appropriate. The needs of special groups such as the elderly and disabled shall also be considered as part of this process.	The proposed development provides for a mix of 1, 2 and 3 bed apartments to cater for a variety of household formations including singles, couples, and small families across the full age spectrum.
Objective 7.18: Safe City a. To ensure a well-integrated urban form that provides a safe environment for all users by maximising visibility and surveillance, increasing pedestrian activity and maximising connections between areas; b. To encourage the ongoing maintenance and upkeep of the public realm, keeping spaces free of graffiti and litter etc.	The architectural design approach ensures that that public and communal areas are subject to passive surveillance and will not encourage anti-social behaviour by creating undesirable or secluded areas.
Objective 7.7: Childcare Facilities Cork City Council will support the provision of high-quality childcare facilities throughout the city suited to the needs of a given area and will: •Require purpose built childcare facilities as part of proposals for new residential developments of more than 75 dwelling units. However, where it can be clearly established that existing facilities are sufficient, alternative arrangements will be considered; •Consult with the Cork City Childcare Company and the HSE on planning applications where childcare facilities are proposed.	The proposal will deliver two no. childcare facilities (662 sq m internal and 247 sq m external) with capacity for 130 no. child spaces. The provision is in accordance with the indicative standard recommended in the 2001 Childcare Guidelines for Planning Authorities.
Objective 10.6: Views and Prospects To protect and enhance views and prospects of special amenity value or special interest and contribute to the character of the City's landscape from inappropriate development, in particular those listed in the development plan. There will be a presumption against development that would harm, obstruct or compromise the quality or setting of linear views of landmark buildings, panoramic views,	Townscape and visual impacts are described and assessed in Chapter 12 of this EIAR, Townscape and Visual.

Policy	Consistency
rivers prospects, townscape and landscape views and approach road views. To identify and protect views of local significance through the preparation of local area plans, site development briefs and the assessment of development proposals on a case-by-case basis	
Objective 10.10: Trees and Urban Woodland a. To protect and enhance the city's tree and urban woodlands b. To protect, survey and maintain existing important individual and groups of trees d. To ensure that new development benefits from adequate landscape structure / tree coverage, particularly in areas of the city with inadequate tree coverage	There are 229 no. trees proposed on the site in addition to the retention of 13 no. trees and woodland groups in lieu of the 9 no. trees and woodland groups required to be felled to facilitate the development.
Objective 11.7: Public Open Space a. To protect, retain, improve and provide for areas of public open space for recreation and amenity purposes. There will be a presumption against development of land zoned public open space for alternative purposes; c. To promote public open space standards generally in accordance with national guidance contained in Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities (DEHLG, 2009) and the accompanying Urban Design Manual – A Best Practice Guide; d. The development of open spaces should aim to enhance and protect natural features and views and be set in safe and secure environments with the emphasis on active open spaces accessible to and enjoyed by all sectors of the community; e. To follow an approach of qualitative as well as quantitative standards for open spaces providing high quality open spaces with high levels of access to recreation for local communities;	The qualitative and quantitative level of functional open space required is provided within the proposed development.
Objective 11.13: Amenity Routes To pursue the development of a network of high-quality amenity routes, particularly along waterways, and linking existing and proposed parks and public open spaces, and to work with Cork County Council and other stakeholders to achieve and improve external linkages subject to	The proposed development will provide direct pedestrian links from the subject site to Marina Walk to the north. In addition, Marina Park is located within close walking distance. The proximity to the greenway and public park will provide excellent

Policy	Consistency
Ecological Assessment and Appropriate Assessment Screening.	amenities for future residents of the scheme to utilise.
11.15 Children's Play Facilities To seek the provision of children's play facilities in new developments and particularly in new larger residential developments of 75 units and over. Facilities for young children aged 0-5 should be provided within easy walking distance of homes or within the cartilage of apartment blocks. Older children should have access to larger equipped play areas within 5 minutes walk of home.	Designated creche play areas (247 sq m) will be provided as part of the proposed scheme. Play facilities catering for both young and older children are provided as part of the proposed scheme and detailed within the Landscape Design Strategy prepared by Park Hood. It should be noted that the subject site is eminently situated near Marina Park which when completed will provide a range of play opportunities for people of all ages and abilities.
Objective 13.1 Strategic Objectives – City Centre and Docklands It is a strategic objective of Cork City Council to: a. Sustain and enhance the vitality and attractiveness of Cork City Centre as the 'Healthy Heart' of the region and as a quality place to live, work and visit; b. Facilitate the orderly expansion of the City Centre eastwards into Docklands and support the progressive development of Docklands as a sustainable urban quarter to complement the continued vibrancy and primacy of the City Centre; c. Implement the appropriate recommendations of the City Centre Strategy report (2014); e. Continue to develop Cork City Centre as a high quality, vibrant and adaptable location for the growth of indigenous and international business; f. To develop the City Centre as a desirable place to live for all by providing a quality, sustainable and socially inclusive housing stock in proximity to quality services and amenities; i. To facilitate the safe, efficient and sustainable movement of people to, from and within the City Centre	The development in combination with the permitted scheme on the Former Ford Site will contribute to the supply of residential units and the delivery of the dockland as a sustainable urban city quarter. The proposed development has been designed having regard to the relevant quantitative standards as outlined throughout this document and will deliver a high quality development on an excellently located site that easily accessible from Cork City Centre.

Policy	Consistency
Objective 16. 1 Design Statement All significant planning applications shall submit an accompanying design statement which provides a framework explaining how a proposed development is a suitable response to the site and its setting.	The proposed development has been designed in accordance with best practice guidance and is a suitable response to the site and its setting.
Objective 16.2: Visual Impact Assessments All significant planning applications shall submit an accompanying visual impact assessment.	Townscape and visual impacts are described and assessed in Chapter 12 of this EIAR, Townscape and Visual.
Objective 16.3 Urban Design - To deliver high quality built environments through good place making; - To ensure that development is designed to high qualitative standard and is cognisant of the need for proper consideration of context, connectivity, inclusivity, variety, efficiency, distinctiveness, layout, public realm, adaptability, privacy and amenity, parking and detailed design.	The proposed development has been designed to all relevant Urban Design criteria as set out throughout this document.
Objective 16.4 Skyline and roofscapes The City Council will seek new buildings to be designed to: - enhance the roofscape in terms of their bulk, massing, materials and aesthetics; - where appropriate, divide building mass into smaller elements which respect the existing cityscape and the setting and views and prospects of landmark buildings and the other special amenity views; - where appropriate locate plant housing for buildings in basements to avoid impact on views of cityscape.	The proposed development has been designed in accordance with Objective 16.4 of the Development Plan.
Objective 16.6 Creating Adaptable Buildings The City Council will seek to ensure that new buildings are designed to be flexible and adaptable throughout the city.	The proposed development has been designed to be flexible and adaptable with 2.7 m floor to ceiling heights at ground floor level and 2.4 m heights at upper levels.

Policy	Consistency
Objective 16.7 Tall Building Locations The City Council will aim to protect the special character of Cork City which have been identified as having potential for tall buildings. These are South Docklands & South Mahon. (Locations are indicated on Zoning and Objectives Maps in Volume 2).	There is a 'tall building designations' located to the east of Centre Park Road. Block A proposes heights of up to 35 no. storeys in the vicinity of this location. In addition to a comprehensive Design Statement prepared by C+W O'Brien Architects, a Tall Building Statement has been prepared by Urban strategies and is enclosed as part of this application.
Objective 16.9 Sustainable Residential Development Residential developments shall be sustainable and create high quality places and spaces which: a. Deliver a quality of life which residents and visitors are entitled to expect in terms of amenity, safetyand convenience; b. Provide adequate open space which are practical in terms of scale and layout and naturally supervised by the aspect of the dwellings it serves; c. Provide a good range of suitable facilities; d. Prioritise walking, cycling and public transport and minimise the need to use cars e. Present an attractive appearance with a distinct sense of place; f. Are easy to access and navigate; g. Promote the efficient use of land in terms of density and plot ratio; h. Promote social integration and provides accommodation for a diverse range of household types and age groups; i. Enhance and protect the built and natural heritage	The objective of the proposed development is to deliver a high quality environment for future residents that will integrates with the surrounding masterplan plan area and permitted developments. The delivery of the public transport corridor along Centre Park Road will further increase the attractiveness of the south docklands as a place to live and work. The application documentation submitted demonstrate that the scheme comprising 823 no. residential units, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities is consistent with objective 16.9.

6.5.3 South Docks Local Area Plan (SDLAP)

Although the South Dock Local Area Plan, 2008 expired in 2018 and is largely outdated it has been included as part of this Chapter for completeness. The vision of the South Docklands Local Area Plan, 2008 is to deliver the development of:

- A new identity for the docklands
- Places for people Places that are inclusive
- Places that have a mix of uses

- Places for learning
- New places for work
- New places for play
- A sustainable place.

Policy	Consistency
Zoning Objective SD 01: Mixed Use Development To promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency. **SD 04 Neighbourhood Centre** To protect, provide for and or/improve the local retail and services function of the South Docks area **SD02 Public Open Space** To protect and provide for recreational uses, open space, natural heritage and amenity features	The proposed mixed-use development provides a vertical and horizontal mix of complementary uses that will achieve a vibrant neighbourhood area for future residents and visitors.
Objective SD 14: Infrastructure Led Development It is an objective of the City Council to ensure that the development of the South Docks is infrastructure-led. The City Council will seek that critical infrastructure and services be in place and operational prior to the completion of significant developments within the South Docks.	Notwithstanding the significant future investment in infrastructure in the south docklands, a Traffic and Transport Assessment prepared by Arup to demonstrate capacity in the surrounding road network.
Objective SD16: Block Sizes The City Council shall ensure the length of a block shall not generally exceed 60-80m between any streets or through site links, to promote accessibility and permeability of new developments.	The proposed development has been designed having regard to the site-specific characteristics including the length and width of the plot which facilitates blocks greater than envisaged in the LAP. The proposed block does not hinder the accessibility or permeability of the proposed development.
Objective SD 18: Pedestrian and Cycle Provision The creation of a pedestrian and cycle-friendly environment will be a priority in the detailed design of roads and the public realm.	The proposed development has been designed in accordance with best practice guidelines and will provide 1,718 no. resident cycle parking spaces and 412 no. visitor cycle parking spaces to encourage walking and cycling from the subject site.

Policy	Consistency
Objective SD 19: Mobility Management Plans (MMP) Cork City Council will require commercial and residential developments to prepare and implement Car Parking Strategies and Mobility Management Plans. Each will be assessed on a case-by-case basis.	An Outline Mobility Management Plan has been prepared by Arup and is enclosed with the application.
Objective SD 21: Residential Design The City Council requires a '*confetti*' type design approach, which avoids repetition and delivers architectural diversity through a mix of housing type for large land holdings and precincts.	The proposed development will provide 282 no. one bed units (34%), 414 no. two bed units (51%) and 127 no. three bed units (15%) including a number of own door units (accessed from the podium level) that will cater for the needs of a range of household formations.
Objective SD 22: Gated Communities Gated communities will not be encouraged in the South Docks where they inhibit the development of a permeable, accessible urban quarter.	The proposed development will not be gated.
Objective SD 23: Residential Guidelines In order to facilitate sustainable communities in Cork Docklands, the City Council will require all new residential development within the South Docks to comply with the minimum sizes set out in Table 4.2. Adequate storage space will be made available for each residential unit.	The proposed residential units have been designed in accordance with the Sustainable Urban Housing Design Standards for New Apartments: Guidelines for Planning Authorities, 2020 which supersedes the LAP.
Objective SD 24: Residential Unit Mix Targets In order to promote balanced development within the South Docks area, the City Council will promote the development of family-sized residential units to encourage a mixed population within the area. The provision of high quality services, ample private open space (see Section 4.9.2), generous recreational areas and facilities will support this objective.	The proposed residential units have been designed in accordance with the guidance on unit mix set out Sustainable Urban Housing Design Standards for New Apartments: Guidelines for Planning Authorities, 2020 which supersedes the LAP.
Objective SD 25: Mixed Tenure Housing The City Council will require that 20% of land zoned for Mixed Use Development or Inner City Residential Neighbourhood be reserved for social and affordable housing under Part 5 of the Planning and Development Act, 2000 (as amended). The City Council's preferred option for compliance with	In accordance with the Planning and Development Regulations, 2021 (as amended) and Part V, Section 96 of the Planning and Development Act 2000 (as amended), the relevant social housing allocation is 10%.

Policy	Consistency
Part 5 will be the provision of units on the site. Consideration may be given to the acceptance of 20% of the subject land, or to the provision of equivalent zoned lands elsewhere within the South Docks Area.	
Objective SD 33: Educational Facilities The City Council will seek to pursue the development of educational facilities to serve the requirements of the South Docks, including pre-school childcare services. The provision of educational facilities will be required in tandem with the pace of residential and other development in the South Docks. **Objective SD 34: Childcare Provision** It is an objective of the City Council to work in partnership with the Cork City Childcare Company to ensure the provision of high quality childcare facilities within the South Docks area in accordance with Policy H28 of the Cork City Development Plan.	The proposed childcare facility will have the capacity for c. 130 no. child spaces (662 sq m internal and 247 sq m external). This amount of provision is in accordance with the indicative standard recommended in the 2001 childcare guidelines for Planning Authorities.
Objective SD 35: Conservation Cork City Council will seek to conserve and protect buildings of architectural, historical, archaeological, artistic, cultural, scientific, technical and social interest in the South Docks in the following manner.	There are no buildings of architectural, historical, archaeological, artistic, cultural, scientific, technical and social interest located on the subject site.
Objective SD 36: Natural Heritage Cork City Council will endeavour to promote natural heritage and biodiversity in the South Docks.	The proposed development has been designed to include specimen trees and herbaceous planting that will support biodiversity on site.
Objective SD 37: High Quality Design Principles It is an objective of the City Council to ensure that the following key principles (in addition to Policy BE 30 of the CCDP 2004 and Sections 4.8.2. and 4.9 of this Plan as well as the Public Realm Strategy) apply to the urban design and architectural design of the South Docks and be reflected in the Urban Design and Architectural Statements submitted with planning applications to ensure a high quality environment:	The proposed development avoids monotonous facades through the variety of materials and treatments proposed.

Policy	Consistency
Objective SD 38: High Density Development The provision of high density residential units within the South Docks should provide for: • The development of defined new urban/transport nodes, extending from the City; • Vibrant, mixed community areas which can support the local economy, transport and community facilities and foster social inclusion; • High quality architectural proposals which provide a combination of designs to create a distinct identity and 'sense of place' within the South Docks; • High quality public realm environment to define neighbourhoods and provide linkages to the waterfront location of the South Docks.	The proposed high density development and associated masterplan is in accordance with the principles set out in Objective SD 38. The proposed development will support the delivery of a vibrant city quarter and the creation of a '*sense of place'* in the south docklands.
Objective SD 39: Protection of Views and Vistas It is an objective of the City Council to promote new developments which protect and enhance the protected views of Cork City centre. All applications for high buildings must have regard to the Cork City Views and Prospects Variation to the CCDP (Variation No. 3), to Table 4.4 and Figure 4.10 of this LAP and to the Public Realm Strategy.	Townscape and visual impacts are described and assessed in Chapter 12 of this EIAR, Townscape and Visual.
Objective SD 41: Design Statements The City Council will request the principles of Safer-By-Design methods to be addressed as part of the Design Statement, which will accompany an application for new development. All applications for significant development shall address the key principles of Safer-by-Design.	The proposed site plan will ensure that both public and communal areas are subject to active surveillance.
Objective SD 42: Landscape Design Strategy A detailed Landscape Plan/Design Strategy should be submitted with all major applications for development. In order to encourage design that is of the highest quality, a clear rationale for the selected design choices needs to be demonstrated.	Park Hood Landscape Architects have prepared a detailed Landscape Masterplan and Design Strategy for the proposed development.

Policy	Consistency
Objective SD 44: Public Open Space The City Council will require the development of the South Docks to demonstrate adequate levels of public open space provision. Public open space will comprise 10-14% of the South Docks area net of the lands of Marina Park and will be developed to a high standard.	The proposed residential units have been designed in accordance with the Sustainable Urban Housing Design Standards for New Apartments: Guidelines for Planning Authorities, 2020 and Cork City Development Plan 2015 -2022 which supersede the LAP.
Objective SD 45: Open Space Principles The Council will seek to establish the following key principles for new developments within the South Docks area: • Require the achievement of high quality urban design and public open space in all developments. • Improve, enhance and encourage biodiversity. • Promote the development of high quality, well designed pocket parks, whether as improvement of existing spaces or as new schemes in development areas. • Seek to ensure that usable, high quality, well designed private or semi-private open spaces are incorporated into the new development, especially in residential areas. • Develop the play area facilities which will include the provision of a range of play areas for differing age profiles and abilities. • Promote access to open space by maximizing linkages, particularly pedestrian and cyclist, throughout the area and by developing continuous circuits for walking, running and cycling. • Require the design of developments that front onto streets and public open space to ensure that passive surveillance of the spaces. • Seek a detailed Landscape Plan/Design Strategy with all major applications for development. In order to encourage design that is of the highest quality, a clear rationale for the design choices made needs to be demonstrated. This process can be documented via a Design Statement. • Seek that the landscape and public realm be well-maintained and managed.	The proposed development will provide high quality and functional open spaces that will cater for a range of ages and abilities. In addition, the landscape design will promote biodiversity and provide green linkages to the permitted scheme to the north on the Former Ford Site (APB-309059-20).

Policy	Consistency
Objective SD 46: Flood Protection and Surface Water Drainage The City Council will require that key flood protection infrastructure be developed on a phased basis within the South Docks. Flood protection measures as outlined in the Infrastructure Strategy include the raising of ground levels with perimeter protection of the site.	A site specific Flood Risk Assessment has been prepared by Arup and is enclosed as Appendix 14.1 to this EIAR.
Objective SD 47: Foul Drainage and Water Infrastructure The City Council will require that key drainage infrastructure elements be developed and in operation prior to the opening of major development within the South Docks.	A Site Infrastructure Report prepared by Arup has been prepared and is submitted as a standalone report.
Objective SD 51: Sustainable Legacy of South Docks Cork City Council will encourage developers to leave a legacy of high quality developments, which are sustainable, conservation-conscious, aesthetically pleasing and user friendly and which have high standards of amenity, safety and convenience in the design of new developments within the South Docks.	The proposed development will deliver an efficient, high quality and contemporary development for future residents of the scheme. As previously noted, the proposed development of the subject lands in combination with the permitted scheme to the north will act as a catalyst for further redevelopment of the south docklands.
Objective SD 52: Energy Efficiency and Renewable Measures Cork City Council will require new developments to demonstrate energy saving measures and sustainable/renewable energy technologies where possible.	The proposed development has been designed having regard to energy saving measures and sustainable/renewable energy technologies where possible.
Objective SD 53: Precinct Development The City Council will require that large planning applications in precinct areas must be accompanied by a Delivery and Implementation/Phasing Strategy to demonstrate how the development and objectives of the precinct will be achieved.	The proposed application will be delivered in phase one of the overall masterplan. A detailed phasing strategy in respect of the construction phase will be submitted at application stage.
Objective SD 60: ESB Power Station Precinct Cork City Council will engage with the ESB and developers.	The proposed development is situated to the east of the former ESB site, therefore Objective SD 60 will be addressed as part of the future application pertaining to those lands.

Policy	Consistency
Objective SD 62: Parkside Cork City Council will seek to ensure the provision of the following elements to promote the sustainable development of the Parkside Precinct within the South Docks: Flood protection measures as identified in the Infrastructure Strategy. Retention and improvement of the Shandon boat club and slipway. Provision of additional moorings in accordance with the Public Realm Strategy. Retention of landscape elements along the Marina and upgrading of public realm, including Quayside Amenity and Area and Sculpture Trail. Relocation of Seveso activities and under-grounding of power lines where possible. Development of part of the post-primary school.	Objective SD 62 of the LAP has been duly considered as part of the proposed development and have been implemented where relevant in the proposed development.

6.5.4 References

- Housing for All - A New Housing Plan for Ireland
- Project Ireland 2040: National Planning Framework
- Sustainable Urban Housing Design Standards for New Apartments: Guidelines for Planning Authorities, 2020
- Building Height Guidelines for Planning Authorities, 2018
- Guidelines for Planning Authorities: Sustainable Residential Development in Urban Areas (Cities, Towns and Villages), 2009
- Urban Design Manual: A Best Practice Guide, 2009
- Design Urban Manual for Urban Roads and Streets, 2013
- Childcare Facilities: Guidelines for Planning Authorities, 2001
- Universal Design Guidelines for Early Learning and Care Settings, 2019
- Planning System and Flood Risk Management Guidelines 2009
- Appropriate Assessment Plans and Projects in Ireland Guidelines for Planning Authorities
- Southern Regional Assembly: Regional Spatial and Economic Strategy
- Cork Area Strategic Plan, 2020 (CASP) and CASP Update 2008
- Cork Metropolitan Area Transport Strategy (CMATS), 2040
- Joint Housing Strategy: Cork Planning Authorities

- Cork City Development Plan 2015-2021
- South Docks Local Area Plan (SDLAP)

7 Traffic and Transportation

7.1 Introduction

This chapter has considered the potential traffic and transport impacts associated with the proposed development. This chapter has been prepared by Clifford Killeen of Arup. A description of the author's qualifications and experience is presented in **Chapter 1** *Introduction*.

The purpose of this chapter is to assess the potential impacts of the Proposed Development on the existing transport network in the site vicinity.

The Proposed Development is described in detail in **Chapter 4** *The Proposed Development.*

7.2 Assessment Methodology

A brief description of the methodology of this assessment is presented below.

7.2.1 Introduction

A Traffic and Transport Assessment was carried out by Arup on behalf of Tiznow Property Company Limited (Comer Group Ireland). This transportation assessment has been prepared based on the principles presented in the Traffic and Transport Assessment Guidelines prepared by the National Roads Authority (now Transport Infrastructure Ireland) in May 2014.

The scope and extent of the Traffic and Transport Assessment, which was discussed and agreed with Cork City Council, also considered a number of relevant points and recommendations issued by Transport Infrastructure Ireland in response to an EIAR scoping request.

7.2.2 Transport Modelling

7.2.2.1 Baseline Traffic Survey Data

To assess the impact of the proposed development on the local road network, an examination of the existing traffic flows in the area was deemed necessary, and traffic count surveys were carried out on Tuesday 30 April 2019 between the hours of 07:00 – 19:00 at a number of junctions in the general site vicinity.

7.2.2.2 Assessment Periods

The Traffic and Transport assessment has been carried out for the base year of 2019, the opening year of 2025 and the forecast year of 2030. Each of the future year assessments includes an assessment of scenarios both 'With' and 'Without' the proposed development. The assessment scenario for the 2025 opening year includes both the operational traffic associated with the initial phases of the proposed development and the ongoing construction traffic associated with the

subsequent phases; as such, a dedicated construction phase assessment (i.e., assessing construction stage traffic only) is not presented.

7.2.2.3 Baseline Traffic Growth Rates

For the purposes of this analysis and in order to ensure a robust assessment, background traffic growth has been assumed to grow at the medium/central rates identified in the Transport Infrastructure Ireland (TII, formerly NRA) Project Appraisal Guidelines (PAG), Unit 5.5: Link- Based Traffic Growth Forecasting for the South-West, which includes Cork.

These growth rates have been applied to the baseline traffic count data to calculate future year baseline traffic conditions on the surrounding road network. This is considered a worst-case scenario given that the implementation of the City Centre Movement Strategy (CCMS) and Cork Metropolitan Area Transport Strategy (CMATS) will reduce city-centre vehicle traffic.

7.2.3 Traffic Generation

The projected peak period traffic which is expected to be generated by the proposed development has been calculated from trip rates derived from the TRICS database. The TRICS database contains trip-generation rates relating to a variety of land uses from sites in Ireland and the UK. Through careful selection of input parameters relating to a variety of criteria such as land-use, location, and public transport provision, the TRICS database allows an estimate to be made of the probable level of trip generation rates for a proposed development.

7.2.4 Traffic Distribution

The distribution of traffic to and from the proposed development has been based on the existing traffic surveys carried out on the surrounding road network and commuting data from the Census 2016 information for Small Area Populations Statistics, for the local electoral areas of Cork City encompassing the site vicinity.

7.2.5 Extent of the Transportation Assessment

7.2.5.1 Link Assessment

The Traffic and Transportation assessment identifies the projected change in traffic on the following roads near the proposed development:

- Centre Park Road (east of Marquee Road);
- Centre Park Road (west of Marquee Road);
- Marquee Road;
- Monahan Road (west of junction with Marquee Road);
- Monahan Road (east of Victoria Rbt);

- Maryville (north of Blackrock Road);
- Blackrock Road (west of Maryville);
- Blackrock Road (east of Maryville);
- Victoria Road (north of Victoria Rbt);
- Victoria Road (south of Victoria Rbt);
- Victoria Road (south of Monahan Road);
- Albert Road (west of Victoria Roundabout);
- Montenotte View (west of Victoria Rbt);
- N27 (south of Albert Road);
- N27 (north of Albert Road);
- Albert Street;
- Eglinton Street;
- Old Station Road;
- N27 South Link;
- Albert Quay (east of N27); and
- Albert Quay (west of N27).

7.2.5.2 Junction Assessment

The following junctions were assessed:

- Centre Park Road/Marquee Road;
- Marquee Road/Monahan Road/Monahan Road Extension;
- Maryville/Blackrock Road;
- Victoria Roundabout/Victoria Signalised Junction; and
- Albert Road/N27 Junction.

7.2.6 Traffic Modelling Tools

The projected change in traffic flows associated with the proposed development has been calculated using spreadsheet analysis. Junction analyses have been carried out using LinSig, which is a computer software package for the assessment and design of traffic signal junctions, either individually or as a network of junctions. The software package was developed by JCT Consultancy Ltd. and is used by traffic engineers to construct a model of a signalised junction or network, which can then be used to assess different designs and methods of operation.

7.2.7 Time Periods Assessed

The following time periods have been identified as the peak hours on the surrounding network and were therefore assessed as part of the Traffic and Transportation assessment:

- AM Peak 07:30 - 08:30; and
- PM Peak 17:15 - 18:15.

The time periods above reflect the peak periods on the road network near the site, as per the traffic count surveys carried out on Tuesday 30 April 2019. This was based on the volume of turning movements recorded at each junction at 15-minute intervals. Whilst it may be expected that an AM peak period closer to the more traditional 08:00 – 09:00 period would exist, the surveys indicate that the local traffic network processes higher volumes of traffic earlier in the morning, likely due to the city centre locations of the surveys and existing pressure on the network extending hours of travel.

7.2.8 Assessment Criteria

The assessment of impacts on the road network, including the projected change in prevailing travel conditions, has been based on the rating system in Table 7.1. This takes cognisance of the Environmental Protection Agency (EPA) guidelines, as contained within the 'Draft Revised Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (August 2017).

Table 7.1 Impact Assessment Criteria

Significance of Impact	Topic-Specific Criteria
Imperceptible	No perceived impact on prevailing travel conditions
Not Significant	A small change in traffic flows without causing a real change in travel conditions
Slight Effects	A change in traffic flow resulting in a minor change in travel conditions
Moderate Effects	A change in traffic flows resulting in a modest change in travel conditions
Significant Effects	A marked change in travel conditions resulting in long delays to traffic
Very Significant Effects	A significant change in travel conditions resulting in very long delays to traffic
Profound Effects	A major change in travel conditions resulting in the breakdown in traffic flow and significant delays to traffic

7.3 Transportation Planning Context

The following documents set out the transport planning policy framework on a national, regional and local level. The overarching emphasis of these documents is to promote and encourage the use of sustainable modes while reducing unnecessary trips.

7.3.1 National Transport Policy

7.3.1.1 Smarter Travel – A Sustainable Transport Future 2009

This document sets out the transport policy for Ireland for the years 2009 – 2020 and remains valid despite currently lying outside its' statutory timeframe. It identified a target for reducing work-related commuting by car from its current modal share of 65% to 45% by 2020.

The document admits that the targets are ambitious and may need to be adjusted in light of improving knowledge and changing trends, but also taking cognisance of the present economic situation.

7.3.1.2 National Cycle Policy Framework 2009 – 2020

The National Cycle Policy Framework (as part of Smarter Travel – A Sustainable Transport Future 2009) outlines national policy for cycling, in order to create a stronger cycling society and a friendlier environment for cycling.

The policy document set a target of 10% of all trips by bicycle by 2020, and equally recognises the needs of promoting and integrating cycle networks.

7.3.1.3 Design Manual for Urban Roads and Streets

The Design Manual for Urban Roads and Streets (DMURS), published by Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government (2013), provides guidance relating to the design of urban roads and streets. It presents a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to networks and individual streets.

DMURS aims to re-balance the transport modes and place the pedestrian and cyclist ahead of the vehicle when examining the street. The pedestrian perspective focuses on:

- **Connectivity and legibility:** where traffic movement is not given priority over pedestrians;
- **Comfort:** increased width and reduced clutter on footpaths. Promotion of passive surveillance and active street edges to help pedestrians feel less isolated and vulnerable; and
- **Safety:** by designing a street with a perceived increase level of risk for drivers encourages reduced speed. Therefore, designing a street for pedestrian comfort will naturally be designed for reduced vehicle speed.

Integrated approaches incorporate elements of urban design and landscaping that instinctively alter behaviour, thus reducing the necessity for more conventional measures (such as physical barriers and the road geometry) alone to manage behaviour. Streets and junctions are more compact, providing better value for money.

Consequently, there are four 'Key Design Principles' which are presented in DMURS. These are:

- **Connected networks:** To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport;
- **Multi-function streets:** The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment;
- **Pedestrian focus:** The quality of the street is measured by the quality of the pedestrian environment; and
- **Multidisciplinary approach:** Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

7.3.2 Regional and Local Transport Policy

7.3.2.1 Southern Regional Spatial and Economic Strategy (RSES)

All Regional Assemblies in the country have now adopted a Regional Spatial and Economic Strategy (an RSES) to give effect to the National Planning Framework at regional level. All Local Authorities are also required to ensure alignment of Development Plans and Local Area Plans with the RSES to ensure the achievement of national and regional policy objectives.

The RSES for the Southern Region outlines numerous objectives within Part 6, Section 2, 'The Regional Transport Strategy', including:

- To provide for the integrated development of sustainable transport infrastructure, including walking, cycling (including emerging e-modes) and public transport to accommodate the necessary switch from the private car, for the travel needs of all individuals in the region, in line with the stated government transport policy;
- To support improved strategic and local connectivity; To cater for the demands of longer-term population and employment growth, in a sustainable manner; and
- Supporting compact and smart growth through the achievement of mutual consistency between land -use and transport planning, investment, and service provision.

7.3.2.2 Cork City Development Plan (2015-2021)

The current Cork City Development Plan (2015-2021) sets out a number of strategic transport objectives, including the following:

- Provide for the greater consolidation of development within the City Centre, Docklands, Key Development Areas and Strategic Corridors, facilitated

through the integration of land-use and transport planning, investment and service provision;

- To reduce the percentage of persons who drive to work to 60% by 2021;
- To invest in transport infrastructure based on the transport user hierarchy: pedestrians, cyclists, public transport users, freight, delivery and waste vehicles; private vehicle users;
- To encourage and facilitate cycling and walking for short/local trips by providing appropriate infrastructure, promoting "soft-measures" that influence change in transport behaviour, and by encouraging proximate, compact land uses;
- To develop a Bus Rapid Transit system from Ballincollig to Mahon via the City Centre and Docklands;
- To work with transport stakeholders to further integrate transport modes and facilitate multi-modal trip chains;
- To provide new local roads, streets, upgraded streets, and pathways where required to increase connectivity;
- To actively manage capacity of the city's street system to reduce the negative impacts of congestion and to maximise the use of the existing street network; and
- To encourage the use of innovative measures to reduce the requirement for car parking.

7.3.2.3 Draft Cork City Development Plan (CDP) (2022-2028)

The Draft Cork City Development Plan (2022-2028) is expected to be finalised and adopted in mid-2022. The Draft Plan promotes the enhancement of the public realm and the promotion of sustainable transportation by the introduction of more space for public transport, pedestrian and cycle infrastructure and a reduction in road space and parking for cars in order to meet the challenge of accommodating the planned growth of the city population. Sustainable and active travel represent a key strategic principle of the Draft Plan.

7.3.2.4 Cork Metropolitan Area Transport Strategy (CMATS)

The National Planning Framework (Ireland 2040) envisages sustained high growth in Ireland's urban centres, with Cork expected to record a 50-60% population growth in the period to 2040.

This population growth will see a commensurate increase in travel demand across the metropolitan area. To meet this challenge the NTA, in collaboration with Cork City and County Councils, has developed the Cork Metropolitan Area Transport Strategy 2040 (CMATS), a €3.5 billion strategy which sets out a framework for the planning and delivery of transport infrastructure and services to underpin the metropolitan area growth.

CMATS sets out a wide range of proposals across the entire transport network, including the following:

- Development of a new proposed metropolitan area bus network encompassing radial bus corridors into the city and orbital bus services across the network;
- Development of an east-west high frequency public transport corridor from Mahon to the City Centre and on to Ballincollig, envisaged to be provided as a Light Rail Transit (LRT) system in the medium to long-term, preceded by a high-frequency bus service in the interim;
- New city centre infrastructure to include several new river crossings at the Mill Road Bridge, Water Street Bridge and the South Docklands Eastern Gateway Bridge;
- Major supporting road infrastructure projects, including the Cork Northern Ring Road, Cork Northern Distributor Road and Cork Southern Distributor Road;
- Implementation of the Cork Metropolitan Area Cycle Network Plan with some additional or upgraded links from this plan; and
- Walking and cycling improvements throughout the metropolitan area.

The CMATS proposals in the vicinity of the proposed development are discussed in further detail.

7.3.2.5 Cork Metropolitan Area Cycle Network Plan

The Cork Metropolitan Area Cycle Network Plan (CNP) was developed in 2016 and outlined recommendations for cycling infrastructure and development of an integrated and coherent cycling network across the study area. The CNP outlined ambitions for an average cycling mode share within the overall South City Environs of 11% (with specific trip types targeted for a mode share of up to 20%). The CNP developed Primary, Secondary, Interurban and Greenway routes for the study area, with the Passage West Greenway identified as a major cycling route between the south-east city and the city centre.

As outlined above, the proposals within the CNP have largely been subsumed into the CMATS cycle network proposals. Proposals relating to the site vicinity are detailed later in this assessment.

7.4 The Existing Receiving Environment

7.4.1 Site Location

The site of the proposed development is located in the eastern suburb of Cork City, approximately 2km east of the city centre, within the South Docklands, at the Former Tedcastles Site. The site is bounded to the north by Marina Walk, to the south by Centre Park Road and to the west by industrial lands. The site is also located quite close to Páirc Uí Chaoimh Stadium and Marina Park. The location of the site in the context of Cork City Centre can be seen in **Figure 7.1.**

The proposed development site is approximately 4.86 hectares in area and is currently not in use, although there are remnants of a number of industrial-type buildings still present on site.

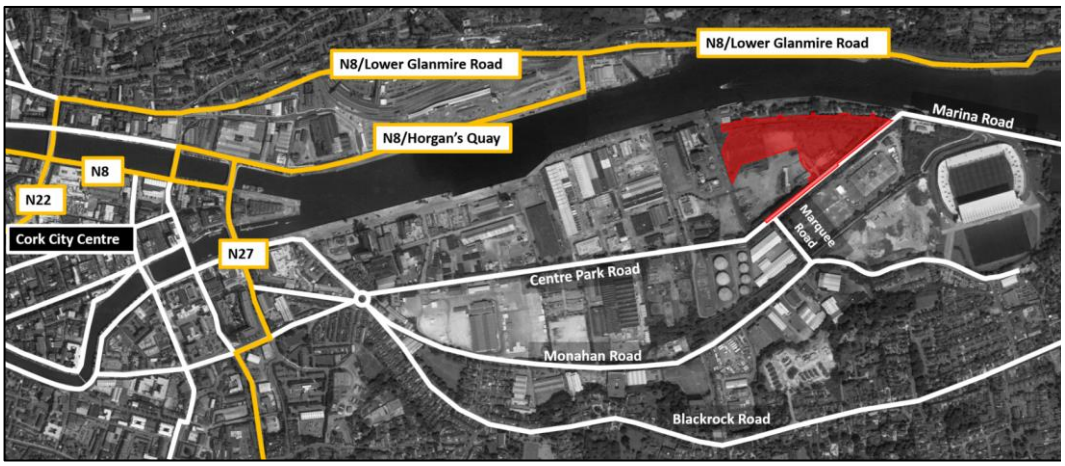

Figure 7.1: Proposed Development Site (highlighted red) – Cork City Centre Context | Source: Google Maps | not to scale

7.4.2 Local Road Network

The roads located in the proximity of the proposed development are described below and can be seen in **Figure 7.1**. The local area surrounding the site at present can largely be described as industrial in use, with a number of dormant sites towards the eastern end of the South Docklands. Centre Park Road and Monahan Road are connecting routes to Cork City Centre to the west, and to the Blackrock and Ballintemple suburban areas to the east/south-east. These routes are standard two-lane carriageways for the most part (with some localised flaring in certain locations). Marquee Road is a connecting road that links Centre Park Road and Monahan Road. The Marina is a local access road to the south-eastern suburbs of Cork City and also facilitates access to Páirc Uí Chaoimh stadium.

7.4.2.1 Centre Park Road

Centre Park Road is a 1.5km long, two-lane wide road which runs from the Victoria Road Roundabout to the west, to the Marina Road to the east. This road will be used to gain access to the proposed development site. There are pedestrian facilities on both sides of the road and there are segregated cycle facilities (outbound) in place on the route. The 212 city bus service (Kent Station to Mahon Point) has an outbound stop on Centre Park Road approximately 250m west of the site.

Centre Park Road also acts as a link to the city centre from Blackrock Village via The Marina. Currently, there are no significantly active entrances on the section of Centre Park Road to the north-east of the junction with Marquee Road, and as such this section of Centre Park Road experiences very light traffic flows. Furthermore, Cork City Council have implemented traffic restrictions along the Marina to the north-east (as of December 2020), which effectively prohibits any

non-essential through traffic along Centre Park Road east of its junction with Marquee Road.

7.4.2.2 Monahan Road

Monahan Road is a 2km long, two-lane wide road, which runs from the Victoria Road to the west to the Blackrock Road to the east. The northern side of the road has a footpath running the length of the road. There is on- street parking on some sections of the southern side of the road, with intermittent footpath provision. There are segregated cycling facilities (inbound) in place along the route.

The 212 city bus service (Kent Station to Mahon Point) has inbound and outbound stops on Monahan Road approximately 200m south-east of the site.

Monahan Road experiences low-to-moderate traffic flow during the AM and PM peak periods as there are several employment areas situated along the road and the route also facilitates onward traffic flow to Centre Park Road. Monahan Road also acts as a link to the city centre from Blackrock Village and Ballintemple via Maryville/Blackrock Road.

7.4.2.3 Marquee Road

Marquee Road is a 135m long, two-lane wide road which links Centre Park Road with Monahan Road. There are no bus stops on the route, but the route has footpaths on both sides as well as segregated cycling infrastructure on the eastern side, connecting Centre Park Road to Monahan Road.

As with the other roads in the locality, Marquee Road experiences low-to-moderate traffic flow during the AM and PM peak periods as there are several employment areas situated in the vicinity and the route also facilitates onward traffic between Centre Park Road and Monahan Road, as well as traffic routing from Maryville/Blackrock Road to Centre Park Road to and from the city centre.

7.4.2.4 The Marina

The Marina is a narrow, two-lane road which runs along the southern bank of the River Lee, connecting Blackrock Village with Centre Park Road. The Marina has been designated by Cork City Council (as of late 2020) as a pedestrian and cyclist-only area, with restrictions in place preventing vehicular use of the route and limiting vehicle access to local access only.

Local access to the Shandon Boat Club, the Lee Rowing Club and Páirc Uí Chaoimh is retained, but no vehicular access is permitted to the east of the vehicle entrance to Páirc Uí Chaoimh (the road is now closed at this location). Further east, access via Blackrock Village is permitted for vehicles up to the junction with Church Avenue; west of this junction, no vehicle access is permitted.

Outbound traffic on Centre Park Road is also permitted to access the Marina for local access to the Lee Rowing Club, and to the Marina Park car park, and for access to Páirc Uí Chaoimh stadium. Otherwise, the Marina now carries no traffic flows of note.

7.4.3 Temporary Proposals on Local Road Network

In response to the prevailing impact of social distancing requirements on the public transport system serving Cork City (due to the Covid-19 pandemic), in May and June of 2020 Cork City Council announced a series of measures intended to promote and facilitate greater numbers of people walking and cycling both to and within the city centre. As part of this, a number of 'pop-up' proposals were brought forward for rapid implementation across the city and suburbs. These included the provision of temporary, protected cycle infrastructure and restrictions on certain roads and streets from general traffic.

In the vicinity of the proposed development site, temporary cycle lanes have been installed on Centre Park Road (outbound from the city to connect to The Marina), Monahan Road (inbound towards the city) and Marquee Road (southbound, connecting Centre Park Road and Monahan Road). These cycle lane proposals involved the re-designation of existing carriageway space to provide dedicated cycle lanes (no widening was undertaken), and the installation of protective bollards to segregate the cycle lanes from vehicular traffic.

It is not known at this time as to the intended lifespan of these measures, including if or when they would be removed. However, it is envisaged that these cycle facilities on Centre Park Road, Monahan Road and Marquee Road will remain in place until such time as these routes are upgraded to permanent facilities in line with the recommendations in the Cork Metropolitan Area Transport Strategy. Indeed, these facilities have proved to be extremely popular and are well-used.

7.4.4 Pedestrian Facilities

All of the routes discussed in Section 7.4.2 have footpaths of varying quality. A program of footpath improvement works has been carried out in recent years in the vicinity of the proposed development site, which has seen the replacement and upgrade of a significant portion of the existing footpaths along Centre Park Road in particular. Monahan Road has a continuous footpath along the northern side of the route, and intermittent footpath provisions on the southern side. The pedestrian network in the site vicinity is extremely popular as a leisure walking and running route due to the onward connection to the southern bank of the River Lee (along The Marina). Marquee Road has footpaths provided on both sides of the road, of varying quality.

Figure 7.2 shows the walking catchment of the proposed development site (in 5-minute bands). It can be seen that Páirc Uí Chaoimh is within the 10-minute catchment. Marina Commercial Park, the South Dock Area and the Blackrock Road are all within the 15-minute catchment. Douglas Street is reachable within 30-minutes and Victoria Road is just outside the 20-minute walking catchment.

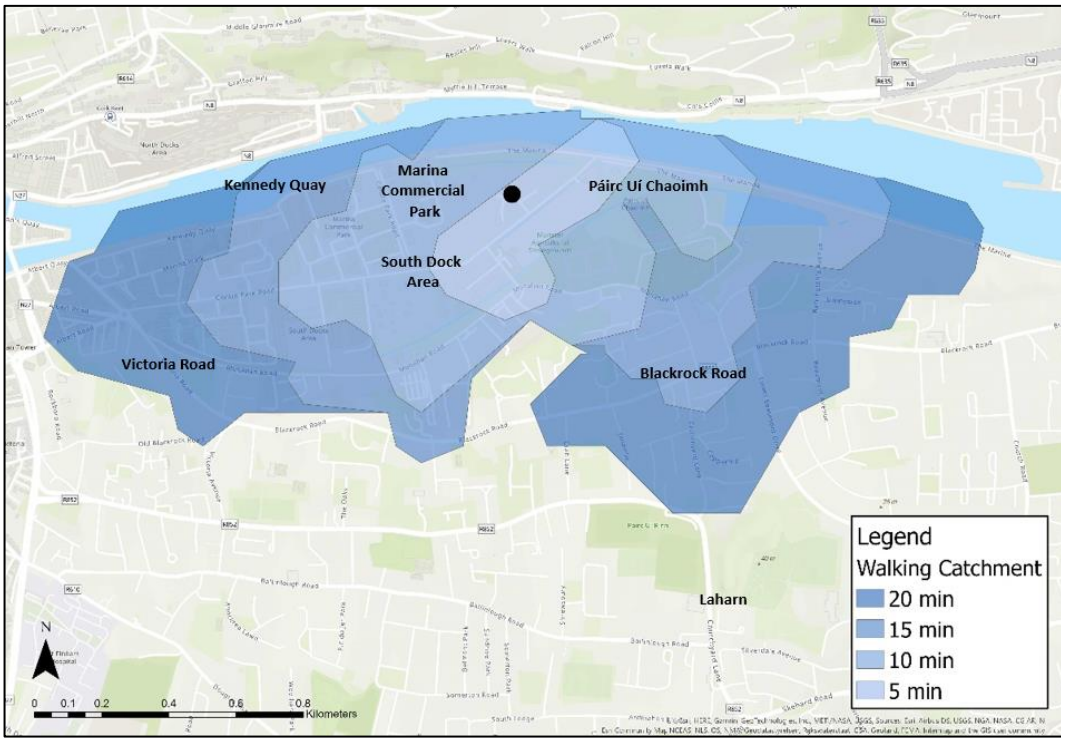

Figure 7.2: Walking Catchment in the vicinity of the Proposed Development | Source: GIS | not to scale

As set out in the Cork Metropolitan Area Transport Strategy (CMATS) a key aim is to improve walking infrastructure across the city to ensure the pedestrian environment is significantly enhanced, more attractive and safer.

7.4.5 Cyclist Facilities

As outlined above, there are a number of dedicated cycle infrastructure improvement schemes which have recently been implemented by Cork City Council in the vicinity of the proposed development site. Segregated cycle infrastructure is now in place on Centre Park Road (outbound), Monahan Road (inbound), Marquee Road (connecting Centre Park Road and Monahan Road), and segregated cycle infrastructure is also now in place between Centre Park Road (at the Victoria Road Roundabout) and Grand Parade, providing high-quality connections directly between the city centre core and the proposed development site. To the east, The Marina is also now a pedestrian and cyclist-only area, and approximately 1km from the proposed development site, the Passage Greenway line is accessible directly from the Marina.

The greenway is an extremely popular facility used for leisure and commuting, providing access via ramped connections to the Mahon Point area (via a ramped connection at St. Michael's Drive) and to Skehard Road (via a ramped connection in the vicinity of the Skehard Road/Mahon Link Road junction), and ultimately linking onwards to Cork City Centre.

The Passage Greenway is currently being upgraded by Cork City Council to allow for a wider facility, additional CCTV and public lighting, and new ramped connections from the adjacent road and street network. This Greenway is

currently under construction and is expected to be complete and opened in mid-2022.

Figure 7.3 shows the cycling catchment for the site. It can be seen that the 20-minute catchment encompasses most of Cork City. The city centre and Blackrock are within a 20-minute cycle from the site. University College Cork, Black Ash, Blackpool, Douglas and Ballyvolane are all within the 30-minute catchment. Munster Technological University (MTU), Whites Cross and Cork Airport are within the 40-minute catchment area.

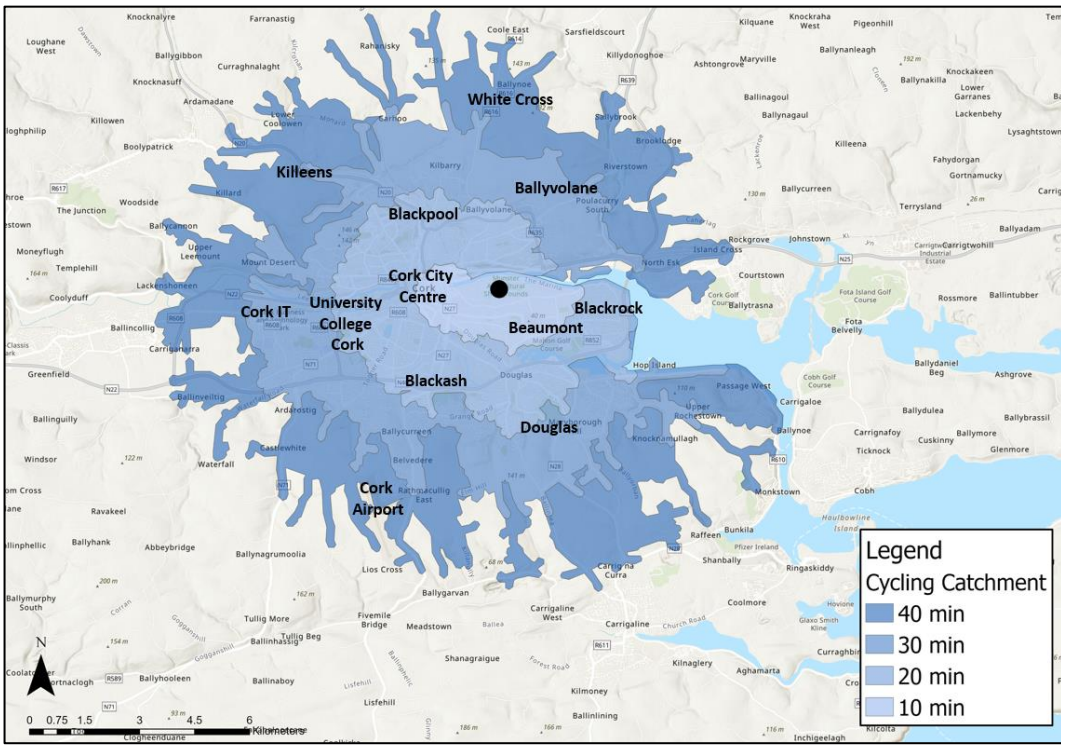

Figure 7.3: Cycling Catchment in the vicinity of the Proposed Development site | Source: GIS | not to scale

Under the Cork Metropolitan Area Cycle Network Plan, a network of cycling facilities have been identified and are due to be implemented. **Figure 7.4** and **Figure 7.5** show the proposed cycling facilities for Cork City Centre and for the road network surrounding the proposed development site, respectively.

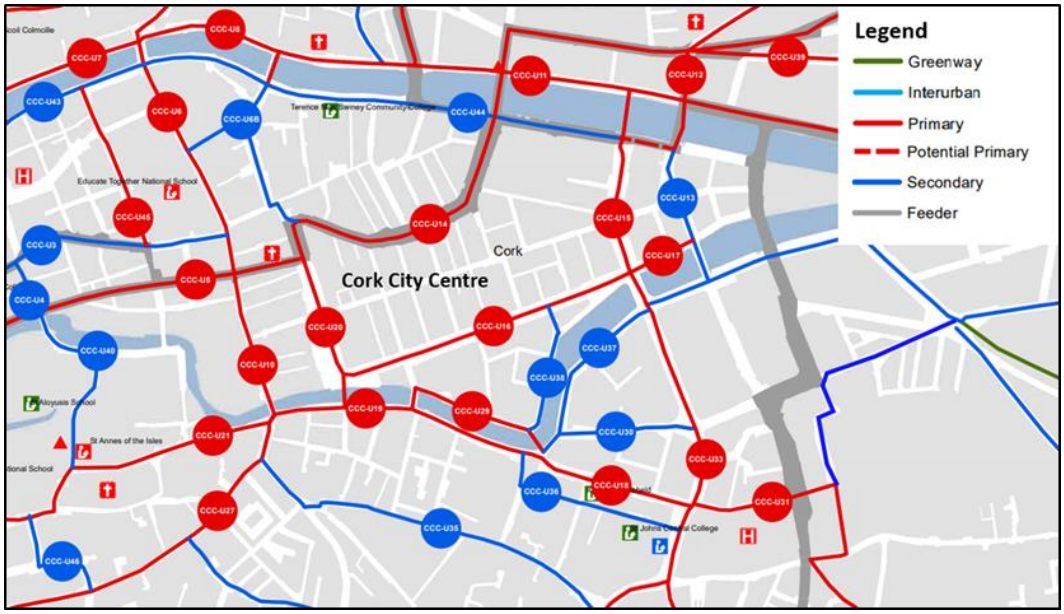

Figure 7.4: Cycle Network Proposals for Cork City Centre | Source: Cork Metropolitan Area Cycle Network Plan | not to scale

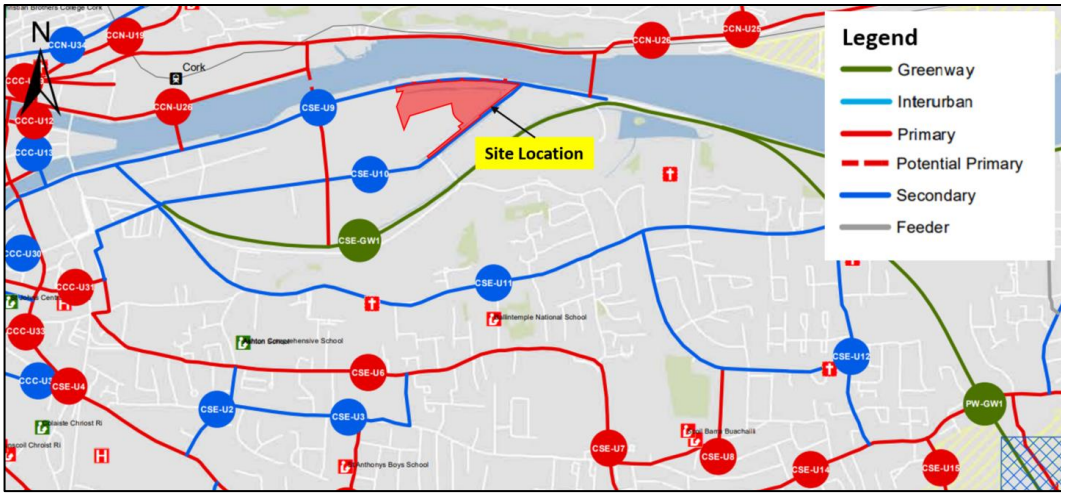

Figure 7.5: Cycle Network Proposals in the vicinity of the Proposed Development | Source: CMATS | not to scale

In addition to the above, the Cork Metropolitan Area Transport Strategy (CMATS) outlines cycle proposals in the site environs. **Figure 7.6** below illustrates the proposed cycle network as indicated in CMATS. The CMATS proposals are assumed in this regard to supersede the Cork Metropolitan Area Cycle Network Plan as the purpose of the strategy is to amalgamate all relevant proposals into a single framework for implementation. It is seen in **Figure 7.6** below that CMATS proposes to amend the cycle network as proposed in the Cork Metropolitan Area Cycle Network Plan to extend the greenway on the Marina further west towards the city centre.

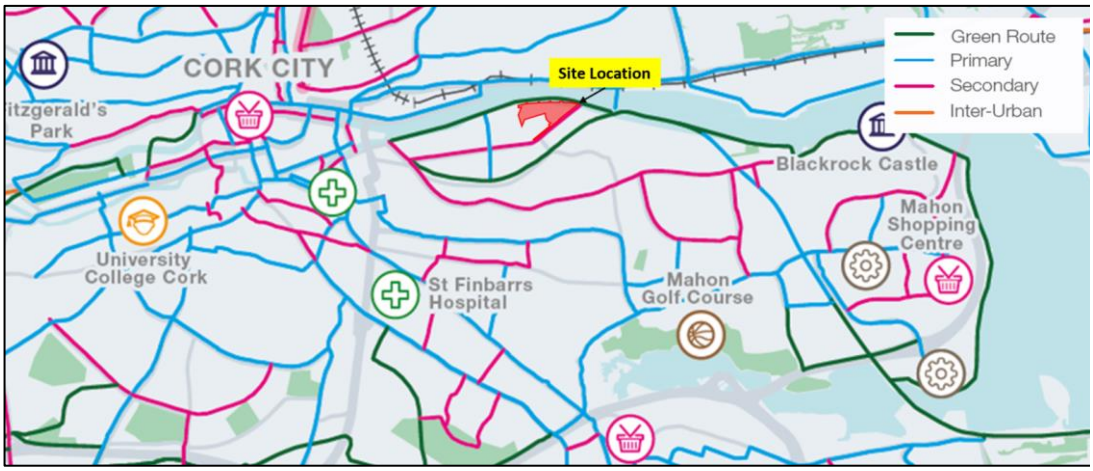

Figure 7.6: Cycle Network Proposals in the vicinity of the Proposed Development | Source: CMATS | not to scale

Cork City is also served by a public bike hire/share scheme which covers a large portion of the city centre and extends from University College Cork in the west to Kent station in the east, as shown below in **Figure 7.7**. The nearest public bike share scheme docking stations to the proposed development site are on Lapp's Quay and Anglesea Street, approximately 1.9km walking distance from the site. It is an ongoing objective of Cork City Council and the National Transport Authority to seek to expand the coverage of the network where feasible. An additional 11 stations have been announced for the scheme, of which 6 are constructed and operational with the remainder expected to be implemented and operational in mid-2022. These additional stations will include a proposed station at Victoria Road, which will be approximately 1.4km from the proposed development site.

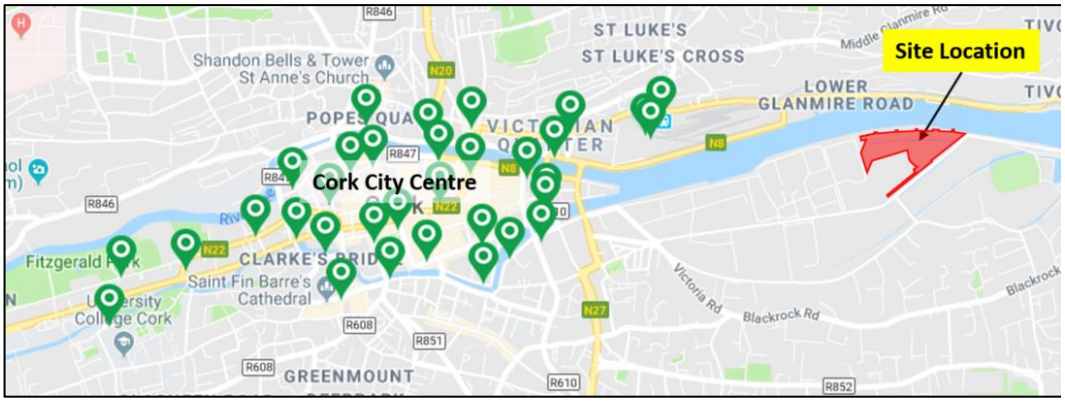

Figure 7.7: Existing Public Bike Hire station locations in the vicinity of the Proposed Development | Source: www.bikeshare.ie | not to scale

7.4.6 Public Transport

Cork City Centre has a large number of public transport services including city bus services, regional and commuter bus services and commuter/suburban rail. These are described in more detail below.

7.4.6.1 Cork City Bus Network

Cork City is served by 30 city bus services. Of these, 27 services travel to or through the City Centre. There are 3 main bus-stop/termini areas in the city centre; namely South Mall, St. Patricks Street and Merchants Quay/Parnell Place Station (see **Figure 7.8** below). The Marina Commercial Park stop is located within 250m walking distance to the west of the site and is served by the 212 bus service, thereby connecting the proposed development site directly with Cork City Centre to the east and Mahon Point to the south-west. To the south-east, the existing stop on Monahan Road is approximately 200m walking distance from the site.

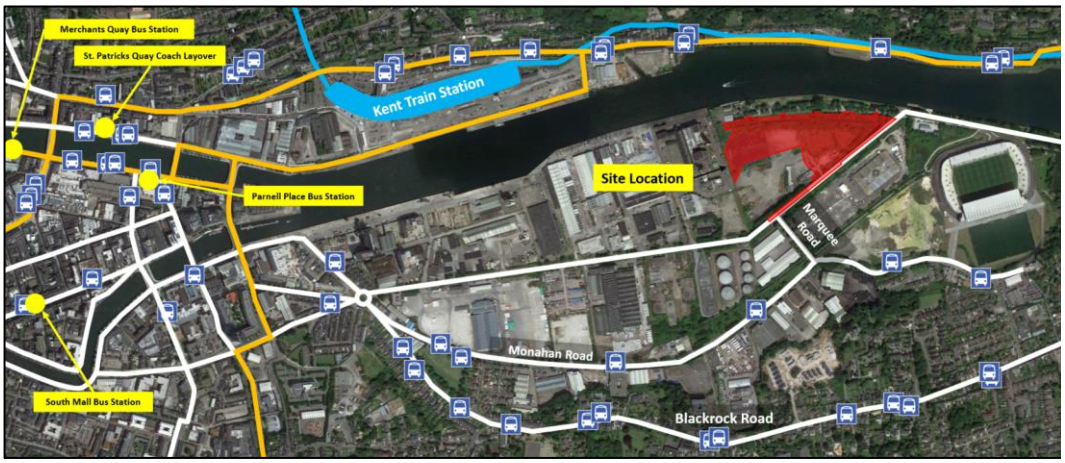

Figure 7.8: Cork City Bus Service Termini and routes/stops in the vicinity of the Proposed Development | Source: Google Maps | not to scale

The Bus Éireann 202 service (which runs from Mahon Point to Knocknaheeny at 10-minute frequencies) also has its' primary route corridor on Blackrock Road, approximately 800m walking distance south-east from the site, shown in Figure 7.9.

Figure 7.9: Existing bus stops and bus routes in the vicinity of the Proposed Development (highlighted red) | Source: Google Maps | not to scale

Figure 7.10 and **Figure 7.11** show the 15, 30, 45 and 60-minute public transport catchments for the site during the AM peak (departing at 08:30) and the PM peak (arriving at 18:00).

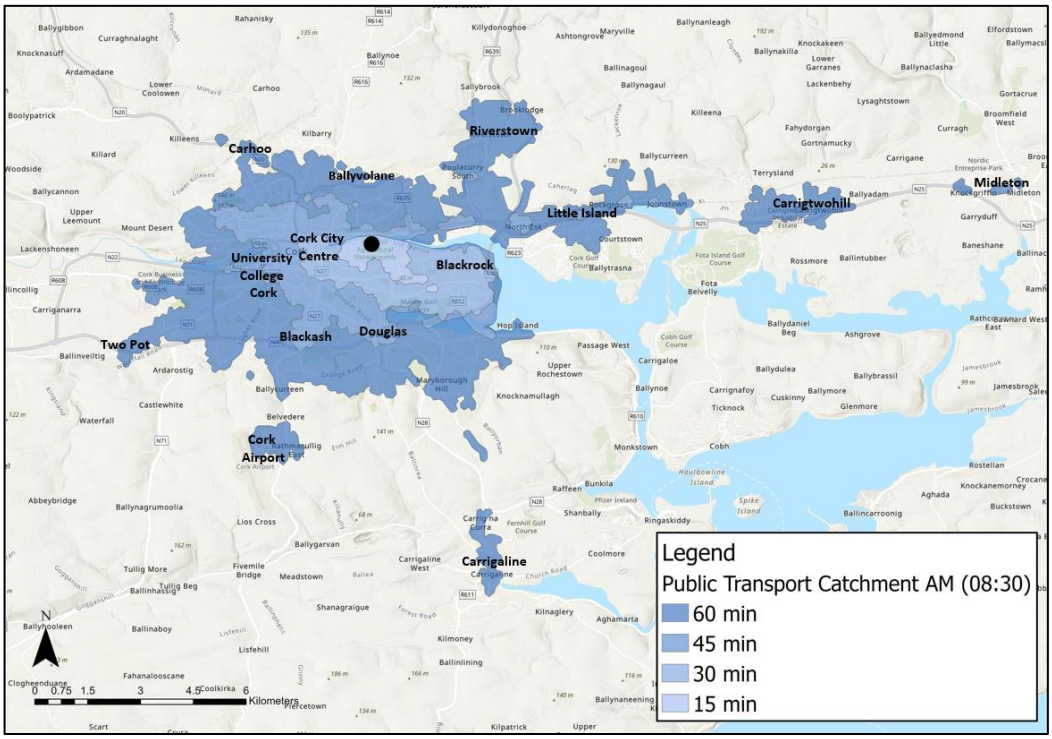

Figure 7.10: AM Peak (08:30) Public Transport Catchment in the vicinity of the proposed development | Source: GIS | not to scale

During the AM Peak Cork City Centre can be reached from the site within 30 minutes, with the western edge of the city centre area within a 45-minute catchment. The 45-minute catchment encompasses Blackrock/Mahon Point and University College Cork. Outside of this, the majority of the Cork City area is within the 60-minute catchment, as well as Riverstown to the north, and the Black Ash and Douglas to the south. Cork Airport lies just inside the 60-minute catchment area.

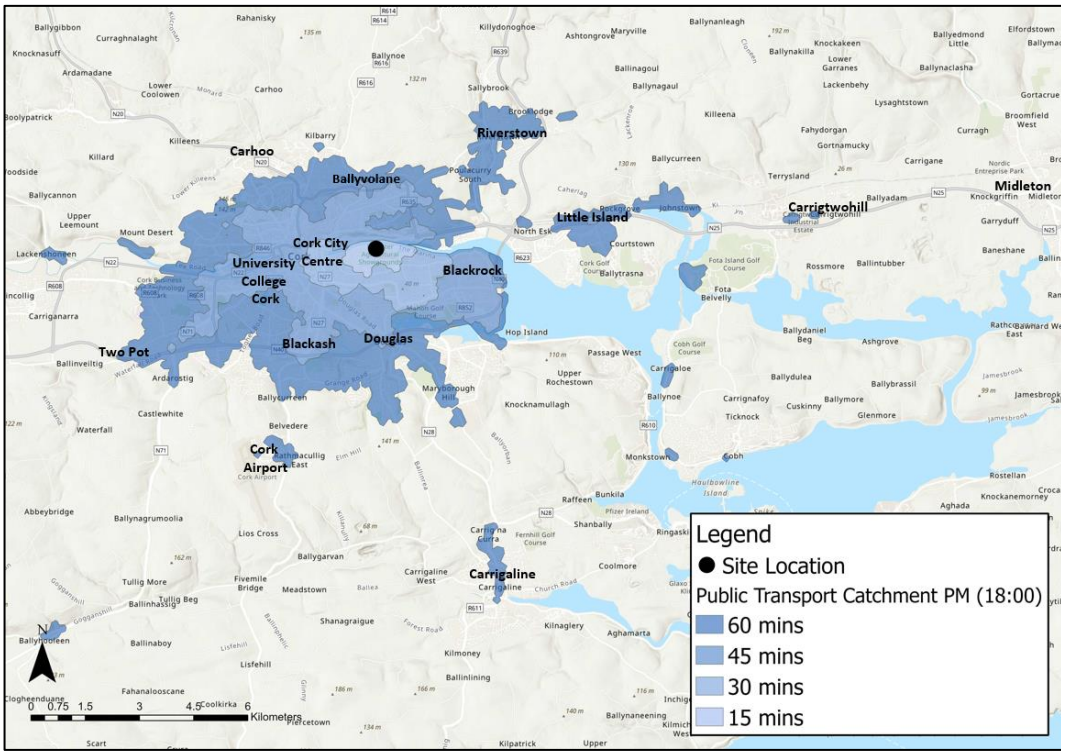

Figure 7.11: PM Peak Public (18:00) Transport Catchment of proposed development | Source: GIS | not to scale

During the PM Peak the proposed development can be reached from Cork City Centre within 30 minutes. Blackrock and University College Cork can be reached by public transport within 45-minutes. Ballyandreen, Riverstown and Carhoo to the north are within 60-minutes by public transport from the site. Cork Airport, Douglas and the Black Ash to the south are also within 60-minutes from the site.

7.4.6.2 BusConnects Cork – Draft City Bus Network

In November 2021, the National Transport Authority announced details of a new metropolitan area bus network for Cork. This new network is currently at draft stage and a consultation process is underway, following which the final proposed new city bus network will be published.

The draft network design maps indicate that a proposed service (Route 9) is intended to link Jacobs Island, at 20-minute weekday frequencies and will pass the proposed development site on Marquee Road along its route. Additionally, the proposed Route 11 will link Mahon Point to Farranree at 30-minute frequencies and will route along the Blackrock Road. The online map of the draft network indicates that this proposed new network would place an estimated 1,000 additional jobs within a 30-minute travel time, and an additional 7,000 jobs within a 60-minute travel time.

Figure 7.12 illustrates the catchment of the proposed new city bus network in relation to the proposed development site.

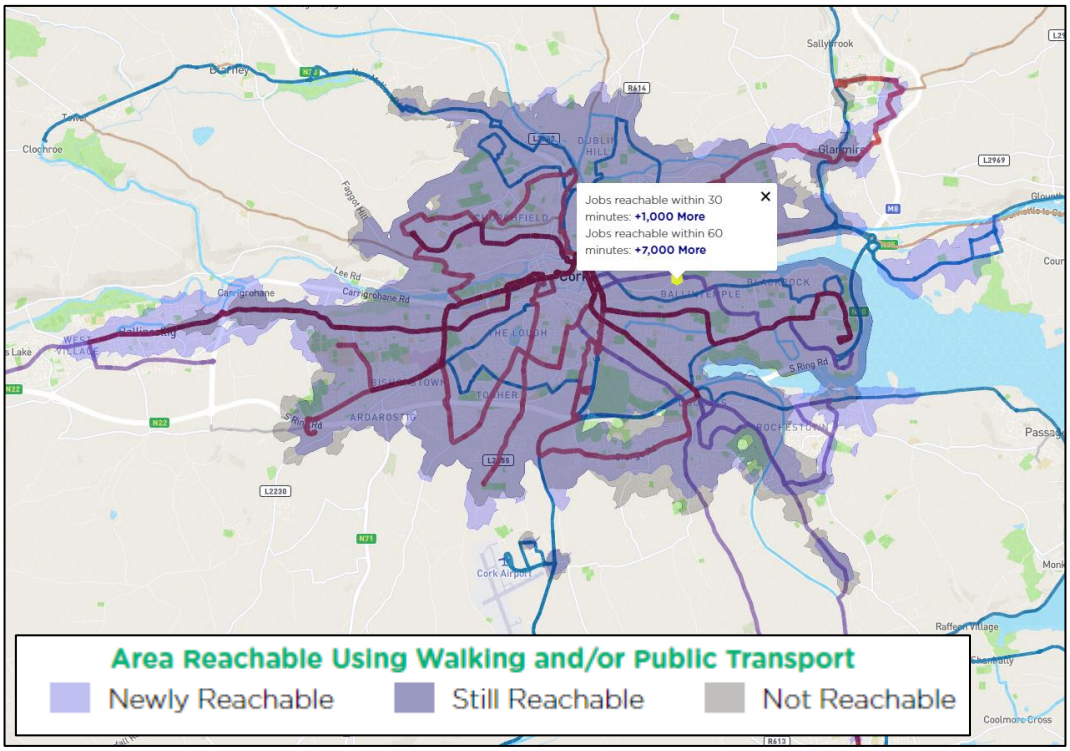

Figure 7.12: Public Transport Destination Accessibility from the proposed development site | Source: BusConnects.ie | not to scale

7.4.6.3 Regional / Commuter Bus Services

A significant number of Bus Éireann Regional and Commuter services terminate or stop at Parnell Place bus station in the city centre, approximately 2km from the proposed development site.

7.4.6.4 Commuter/Suburban Rail Services

Kent Station is the principal train station serving Cork City. Services to and from Cobh, Mallow, Midleton and Dublin arrive and depart from Kent Station. The station is approximately 1.2km due north-west of the proposed development site but is approximately 2.5km by road.

The commuter services to and from Cobh run every 30 mins during the AM and PM peak periods (i.e., 07:00-09:00 and 16:00-19:00). There are 4 services from Mallow which arrive in Kent Station during the AM peak period and 6 services which depart from Cork to Mallow during the PM peak period. Services to and from Midleton run every 30 mins during the AM and PM peak periods.

Intercity services from Cork to Dublin typically run every hour during the day, a number of these are direct services and others have scheduled stops along the route.

7.4.7 Strategic Transport Proposals

The Cork South Docklands is envisaged to be a major regeneration hub for the city and will result in a substantial population and employment increase within the study area (including within the proposed development site). This will in turn require a commensurate improvement in both transport infrastructure and transport services.

Local and strategic transport proposals for the transport network in the vicinity of the proposed development site include upgrades to the local road network and additional road infrastructure in the surrounding environs (including some additional river crossings). At a strategic level the proposed development site lies along a proposed rapid transit corridor linking Mahon to Ballincollig via Cork City Centre. Therefore, regardless of the implementation of the proposed development, the local road network will see a significant increase in traffic flow arising from the redevelopment of the South Docklands and the implementation of new major transport infrastructure projects.

7.4.7.1 Cork Metropolitan Area Transport Strategy (CMATS)

CMATS has been developed by the National Transport Authority in collaboration with Transport Infrastructure Ireland, Cork City Council and Cork County Council. CMATS represents a co-ordinated land-use and transport strategy for the Cork Metropolitan Area to cover the period to 2040. The strategy builds upon previous similar strategies, including the Cork City Centre Movement Strategy (CCMS), the Cork Area Strategic Plan (CASP) and the Cork Metropolitan Area Cycle Network Plan.

CMATS is intended to provide a coherent transport planning policy framework and implementation plan for the measures contained therein.

CMATS aspires to support the future development of the Cork Metropolitan Area and specifically the South Docklands area as a key development zone within Cork City; to this end, high-frequency bus services are proposed across the entire Cork Metropolitan Area, with most services intended to have frequencies of 15 minutes or less. It is also understood that to serve the South Docklands in the short term, high-frequency bus services are deemed critical. The proposed bus network identified in CMATS (shown in **Figure 7.13)** is to be delivered in the coming years by the NTA and Cork City Council via the 'BusConnects Cork' funding programme.

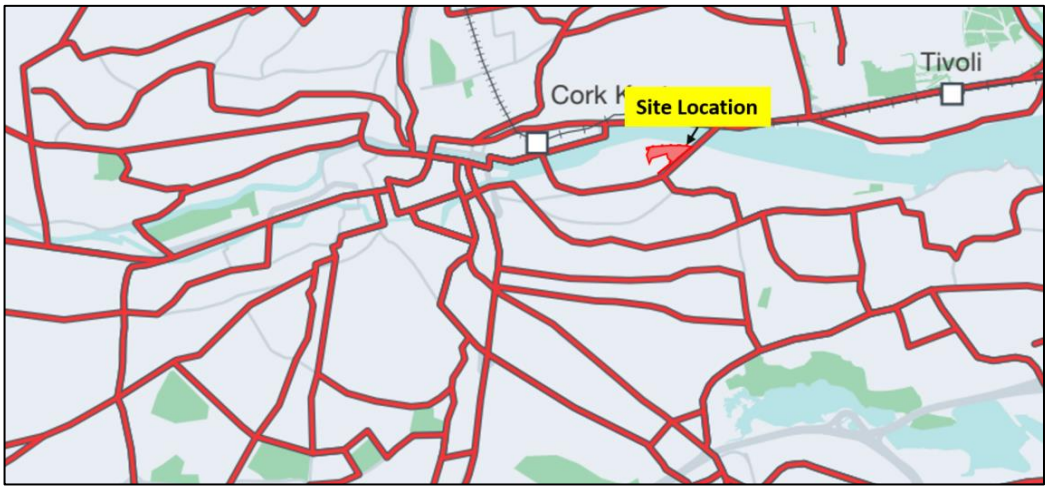

Figure 7.13: CMATS Bus Network Proposals in the vicinity of the proposed development | Source: CMATS | not to scale

A significant portion of the proposed network above will be provided with bus priority measures – these are being developed by the National Transport Authority under the BusConnects Cork programme at present and are expected to be released for consultation in mid-2022.

In addition, a Bus Rapid Transit (BRT) system has been initially envisaged to serve the South Docklands area as part of a proposed rapid transit corridor to link Ballincollig to Mahon via Cork City Centre; ultimately, it is expected that this corridor will be upgraded to Light Rail Transit (LRT). A route feasibility study is underway at present to determine the preferred route corridor for a future LRT system (refer to **Figure 7.14** and **Figure 7.15**).

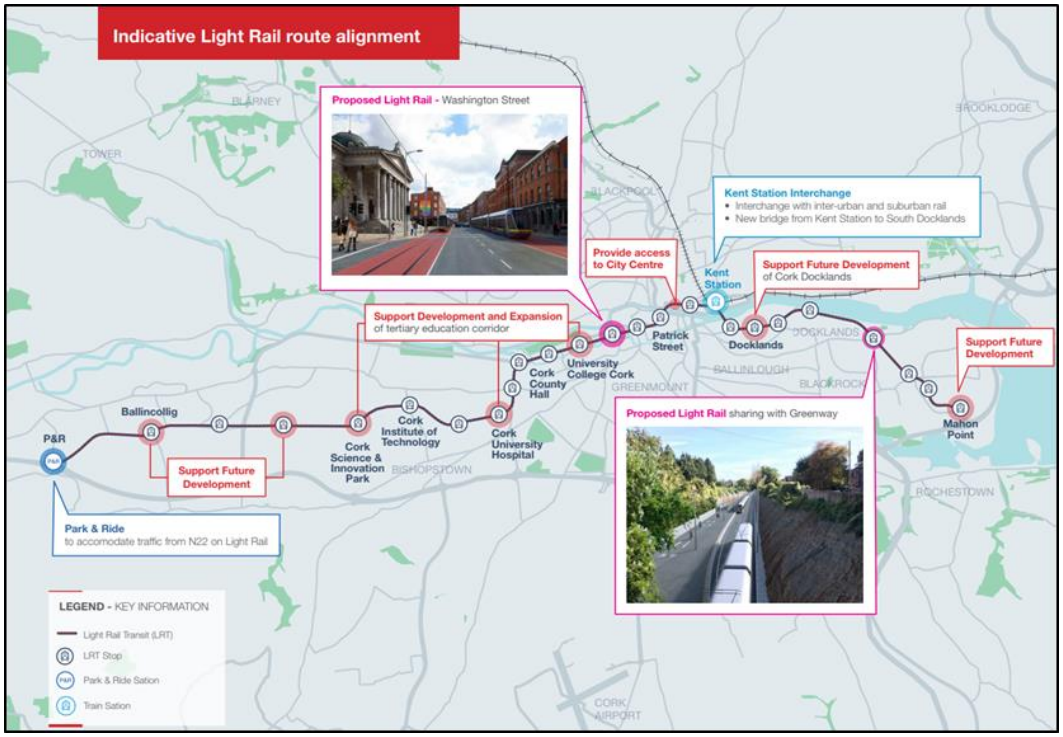

Figure 7.14: Proposed Light Rail Transit East-West Corridor | Source: CMATS | not to scale

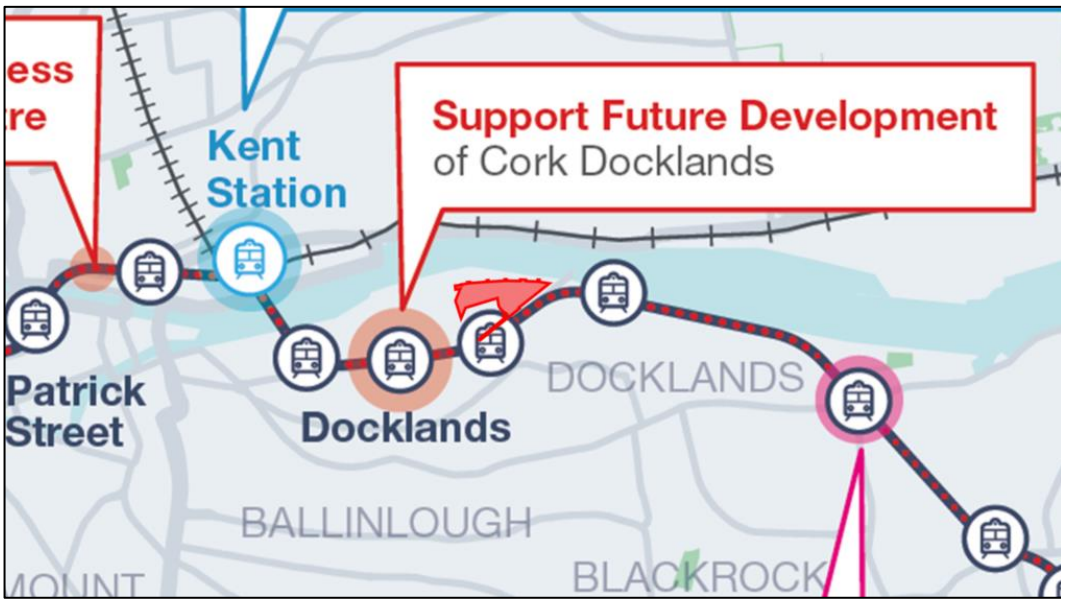

Figure 7.15: Proposed Light Rail Transit Corridor through South Docklands and along the proposed development (highlighted red) | Source: CMATS | not to scale

This transit corridor is proposed to route from Mahon to Ballincollig (via Cork City Centre) and to pass directly along the site boundary on Centre Park Road.

Improved throughput at Kent Station is also proposed as part of the CMATS, in order to enable direct train services from Mallow to Midleton/Cobh without requiring passengers to interchange between services at Kent Station. In addition,

CMATS proposes the implementation of eight new train stations along the route to create a better suburban network (refer to **Figure 7.16**).

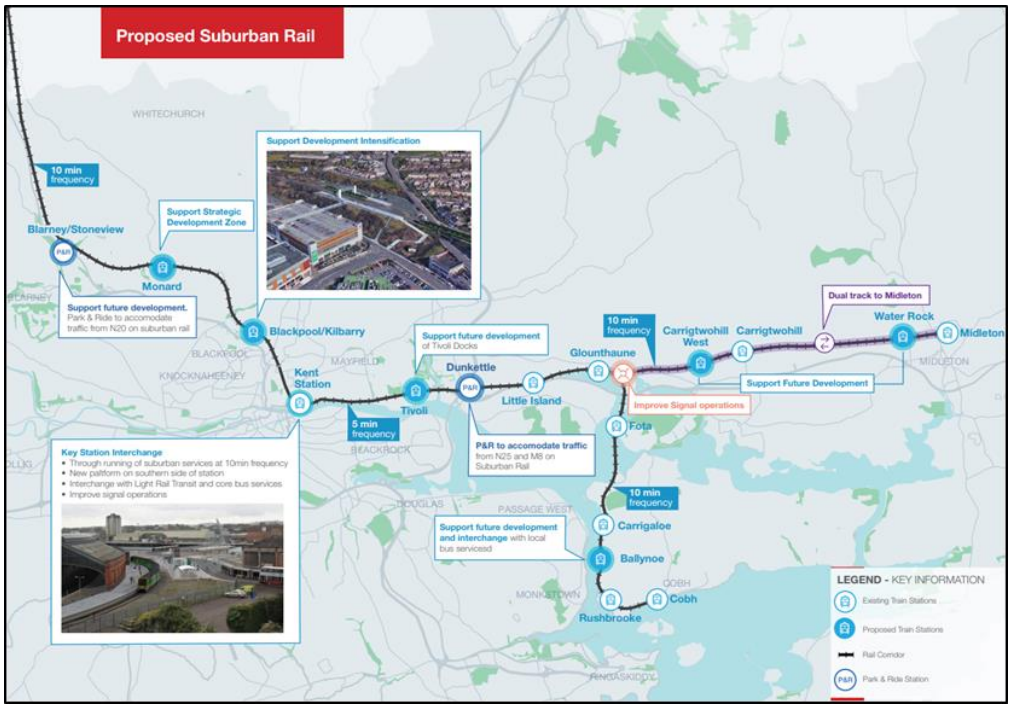

Figure 7.16: Proposed Suburban Rail Improvements | Source: CMATS | not to scale

As outlined above, since publication of CMATS a proposed LRT Route Feasibility Study has been tendered and awarded to a design consultant, and the BusConnects Infrastructure Cork project has also been awarded to consultants to develop the relevant infrastructure proposals for bus services on a number of corridors across the city and suburbs. Further details on these two transformational projects are expected in 2022.

7.4.7.2 South Docklands Area-Based Transport Assessment (ABTA)

CMATS is supported at a local level by an 'Area-Based Transport Assessment' (ABTA) for the South Docklands, developed by Cork City Council (due to be finalised and published in 2022). The CMATS and ABTA assessments in turn will then inform the (ongoing) development of a new Local Area Plan for the South Docklands. It is noted that the outputs from the ABTA study have been incorporated into a specific section of the Draft Cork City Development Plan (2022-2028) that outlines the strategic objectives for the South Docklands area.

The ABTA for the South Docklands is fully aligned with the proposals outlined in CMATS (including the proposed public transport services and transport infrastructure proposals) and is based on a 2040 horizon year to include full achievement of the population and employment growth for Cork envisaged in the National Planning Framework as well as full build-out of the South Docklands (including the proposed development). The CMATS and ABTA have therefore

determined the necessary transport infrastructure required to support this population and employment growth in the period to 2040.

The CMATS and ABTA also both support the implementation of a comprehensive cycle network across the metropolitan area, and specifically within the South Docklands dedicated cycle infrastructure is proposed on all roads that pass the site.

To complement the above transport proposals, the proposed development will adopt a robust approach to demand management, to include a reduced parking provision at the site and the promotion of walking, cycling and public transport. As a result, the expected trip generation for the scheme will be reduced, and the resultant impacts on the local road network will be reduced.

The proposed development will have one distinct vehicle access point on Marquee Road. This will also rationalise the distribution of traffic onto the local road network.

Crucially, the site of the proposed development is extremely well-placed to avail of the transformational sustainable transport proposals envisaged for the South Docklands and the wider city area and indeed to support the viability of these services.

The proposed rapid transit corridor is seen in **Figure 7.15** to cross the River Lee using a new proposed public transport-only bridge (the Mill Road Bridge) and route directly to Kent Rail Station, providing interchange opportunity with suburban and inter-city rail services, and with city bus services that serve Kent Station. The LRT corridor continues eastwards to Mahon Point, and westwards to Ballincollig via the city centre, with proposed stops at key destination and interchange locations, including:

- Mahon Point;
- St. Patrick's Street;
- University College Cork;
- Cork County Hall;
- Cork University Hospital;
- Cork Institute of Technology;
- Cork Science & Innovation Park; and
- Ballincollig.

The LRT system is intended to ultimately operate at 5-minute frequencies. The location of the proposed development along the proposed LRT system alignment on Centre Park Road ensures the proposed development is ideally placed to support the rapid transit corridor and to avail of the benefit of a flagship public transport system.

7.4.7.3 Cork Docklands to City Centre Road Improvement Scheme

The Cork Docklands to City Centre Road Improvement Scheme has been identified by Cork City Council as an important project to support development in the South Docks of Cork City.

Funding has been secured by Cork City Council from the Local Infrastructure and Housing Activation Fund (LIHAF) to implement measures aimed at unlocking sustainable transport access between the South Docks and the city centre which will facilitate the beginning of the Docklands area realising its stated potential. The road improvement works will form part of Cork City Council's long-term infrastructure proposals for both the North and South Docks which will interconnect all zones within the Docklands area as development parcels are advanced.

The main objectives of the Cork Docklands to City Centre Road Improvement Scheme are:

- To provide key transport infrastructure that will act as the catalyst for the early development of the adjoining lands within the Docklands area;
- To provide a network for the optimum movement of all modes of transportation between Docklands and the City Centre; and
- To provide a high-quality public realm consistent with the overall ambition for the Docklands area as a vibrant, innovative, mixed use, sustainable, socially inclusive, new urban quarter.

The Cork Docklands to City Centre Road Improvement Scheme extends from the Albert Road/Albert Quay/Éamon de Valera Bridge junction eastwards along Victoria Road and incorporates the junctions at Centre Park Road, Monahan Road and Blackrock Road. The main changes proposed to the network under the scheme are as follows:

- Replacement of the existing Victoria Road Roundabout with a signalised junction;
- Introduction of a northbound contraflow bus lane on Victoria Road North from the new signalised junction to Albert Quay, continuing west along Albert Quay through the Albert Quay/Albert Street Junction and terminating at the Eglinton Street/Albert Quay and Clontarf Bridge Junction;
- Introduction of a two-way Cycle Track on Albert Quay East;
- Introduction of a two-way Cycle Track on Victoria Road North which will continue down Centre Park Road and Monahan Road (for future connectivity);
- Improvement to the Monahan Road/Victoria Road Junction;
- Re-alignment of the Old Blackrock Road/Victoria Road Junction;
- Public Realm Improvements to Albert Quay East – this quay will act as the 'gateway' to the South Docks from the city centre; and

- Public Realm Improvements to Victoria Road, Albert Road, and Marina Terrace.

The implementation of these measures is to ensure connectivity for sustainable modes of transport between the South Docks and the city centre into the future. A planning application is expected to be submitted for this scheme in early 2022.

Figure 7.17: Proposed Streetscape Improvements on Albert Quay East under the Docklands to City Centre Road Network Improvement Scheme | Source: www.corkcity.ie | not to scale

7.4.8 Other Relevant Infrastructure Proposals

In addition to the strategic and local sustainable transport proposals emerging from the CMATS and ABTA studies, Cork City Council are proposing to carry out a series of localised improvement/upgrade schemes on the existing road network in the vicinity of the proposed development in addition to a series of new infrastructure projects. A number of these are detailed below:

- **Monahan Road Extension** – from the existing junction with Marquee Road to the proposed Eastern Gateway Bridge landing location. This project will result in the extension of Monahan Road from its' current junction with Marquee Road, to route eastwards towards the proposed landing point of the Eastern Gateway Bridge. Local Infrastructure Housing Activation Fund (LIHAF) support has been secured for this proposal, and it is noted that the LIHAF funding award to Cork City Council is contingent on the delivery of residential development and is also time dependent. This project has progressed through the Part VIII planning process with Cork City Council, and therefore detailed design and construction will follow in 2022;
- **Centre Park Road Upgrade** – Cork City Council are awaiting outputs from a series of ancillary studies applicable to the South Docks, including the ABTA study and a parallel Levels Strategy study. A potential recommended output from these may be improvement works to Centre Park Road (potentially to raise the level of the road). Improvements to the road have also been identified

in the ABTA assessment, to increase the route width to ultimately cater for traffic flow and the proposed rapid transit corridor. There is currently no defined timeline for the design and implementation of this project; and

- **Eastern Gateway Bridge** – there is a legacy planning permission in place for the Eastern Gateway Bridge scheme (which is proposed to link Monahan Road to the Lower Glanmire Road in Tivoli). This is expected to be superseded by a new proposal for the bridge (with a different proposed cross-section width and facilities for public transport and cycling incorporated into the bridge). The implementation of the Eastern Gateway Bridge will be transformative for the site locality as it will provide an alternative river crossing for traffic travelling to and from South Docklands and is identified within CMATS and ABTA as a key infrastructure project. There is currently no timeline for the design and implementation of this project.

7.4.9 Existing Traffic Patterns

In order to assess the impact of the proposed development on the local road network, an examination of the existing traffic flows in the area was deemed necessary, and traffic surveys were carried out on Tuesday 30 April 2019 between the hours of 07:00 – 19:00, at the 11 junctions shown in **Figure 7.18**. At the time of the traffic surveys, the Marina (to the north-east of the site) was open to vehicular traffic. Although this route is now closed to traffic, no reduction in the traffic flows that were recorded on the Marina has been applied to ensure a conservative, robust assessment and to allow for traffic to and from the new public car parking area associated with Phase 1 of Marina Park, which has since been constructed and is open for public use.

Figure 7.18: Location of Traffic Surveys | Source: Google Maps | not to scale

7.4.9.1 Traffic Volumes

Examination of the traffic count data concluded that the peak morning traffic flows occurred between 07:30 and 08:30, while the evening peak period was observed to occur between 17:15 and 18:15. The two-way traffic flows (Passenger Car Units (PCU's)) during these time periods are presented in **Table 7.2.**

Table 7.2 : 2019 Two-Way Link Flows (PCUs), AM peak (07:30 – 08:30) and PM peak (17:15 – 18:15)

Junction/Link	AM Peak (07:30-08:30)	PM Peak (17:15-18:15)	AADT	%HGV (of AADT)
Centre Park Road (east of Marquee Road)	232	430	2,990	1.3%
Centre Park Road (west of Marquee Road)	410	484	4,291	3.0%
Marquee Road	222	214	2,412	4.5%
Monahan Road (west of junction with Marquee Road)	262	252	2,777	3.2%
Monahan Road (east of Victoria Rbt)	292	391	3,598	2.9%
Maryville (north of Blackrock Road)	352	324	3,473	1.6%
Blackrock Road (west of Maryville)	887	977	9,934	1.2%
Blackrock Road (east of Maryville)	857	895	9,337	1.2%
Victoria Road (north of Victoria Rbt)	840	957	9,849	7.1%
Victoria Road (south of Victoria Rbt)	1,028	848	9,775	2.1%
Victoria Road (south of Monahan Road)	799	615	7,145	1.7%
Albert Road (west of Victoria Roundabout)	518	379	4,684	5.7%
Montenotte View (west of Victoria Rbt)	135	186	1,916	3.1%
N27 (south of Albert Road)	2,141	2,144	23,920	4.2%
N27 (north of Albert Road)	2,357	2,196	24,605	4.0%
Albert Street	2,287	2,416	25,812	4.1%
Eglinton Street	1,102	921	12,210	4.1%
Old Station Road	1,341	1,380	16,921	1.7%
N27 South Link	2,952	3,237	36,294	3.8%
Albert Quay (east of N27)	729	606	7,217	6.6%
Albert Quay (west of N27)	994	951	10,368	3.9%

7.5 Proposed Development

7.5.1 Nature of the Proposed Development

The proposed development will consist of demolition of the existing structures on site and the construction of a strategic housing development of 823 no. units, resident amenity and ancillary commercial areas including childcare facilities. The proposed development will comprise of 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises of hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

The proposed development will deliver a new neighbourhood which will be conveniently located in proximity to Cork City Centre and to the south-eastern suburbs. The site lies on the strategic transport corridor intended to facilitate a rapid transit system as identified in the Cork Metropolitan Area Transport Strategy.

All of the 268 residential parking spaces (inclusive of 18 accessible spaces) will be located at sub-podium level, with 10 non-residential parking spaces proposed at street level. In addition, 1,718 bicycle parking spaces are proposed at sub-podium level and a further 412 visitor cycle parking spaces are proposed at surface level.

The breakdown of the proposed development is shown below.

Table 7.3: Proposed Development Breakdown

Schedule of Accommodation	All Blocks
1-bed Apartments	282
2-bed Apartments	414
3-bed Apartments	127
Commercial/Retail	2,484m^2
Crèche/Montessori	662m^2
Food/Beverage	1,089m^2
Amenity	2,760m^2

7.5.2 Pedestrian and Cyclist Access

The proposed development site will be highly accessible and permeable for pedestrians and cyclists. The site is bounded to the north by the Shandon Boat Club access road, to the south by Centre Park Road and to the west by industrial lands. The site is in close proximity to Páirc Uí Chaoimh Stadium and Marina Park.

All of the existing roadways that bound the site will have numerous entries to the proposed development at street level for pedestrians and cyclists. In addition, a

single internal street is proposed within the site, from the access on Centre Park Road. This street (Street A) will facilitate vehicle access to the sub-podium car parking areas and will function as a 'local' street as per DMURS, with a reduced emphasis on the movement of vehicles.

7.5.3 Vehicle Access

As outlined above, the proposed development consists of 6 no. blocks and will be constructed on a phased basis. The site will have a quantum of sub-podium vehicle parking; therefore, the site will provide vehicle access to car parking areas via the access junction with Centre Park Road.

With the exception of emergency vehicle access, no surface level vehicular through movements will be permitted on the site outside of the proposed internal street (Street A), which will be the only permitted route through the site for vehicles at street level to facilitate sub-podium car park access and the use of the limited number of on-street non-residential parking and will be a cul-de-sac route with a turning area at the western end.

A diagram of the main vehicular access to the site is presented in **Figure 7.19**.

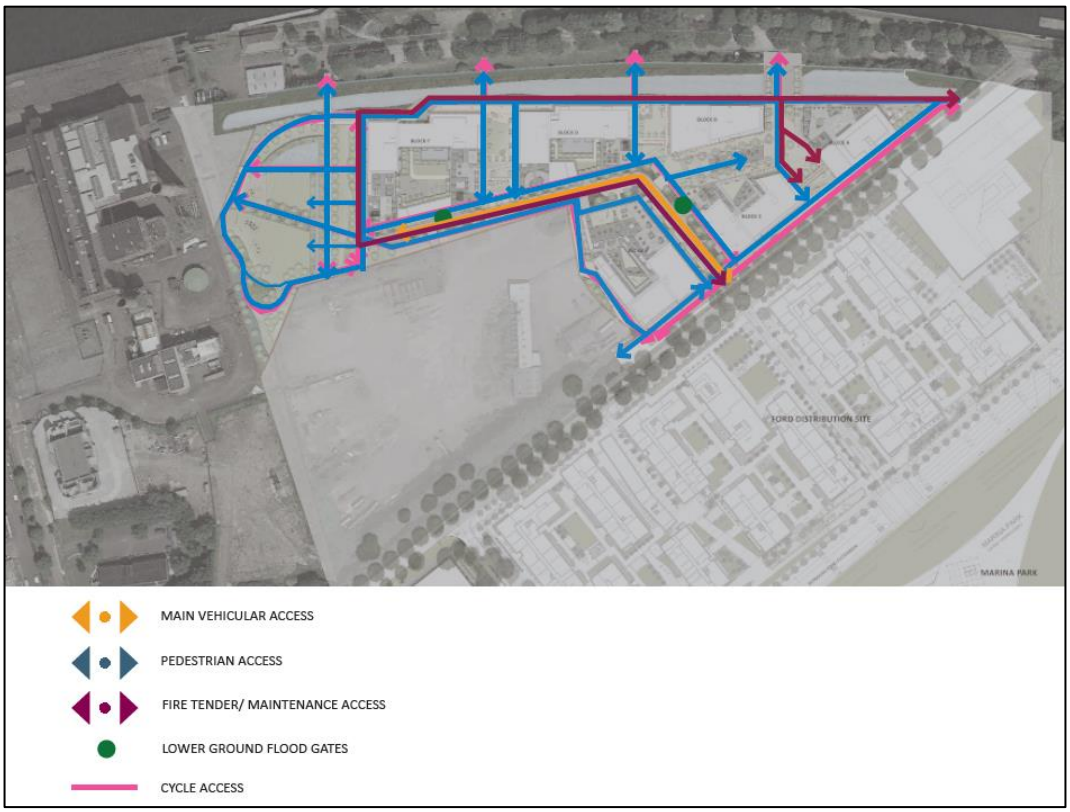

Figure 7.19: Access Strategy for Proposed Development | Source: CWOB Architects | not to scale

7.5.4 Parking Provision

7.5.4.1 Car Parking

The Area-Based Transport Assessment (ABTA) prepared by Cork City Council for the Cork South Docklands area includes recommendations for parking provision within the South Docklands. The proposed development lies within the easternmost portion of the overall docklands, and ABTA indicates suggested parking standards for origin (residential) and destination (employment/education) developments as indicated in **Table 7.4** and **Table 7.5.**

Table 7.4: Cork City Council ABTA Parking Standards

Unit Type	Recommended ABTA Maximum Parking Standard	Maximum Parking Capacity Per Zone
1-bedroom units	0-0.25	Up to 2,650
2/2+ bedroom units	0-0.5	Up to 2,650
Employment	1 per 6 employees	Up to 1,800

Table 7.5: Residential Parking Range

Unit Type	Number of Units	Parking Range	Total
1-bedroom units	282	0-71	0-341
2/2+ bedroom units	541	0-271	

The associated parking standards for the proposed development under the current Cork City Development Plan are as follows (note that the site lies within Zone 2B of the current city parking zones):

Table 7.6: Cork City Development Plan Residential Parking Requirements for the Proposed Development

Unit Type	No. Units	Parking Standard (per unit)	Visitor Spaces	Total
1-2 Bedroom	696	1 space	N/A	696
3/3+ Bedroom	127	2 spaces	N/A	254
TOTAL				**950**

As per Table 16.8 of the Cork City Development Plan, for Zone 2B of the city no visitor parking is required.

Under the emerging ABTA guidance, it is seen that a maximum of 341 residential parking spaces would be warranted for the site, based on the parking standards outlined above. Under the existing Cork City Development Plan, a maximum of 950 parking spaces would be permitted.

A total of 268 residential parking spaces are proposed across the proposed development, which represents 79% of the suggested maximum standards as per

the ABTA guidance, and 28% of the maximum requirement as per the Cork City Development Plan.

The ABTA parking standards are appropriate for the longer-term development of the South Docklands, with a phased approach intended for the roll-out of enhanced public transport services commencing with high-frequency bus services and upgrading to Bus Rapid Transit and ultimately Light Rail Transit in the period to 2040. The ABTA will inform the development of an updated LAP for the South Docklands area, and the parking standards associated therein will become applicable (taking precedence over the Cork City Development Plan).

Furthermore, the ABTA indicates a suggested maximum residential parking capacity for the 'South Docks East' zone of the study area of 2,650 parking spaces. The proposed development would equate to 10% of this maximum parking capacity.

This approach to parking provision for the proposed development is in recognition of the programme of intended improvements to public transport serving the area over the short, medium and long-term.

7.5.4.2 Non-Residential Car Parking Provision

The breakdown of non-residential parking space requirements, as per the Cork City Development Plan, are indicated below. The site lies within Zone 2B of the current Cork City Development Plan parking zones.

Table 7.7: Non-residential parking requirements

Use	Parking Standard (1 space per)	Gross Floor Area (GFA) (m^2)	Total
Retail/ Neighbourhood Centre	1 per 30 m^2 (convenience retail)	2,484	83
Creche/ Montessori	1 per 6 students	662	16 (assuming 50% of GFA is 'floor space' and assuming 3.5m^2 per child)
Food/Beverage	1 per 50m^2	1089	22
TOTAL			**121**

It is seen in **Table 7.7** that the current Cork City Development Plan would indicate a maximum of 121 parking spaces would be permissible for the non-residential elements of the proposed development.

The draft ABTA for the South Docklands identifies 'Destination' parking standards for the 'South Docks East' zone of the study area – a maximum of 1,800 spaces are suggested.

The proposed development includes a total of 10 non-residential parking spaces internally within the site at street level, which is approximately 14% of the maximum parking as per the Cork City Development Plan and equates to less than 1% of the 1,800 maximum 'destination' parking total envisaged for the South Docks East zone as per ABTA. This is in recognition of the fact that the majority

of the on-site non-residential uses (retail, crèche, café, etc.) are likely to primarily serve the proposed development itself and are not expected to generate a significant quantum of external trips.

7.5.4.3 Electric Car Parking Provision

The Cork City Development Plan stipulates that developments with ten or more parking spaces shall incorporate at least one space fully equipped with electric vehicle charging facilities, and that at least 10% of the entire parking provision shall be equipped with the relevant ducting to enable future fit-out for electric vehicle charging.

Of the 268 residential parking spaces, 63 no. will have access to electric charging points, which corresponds to approximately 24% of the proposed spaces. All residential spaces will however be future-proofed with the necessary ducting, etc. to allow for future conversion to EV-compatible spaces.

7.5.4.4 Disabled Parking Provision

The Cork City Development Plan stipulates that 5% of car parking spaces provided should be set aside for disabled car parking. A total of 18 accessible car parking spaces are therefore to be provided below podium-level, which exceeds the required 14 spaces.

7.5.4.5 Cycle Parking

The Cork City Development Plan stipulates that an allocation of at least 0.5 bicycle parking space per residential unit (in suburban locations) be provided. This equates to a minimum of 419 bicycle parking spaces for the proposed development. The Cork City Development Plan does not stipulate a requirement for visitor cycle parking spaces.

The Cork City Development Plan also stipulates that the non-residential elements of the proposed development would warrant a total of 25 additional cycle parking spaces.

The ‘Sustainable Urban Housing: Design Standards for New Apartments’ indicate that cycle parking shall be provided at a rate of 1 storage space per bedroom (and at least 1 per studio), with visitor cycle parking provided at a rate of 1 space per 2 residential units. The proposed development comprises a total of 1,491 bedrooms in 823 apartments. Therefore, a total of 1,491 cycle parking spaces are recommended based on these standards. Furthermore, a total of 412 visitor cycle parking spaces are recommended based on these standards.

A total of 1,718 bicycle parking spaces and 412 visitor bicycle parking spaces will be provided as part of the proposed development. It is assumed that the 412 visitor cycle parking spaces will also be sufficient to cater for the cycle parking demand associated with the non-residential elements of the proposed development.

All of the residential cycle parking spaces will be provided below street level in secure bicycle parking and storage areas. All of the 412 visitor cycle parking spaces will be provided at street level.

7.5.4.6 Motorcycle Parking Provision

The Cork City Development Plan stipulates that an allocation of 1 motorcycle parking space be provided per 10 car parking spaces. As part of the proposed development 27 no. motorcycle parking spaces will be provided.

7.5.5 Development Assessment Scenarios

7.5.5.1 2025 Opening Year

The proposed development is expected to be constructed over a number of individual phases, with the first residential blocks opened in 2025. The anticipated construction programme is as follows:

- Construction commences in 2023 for **Phase 1 -** enabling works (lower ground floor to podium level) and for **Phase 2** – Blocks A, B and C;
- Blocks A, B, and C open in 2025, and construction commences on **Phase 3 –** Blocks D and E;
- Blocks D and E open in 2028, and construction commences on **Phase 4** – Block F; and
- Block F opens in 2030.

Construction is therefore expected to commence in 2023 and would be approximately 24 months in duration before the initial blocks become occupied (Blocks A, B, and C). Background traffic flows on the surrounding road network have been increased using growth factors to account for the period between 2019 and 2025. This is based on a 'Central' growth profile as outlined in the Transport Infrastructure Ireland Project Appraisal Guidelines.

It must be noted that in the assessment year of opening (2025) that construction traffic remains present on the road network associated with the subsequent phases of the proposed development. As such, the 2025 assessment scenario includes operational traffic and construction traffic. Therefore, a standalone assessment of the construction phase between 2023 and 2025 is not presented, as the 2025 Opening Year scenario includes for operational and construction traffic and is considered more robust.

7.5.5.2 2030 Opening Year +5

For the 2030 scenario, background traffic flows on the surrounding road network will be increased using growth factors to account for the period between 2025 and 2030. Again, this is based on 'Central' growth profile as outlined in the Transport Infrastructure Ireland Project Appraisal Guidelines.

It has been agreed with Cork City Council that the 'Opening Year +15' scenario for the proposed development (which would be in 2040) is not a requirement of

this traffic assessment, as it is closely aligned with the CMATS and ABTA strategies and it is considered that the proposed development has already been considered from a traffic and transport perspective in the development of these two governing strategic assessments.

7.5.6 Cumulative Developments

Four significant developments have been identified in the general vicinity of the proposed development that are of note include the following:

Marina Park (Phase 1, which is substantially complete and has opened as of 13 December 2021) includes the creation of a new public park in the lands surrounding Páirc Uí Chaoimh stadium. This includes the creation of a new parking area along the Marina to service the park. It is envisaged that the majority of vehicle trips to and from the parking area associated with Marina Park will be off-peak, and as the existing traffic surveys account for traffic flow onto the Marina via Centre Park Road it is considered that any potential vehicle trips to the Marina Park car parking area will be accounted for in this existing traffic and in the proposed traffic growth rates applied to baseline survey data.

The **Monahan Road Extension** has obtained planning consent (via the Part 8 process) as of November 2021. The brief of works for this project involves the design of the proposed extension of Monahan Road eastbound to the potential future Eastern Gateway Bridge landing location (the Eastern Gateway Bridge is not part of the Monahan Road Extension works). It is envisaged that the proposed Monahan Road extension will progress through detailed design and commence construction in late mid-2022 and will be completed within 12 months (estimated to be early to mid-2023).

For the purpose of this assessment, it has also been assumed that the extended Monahan Road will not carry any traffic flows beyond that associated with the Former Ford Distribution Site residential development outlined below (due to the Eastern Gateway Bridge not being in place and general traffic having no onward route).

Marina Quarter, Ltd. have received a grant of planning for a proposed residential development at the Former Ford Distribution Site (used in recent years for the ‘Live at the Marquee’ concert series) which is directly adjacent to the proposed development site, located on the other side of Marquee Road. It is assumed that this development will be implemented in line with the phasing strategy associated with the planning documentation submitted (the development will be built over three individual phases), with Phase 1 estimated to be complete and opened by 2024 and construction to be ongoing on Phase 2 at the same time, and the full site to be built by 2029. The operational and construction traffic flows associated with this development have been incorporated into this transport assessment.

The Former Cork Warehouse Company Site – Tiznow Property Company Limited (Comer Group Ireland) have submitted application documentation for a strategic housing development to An Bord Pleanála for a development comprising 190 apartments in a single building at a site located to the southeast of the

proposed development site. Although this development does not therefore have a grant of planning, for robustness it has been assumed that it will be permitted and will be implemented and will be constructed and operational by 2025.

7.5.7 Traffic Growth

In addition to consideration of planned developments in the immediate vicinity, background traffic from the 2019 baseline surveys has been adjusted to account for normal traffic growth in the area.

Background traffic growth for each future assessment year has been based on the updated TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (Transport Infrastructure Ireland, 2019). Calculated growth rates for light vehicles and for heavy vehicles have been applied to AM, PM and daily traffic volumes (a 'Central' growth profile has been adopted). These factors correspond to the Cork Metropolitan Area.

7.5.8 Projected Trip Generation

The potential traffic generated by the proposed development has been determined by using a multi-step methodology.

Firstly, the potential trip rate is calculated by examining the TRICS online database. The TRICS database contains trip-generation rates relating to a variety of land uses from sites in the UK and Ireland. Through careful selection of input parameters relating to a variety of criteria such as land use, location, and public transport provision, the TRICS database allows an estimate to be made of trip generation rates for a proposed development.

Total traffic expected to be generated by the proposed development is then calculated based on the trip rates identified in TRICS, the proposed floor areas/number of units for different uses and the modal split of the local area, based on Census 2016 data.

For the purpose of developing a robust trip generation and distribution profile for the proposed development, the following methodology was adopted:

1. The TRICS online database was interrogated for multi-modal site surveys, in order to allow a trip rate for 'person trips' to be derived for the proposed development (as opposed to a trip rate for vehicles only) – this allows for a more representative trip rate to be developed for the proposed development;
2. The 'person' trip rate is then applied to the number of units and the other proposed uses to derive a total number of 'person trips' that the proposed development is expected to generate;
3. For the non-residential elements of the proposed development, it has been agreed with Cork City Council that these proposed uses are intended and are likely to only serve the residents of the proposed development itself, and consequently it has been agreed that these non-residential uses will not generate any new vehicle trips on the local road network;

4. The Central Statistics Office (CSO) Small Area Population (SAP) statistics were reviewed for the local area. A total of 5 relevant zones were identified and reviewed (Knockrea B – which contains the site itself, Mahon A, Mahon C, Knockrea A, and Ballinlough C). The SAP information for these zones is based on Census 2016 data, and provides data on existing travel habits from the proposed development site, including mode share, departure times and distances to work, etc.;
5. The modal split information for these 5 aggregated zones is then applied to the total 'person trips' the proposed development will generate, with the vehicle mode share used to determine the total number of vehicular trips to and from the site at peak periods; and
6. The CSO SAP statistics for the Electoral District containing the proposed development site and a number of adjoining sites were reviewed to determine the origins and destinations for traffic travelling to and from the proposed development site, in order to apply this traffic distribution to traffic leaving and returning to the site at peak times.

Firstly, as outlined above the potential traffic generated by the proposed development has been calculated by examining the TRICS online database. The trip rates calculated for the proposed development at peak hours are presented in **Table 7.8**. The trips presented below are for the proposed development peak hours of 08:00-09:00 and 17:00-18:00, as per TRICS.

Table 7.8 : Trip Generation Rates – Residential Units (all trips are 'Person Trips' per unit)

	AM Peak Period		PM Peak Period	
	Arrival	**Departure**	**Arrival**	**Departure**
Trip Rate	0.095	0.339	0.399	0.232
Two-Way	0.434		0.631	

Secondly, using the available Census 2016 information for the general site vicinity, shown in Figure 7.20, a breakdown of mode share for trips undertaken to work, school or college is determined. As outlined above, several zones in the site vicinity were identified and aggregated so as to ensure a sufficient sample size.

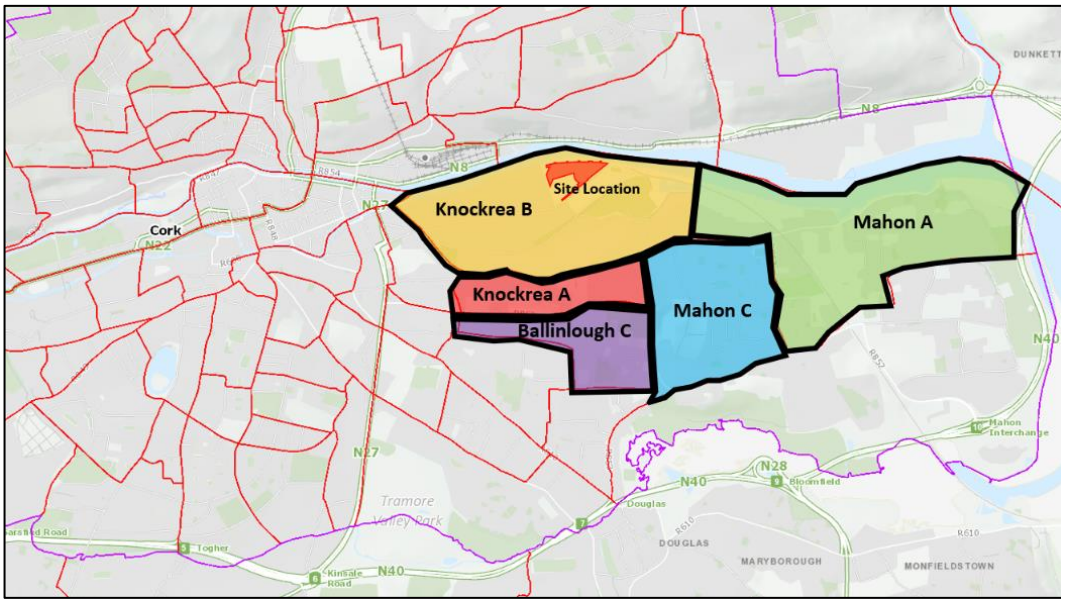

Figure 7.20: Electoral Division Zones in Cork City (proposed development highlighted in red) | Source: www.cso.ie | not to scale

Table 7.9 : Existing Mode Share in Site Locality

Mode of Travel	Modal Split
On foot - Total	14%
Bicycle - Total	4%
Bus, minibus or coach - Total	8%
Train, DART or LUAS - Total	0%
Motorcycle or scooter - Total	0%
Car driver - Total	46%
Car passenger - Total	20%
Van - Total	3%
Other (incl. lorry) - Total	0%
Work mainly at or from home - Total	2%
Not stated - Total	3%
Total	**100%**

It is seen in Table 7.9 that an existing mode share of 49% exists for car drivers and van drivers for these zones. This is to be expected given the proximity to both the city centre and to the Mahon employment area, the presence of a high-frequency bus service serving these areas (the Bus Éireann 202 route) and the connection to the Passage Greenway line for cycling. These mode share splits are also from Census 2016 and would not account for more recent improvements to public transport and cycling facilities (for example the Skehard Road improvement schemes, the Passage Greenway widening and lighting scheme, the current closure of the Marina to traffic, the new 212 bus service and the temporary cycle infrastructure installed on Centre Park Road, Marquee Road and Monahan Road).

In light of the improvements made since 2016 and the envisaged introduction of a high-frequency bus service to serve the South Docklands in the short term, a reduced mode share from the 49% noted above could be justified.

However, for robustness and to ensure a conservative assessment, it has been agreed with Cork City Council that the prevailing mode share of 49% for vehicle trips should be assumed for the proposed development for the Opening Year scenario (2025), and that a mode share of 40% for vehicle trips can be assumed for the Opening Year +5 scenario (assumed to be 2030), as shown in Table 7.10.

This is in recognition of the pending implementation of further walking, cycling and public transport service improvements within the South Docklands as the CMATS and ABTA strategies are applied and implemented across the Cork Metropolitan Area.

Table 7.10 : Proposed 2030 Mode Share in Site Locality

Mode of Travel	Modal Split
On foot - Total	15%
Bicycle - Total	8%
Bus, minibus or coach - Total	12%
Train, DART or LUAS - Total	0%
Motorcycle or scooter - Total	0%
Car driver - Total	37%
Car passenger - Total	20%
Van - Total	3%
Other (incl. lorry) - Total	0%
Work mainly at or from home - Total	2%
Not stated - Total	3%
Total	**100%**

Total traffic expected to be generated by the proposed development is then calculated based on the trip rates above and the proposed floor areas for different uses. The proposed development is expected to be constructed in phases, with the opening of the initial phase (Blocks A, B and C) expected to occur by 2025 and the full development build out expected to be completed by 2030. The expected volume of traffic for the 2025 Opening Year can be seen in **Table 7. 11**. The trips below are based on the proposed development's peak periods as per the TRICS database.

Table 7.11: Trip Generation – 2025 Opening Year

	AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
	Arrival	Departure	Arrival	Departure
Total	**16**	**57**	**67**	**39**

Note: *Figures in the above table have been rounded up/down for clarity. All values are in vehicles.*

The proposed vehicle trip generation shows that for the proposed opening year of 2025 there will be 73 new two-way movements in the AM peak traffic hour (08:00-09:00) and 106 new two-way movements in the PM peak traffic hour (17:00-18:00) to and from the proposed development. For robustness, the peak hours for trip generation for the proposed development shown above will be applied to the morning and evening peak periods on the local road network (07:30-08:30 and 17:15-18:15) to ensure a conservative assessment.

By the end of 2030, it is assumed that all phases of the proposed development will be constructed (all 823 apartments. A revised mode share for the site locality has also been assumed to be achieved by 2030. The associated trip generation for the 2030 Opening Year +5 is shown below in **Table 7.12.**

Table 7.12: Trip Generation – 2030 Opening Year +5

	AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
	Arrival	Departure	Arrival	Departure
Total	**31**	**112**	**131**	**76**

Note: *Figures in the above table have been rounded up/down for clarity*

The proposed vehicle trip generation shows that for the proposed design year of 2030 there will be 143 new two-way movements in the AM peak traffic hour (08:00-09:00) and 207 new two-way movements in the PM peak traffic hour (17:00-18:00) to and from the proposed development. For robustness, as with the 2025 Opening Year the peak hours for trip generation for the proposed development shown above will be applied to the morning and evening peak periods on the local road network (07:30-08:30 and 17:15-18:15) to ensure a conservative assessment.

The existing AM and PM peak traffic hours were determined based on the traffic counts undertaken at the junctions in the site vicinity and were used as the ‘base’ scenario for the assessment of additional traffic arising from the proposed development.

7.5.9 Construction Traffic Generation

The level of construction traffic associated with the proposed development will vary over the course of the construction programme and the following section presents the projected volume of traffic generated during the peak construction activity only.

It is envisaged that the construction of the proposed development will be phased from west to east, with enabling works to podium level (Phase 1) and Blocks A, B and C (Phase 2) to be constructed as part of the initial works, Blocks D and E blocks to be constructed as part of Phase 3 and Block F to be constructed in Phase 4.

An opening year of 2025 is assumed for Phases 1-2 as outlined above. Following this, construction will commence at Phase 3, and so forth. In 2025 (the assumed opening year) therefore there will be traffic associated with the residents of Phase

2, and construction traffic associated with Phase 3 will be present on the site and local road network at the same time.

By 2030, which corresponds to the Opening Year +5 it has been assumed that the proposed development is in place, and as such there will be no construction traffic present on the local road network associated with the proposed development.

7.5.9.1 Construction Traffic – Heavy Vehicles

The movements of HGVs and LGVs to and from the site is expected to generate traffic from the following activities:

- Enabling works (piling, substructure, etc.);
- Superstructure works;
- Façade;
- Fit-Out; and
- Landscaping.

Peak weekly HGV/LGV vehicle trips to the site during construction are estimated to be 50 vehicles per day.

Typically, heavy vehicles are expected to have a distribution profile that is more evenly spread across a typical working day and will therefore be present on the local road network during the morning and evening peak periods. There may also be particular activities which are more intensive in terms of heavy vehicle movements, such as during the enabling works when there may be earthworks ongoing at the site.

For robustness it is therefore assumed that a total of 8 HGVs and 4 LGVs arrive and depart the site (a total of 12 vehicles) in the peak periods on the local road network (07:30-08:30 and 17:15-18:15).

7.5.9.2 Construction Traffic - Workforce

The peak construction period is expected to see up to 350 to 400 construction personnel on site per day.

Due to the site benefiting from a high-frequency bus service in the vicinity and additional cycle connectivity, it is therefore envisaged that a proportion of the construction staff will travel to and from the site by public transport and other alternative modes. It is anticipated that approximately 25% of staff will travel by bus, by bike or on foot.

To support this, only a limited amount of parking is proposed for construction staff (to be located within the applicant’s landholding). Those workers that do travel to the site by car will be encouraged to car-pool, and it is assumed that there will be an average occupancy of 1.2 persons per car.

This will result in a total of 250 vehicles travelling to the site on a daily basis for construction workers. Allowing a 10% increase to account for miscellaneous trips increases this to 275 vehicles per day at the site.

During lunchtime, it is expected that the majority of the workers will remain on site, as it is intended that on-site catering will be in place, and the time taken to process and exit the site and leave for lunch by car for a construction employee will also reduce the likelihood of these trips. However, it has been assumed that 10% of the vehicles (25 vehicles) will leave the site and return during lunch, with any other departing workers expected to leave on foot. This therefore increases the total daily number of vehicle trips to the site to 300 (i.e., a daily total of 600 vehicle movements).

Construction hours on weekdays are expected to be from 07:00-19:00; therefore, the above trips will not coincide with the morning and evening peaks on the local road network (07:30-08:30 and 17:15-18:15, respectively). Weekend working hours (on Saturdays) are expected to be from 07:00-16:30, unless otherwise agreed with Cork City Council.

7.5.10 Traffic Distribution

In addition to the modal splits for the site and surrounding areas, the CSO records of travel data for Electoral Districts in the site vicinity was also interrogated to determine the likely destinations for trips to and from the site. This trip distribution profile was applied to the proposed development traffic for the morning and evening peak periods. The proposed trip distribution for the AM and PM peak hours is shown in **Table 7.13**.

Table 7.13 : Proposed Trip Distribution Profile

Access Route	Traffic Leaving the site	Further distribution at nearby junctions		Comment
Site Vicinity				
Maryville	**36%**			
	• Of which Blackrock Road (W)	13%	N/A	N/A
	• Of which Blackrock Road (E)	23%	N/A	N/A
Monahan Road	**20%**			
	• Of which Victoria Road (N)	15%	N/A	N/A
		• Of which Albert Road	10%	N/A
		• Of which Montenotte View	5%	Routes on to Albert Street
	• Victoria Road (S)	5%	N/A	N/A
Centre Park Road	**44%**			
	• Of which Albert Road	44%	N/A	N/A

City Distribution				
N27 South of Albert Quay	**32%**			
	• Of which Albert Street	32%	N/A	5% from Montenotte View added to 32%
		• Of which Eglinton Street	8%	Total 37%
		• Of which Old Station Road	14%	
		• Of which N27 South Link	15%	
N27 North of Albert Quay	**22%**			

A similar trip distribution profile was applied to returning traffic to the site, with localised amendments to account for specific routing within the city centre (where there are a number of one-way streets).

Using the traffic distribution profile outlined in **Table 7.13**, traffic from the proposed development was assigned to the surrounding road network for analysis purposes.

7.5.11 Construction Traffic Distribution

The above trip distribution profile for residential traffic associated with the proposed development once complete and occupied is also expected to apply to construction personnel arriving and departing the site. For heavy vehicles associated with the construction works, it is assumed that all of these vehicles will route to and from the site via Centre Park Road and the Victoria Roundabout.

7.6 Potential Impact

The potential impact of the proposed development, the mitigation measures required, and the residual impacts are considered under three separate headings:

- Do Nothing Scenario;
- Construction Phase; and
- Operational Phase.

7.6.1 Do Nothing Scenario

The 'Do Nothing' scenario refers to what would happen if the proposed development was not implemented. In this scenario, the effects described in this chapter would not arise and for this reason the 'do-nothing' scenario is considered to have a not significant effect with regards to traffic and transportation. Traffic flows in the vicinity of the proposed development would continue to grow over the coming years in line with the anticipated growth rates for the Cork City area, and the development of the remainder of the South Docklands area would occur over time. The 'Do Nothing' scenario is therefore not addressed further in this chapter.

7.6.2 Construction Phase

Construction traffic flows are presented in **Section 7.5.9**. These flows will be non-coincidental with the morning and evening peak periods on the local road network, and as such their impact will be short term and slightly negative. An allowance has been made within the Operational Phase assessment for the presence of a portion of the daily construction traffic on the local road network during the morning and evening peak periods to ensure a robust assessment. The Construction Phase is therefore not addressed further in this chapter.

7.6.3 Operational Phase

The impact on the local road network has been assessed by examining the projected traffic flows on links in the vicinity of the proposed development, and at the following junctions both 'Without' and 'With' the proposed development:

1. Centre Park Road/Marquee Road junction;
2. Monahan Road (existing/extended)/Marquee Road junction;
3. Maryville/Blackrock Road junction;
4. Victoria Road Roundabout/Signalised junction; and
5. Albert Road/N27 signalised junction.

It has been agreed with Cork City Council that the existing roundabout at the Victoria Road/Albert Road junction can be assumed to be upgraded to a signalised junction by 2025 (as part of the Docklands to City Centre improvement scheme, due to be submitted for planning approval in 2022).

The morning peak period (07.30-08.30) and evening peak period (17.15-18.15) have been examined to assess the busiest case in terms of local traffic on the road network and traffic generated by the proposed development.

As outlined above, for assessment purposes it has been assumed that Phase 1 (podium level) and Phase 2 of the proposed development (Blocks A, B and C) will be constructed and fully occupied during the year 2025. The impact on the local road network has been assessed for this opening year (2025) and an interim year of five years after opening (2030), by which time it is envisaged that the proposed development will be fully constructed.

It has been agreed with Cork City Council that a horizon design year (15 years after opening, in 2040) is not required for this assessment.

Traffic volumes surveyed in 2019 on the local road network have been increased to account for the growth in background traffic to the years 2025 and 2030. These growth rates are in accordance with the Transport Infrastructure Ireland (formerly National Roads Authority) Project Appraisal Guidelines for Link-Based Traffic Growth Forecasting (assuming a 'Central' growth profile).

The construction phase of the proposed development is expected to generate workforce trips to and from the site outside the morning and evening peak periods, and as such has not been included in this transport assessment. Construction hours are expected to be from 07:00-19:00 and will be the subject of a specific Construction Traffic Management Plan which shall be developed and agreed with Cork City Council prior to commencement. However, in the year of opening (2025) it is assumed that construction at the adjacent residential developments (the Former Ford Distribution Site and the Former Cork Warehouse Company Site) will be ongoing, and as such this construction traffic has been retained on the road network for analysis purposes in 2025, but is not present on the local road network in 2030.

7.6.4 Link Flow Assessment

The projected link traffic flows for both the 'With' and 'Without' development scenarios are presented for each of the assessment years in the following tables. The figures in brackets relate to the percentage increase in link traffic volumes as a result of the proposed development. **Table 7.14** below shows the analysed links. Traffic flows are presented in vehicles.

Table 7.14 : 2025 Opening Year – Two-Way Link Flows

Link	2025 Opening Year			
	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
Centre Park Road (east of Marquee Road)	302	424 (+40%)	523	679 (+30%)
Centre Park Road (west of Marquee Road)	546	619 (+13%)	661	753 (+14%)
Marquee Road	316	365 (+16%)	339	402 (+19%)

Link	2025 Opening Year			
	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
Monahan Road (west of junction with Marquee Road)	316	330 (+4%)	307	322 (+5%)
Monahan Road (east of Victoria Rbt)	349	364 (+4%)	462	478 (+3%)
Maryville (north of Blackrock Road)	447	483 (+8%)	435	483 (+11%)
Blackrock Road (west of Maryville)	1,012	1025 (+1%)	1,119	1136 (+2%)
Blackrock Road (east of Maryville)	993	1016 (+2%)	1,047	1077 (+3%)
Victoria Road (north of Victoria Rbt)	745	781 (+5%)	848	900 (+6%)
Victoria Road (south of Victoria Rbt)	1,166	1175 (+1%)	963	972 (+1%)
Victoria Road (south of Monahan Road)	902	907 (+1%)	697	704 (+1%)
Albert Road (west of Victoria Roundabout)	878	921 (+5%)	777	823 (+6%)
Montenotte View (west of Victoria Rbt)	156	158 (+2%)	212	215 (+2%)
N27 (south of Albert Road)	2,442	2472 (+1%)	2,439	2472 (+1%)
N27 (north of Albert Road)	2,666	2678 (+0%)	2,480	2495 (+1%)
Albert Street	2,610	2643 (+1%)	2,747	2783 (+1%)
Eglinton Street	1,266	1295 (+2%)	1,077	1114 (+3%)
Old Station Road	1,522	1535 (+1%)	1,571	1589 (+1%)
N27 South Link	3,349	3388 (+1%)	3,669	3712 (+1%)
Albert Quay (east of N27)	858	894 (+4%)	751	803 (+7%)
Albert Quay (west of N27)	1,130	1157 (+2%)	1,108	1145 (+3%)

It is seen in **Table 7.14** that the impact of the proposed development in the 2025 Opening Year scenario is slight to moderate (depending on the location). The largest proportional increases are on the local roads adjacent to the site (Marquee Road, Centre Park Road and Maryville, with a maximum increase seen on Centre Park Road of 40% in the AM Peak) – however, these larger proportional increases are due to the prevailing low flows on these roads during the morning and evening peaks and correspond to a low increase in vehicle numbers.

However, it is seen that the majority of the road links assessed above show traffic increases below 5%, with a number of road links showing traffic flow increases of between 5-10% - as such the impact in these locations is considered to be slight.

The traffic associated with the proposed development is considered to have a slight impact on prevailing traffic flows, even when accounting for construction traffic as well as operational traffic generated by the proposed development being present on the road network simultaneously.

Table 7.15 : 2030 Opening Year +5 – Two-Way Link Flows

Link	2030 Opening Year + 5			
	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
Centre Park Road (east of Marquee Road)	333	476 (+43%)	604	811 (+34%)
Centre Park Road (west of Marquee Road)	602	668 (+11%)	749	854 (+14%)
Marquee Road	323	399 (+24%)	342	444 (+30%)
Monahan Road (west of junction with Marquee Road)	359	384 (+7%)	351	378 (+8%)
Monahan Road (east of Victoria Rbt)	396	421 (+6%)	522	549 (+5%)
Maryville (north of Blackrock Road)	509	560 (+10%)	507	582 (+15%)
Blackrock Road (west of Maryville)	1,118	1136 (+2%)	1,239	1266 (+2%)
Blackrock Road (east of Maryville)	1,102	1134 (+3%)	1,167	1215 (+4%)
Victoria Road (north of Victoria Rbt)	805	824 (+2%)	965	1043 (+8%)
Victoria Road (south of Victoria Rbt)	1,291	1309 (+1%)	1,066	1083 (+2%)
Victoria Road (south of Monahan Road)	994	1001 (+1%)	769	779 (+1%)
Albert Road (west of Victoria Roundabout)	993	1053 (+6%)	851	893 (+5%)
Montenotte View (west of Victoria Rbt)	174	179 (+3%)	233	237 (+2%)
N27 (south of Albert Road)	2,701	2737 (+1%)	2,678	2703 (+1%)
N27 (north of Albert Road)	2,949	2973 (+1%)	2,730	2747 (+1%)
Albert Street	2,890	2931 (+1%)	3,016	3045 (+1%)
Eglinton Street	1,387	1405 (+1%)	1,197	1241 (+4%)
Old Station Road	1,678	1698 (+1%)	1,735	1764 (+2%)
N27 South Link	3,678	3700 (+1%)	4,027	4059 (+1%)
Albert Quay (east of N27)	929	948 (+2%)	859	937 (+9%)
Albert Quay (west of N27)	1,232	1243 (+1%)	1,236	1285 (+4%)

Table 7.15 above shows that the impact of the proposed development in the 2030 Opening Year +5 scenario is again slight to moderate.

By 2030, the proposed development is assumed to be fully constructed and therefore there is no additional construction traffic present on the road network.

As with 2025, the largest proportional increases are on the local roads adjacent to the site (Marquee Road, Centre Park Road and Maryville, with a maximum increase seen on Centre Park Road of 43% in the AM Peak) – these larger proportional increases are again due to the prevailing low flows on these roads.

However, it is seen that the majority of the road links assessed above show traffic increases of below 5%, with a number of road links showing traffic flow increases of between 5-10%.

The proposed development traffic therefore is considered to have a slight impact on prevailing traffic flows in the 2030 assessment year.

7.6.5 Junction Assessment

The impact on the local road network has been assessed by examining the projected traffic flows on links in the vicinity of the proposed development, and at the following junctions both 'With' and 'Without' the proposed development:

- Centre Park Road/Marquee Road;
- Marquee Road/Monahan Road Extension; and
- Maryville/Blackrock Road;
- Victoria Roundabout/Victoria Signalised Junction; and
- Albert Road/N27 Junction.

These junctions have been assessed under the following scenarios:

- 2019 Base Year (the year that the traffic surveys were undertaken);
- 2025 Opening Year; and
- 2030 Design Year.

The impact of the proposed development at each junction has been assessed using LinSig, which is a computer software package for the assessment and design of traffic signal junctions, or Junctions 9, which is a software package for the assessment and design of priority junctions and roundabout junctions.

The impacts on these junctions resulting from the operational phase of the proposed development are assessed and presented below. Results are presented in terms of Ratio of Flow to Capacity (RFC), measured as a percentage, and Mean Max Queue Length, measured in PCU's (Passenger Car Units).

PCU's have been used for modelling purposes and are used as the unit of measurement rather than using vehicles in order to examine and measure the relative effect on traffic networks by a variety of vehicles.

Essentially, a passenger car is assumed to be the standard vehicle for the network and is therefore given a PCU value of 1. A factor is then applied to vehicles other than a standard car in order to convert their relative effects in terms of volume, speed, delay etc. to that of a car. A Heavy Goods Vehicle, for example, would have an equivalent PCU value of 2.3.

7.6.5.1 Centre Park Road/Marquee Road Junction

The junction of Centre Park Road and Marquee Road is a standard priority T-junction, with Marquee Road forming the minor arm.

7.6.5.1.1 2019 Base Year

Table 7.16 : Centre Park Road/Marquee Road Junction – 2019 Base Year Results

Arm	Turning Movement	AM Base 07:30-08:30		PM Base 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Centre Park Road (WB)	L/St	-	-	-	-
Marquee Road	L	24%	<1	8%	<1
	R	4%	<1	13%	<1
Centre Park Road (EB)	St/R	7%	<1	15%	<1

It is seen in the above table that the junction has significant spare capacity in the morning and evening peak periods.

7.6.5.1.2 2025 Opening Year

Table 7.17 : Centre Park Road/Marquee Road Junction – 2025 Opening Year Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Centre Park Road (WB)	L/St	-	-	-	-
Marquee Road	L	34%	1	35%	1
	R	7%	<1	12%	<1
Centre Park Road (EB)	St/R	10%	<1	11%	<1

In 2025, the background traffic from the 2019 traffic surveys has been increased in line with traffic growth forecasts for the area.

The introduction of traffic associated with the opening of Phase 2 (Blocks A, B and C) and ongoing construction of Phase 3 at the junction in 2025 is seen to not have a significant impact in the AM Peak, with the RFC value on Marquee Road increasing from 34% to 35%. The junction retains significant spare capacity.

Table 7.18 : Centre Park Road/Marquee Road Junction – 2025 Opening Year Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Centre Park Road (WB)	L/St	-	-	-	-
Marquee Road	L	14%	<1	16%	<1
	R	16%	<1	25%	<1
Centre Park Road (EB)	St/R	29%	1	32%	1

As with the AM Peak, the introduction of traffic associated with the opening of Phase 2 and ongoing construction of Phase 3 at the junction in 2025 is seen to have no significant impact in the PM Peak, with the RFC value on Centre Park Road (eastbound) increasing from 29% to 32%. However, the junction retains significant spare capacity.

7.6.5.1.3 2030 Opening Year +5

Table 7.19 : Centre Park Road/Marquee Road Junction – 2030 Opening Year +5 Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Centre Park Road (WB)	L/St	-	-	-	-
Marquee Road	L	36%	1	38%	1
	R	5%	<1	9%	<1
Centre Park Road (EB)	St/R	11%	<1	12%	<1

In 2030, as with the 2025 scenario the background traffic from the 2019 traffic surveys has been increased in line with traffic growth forecasts for the area.

The introduction of traffic associated with the opening of all phases of the proposed development at the junction in 2030 is seen to have no significant impact in the AM Peak, with the RFC value on Marquee Road increasing from 36% to 38%. The junction retains significant spare capacity.

Table 7.20 : Centre Park Road/Marquee Road Junction – 2030 Opening Year +5 Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Centre Park Road (WB)	L/St	-	-	-	-
Marquee Road	L	15%	<1	17%	<1
	R	18%	<1	35%	1
Centre Park Road (EB)	St/R	31%	1	34%	1

As with the AM Peak, the introduction of traffic associated with the opening of all phases of the proposed development at the junction in 2030 is seen to have a slight impact in the PM Peak, with the RFC value on Centre Park Road (eastbound) increasing from 31% to 34% and the RFC value for the right-turning movement on Marquee Road to Centre Park Road increasing from 18% to 34% (note that this movement is present in the traffic surveys captured in the site vicinity but in the intervening period the closure of the Marina to general traffic will mean that this traffic movement no longer will be present to the same extent on the local road network). However, the junction retains significant spare capacity.

7.6.5.2 Marquee Road/Monahan Road/Monahan Road Extension

In the 2019 base year scenario, the junction of Marquee Road and the Monahan Road is a standard priority T-junction, with Marquee Road forming the minor arm (i.e., the current arrangement).

However, by 2025 it is assumed that the Monahan Road Extension scheme is implemented, which will convert this existing three-arm junction to a four-arm, signalised junction. The 2025 and 2030 scenarios are based on this junction upgrade.

The Monahan Road Extension scheme is a precursor to the longer-term implementation of the Eastern Gateway Bridge scheme, which is not assumed to be in place in 2025 or in 2030 (but has been factored into the strategic modelling carried out for the Cork Metropolitan Area as part of the CMATS and ABTA assessments). Consequently, in 2025 and 2030, even with the Monahan Road Extension scheme in place, there will be no traffic present on this arm of the junction, with the exception of the traffic associated with the residential development at the permitted Former Ford Distribution Site (a portion of which will exit this site onto the Monahan Road Extension).

7.6.5.2.1 2019 Base Year

Table 7.21 : Marquee Road/Monahan Road Junction – 2019 Base Year Results

Arm	Turning Movement	AM Base 07:30-08:30		PM Base 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Marquee Road	L	5%	<1	15%	<1
Monahan Road (NWB)	R	3%	<1	2%	<1
	St/R	28%	1	12%	<1
Monahan Road (EB)	L/St	-	-	-	-

It is seen in the above table that the junction has significant spare capacity in the morning and evening peak periods.

7.6.5.2.2 2025 Opening Year

Table 7.22 : Marquee Road/Monahan Road Junction – 2025 Opening Year Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Marquee Road	L/St/R	57%	3	76%	5
Monahan Road (WB)	L/St/R	-	-	-	-
Monahan Road (NB)	L/St	81%	11	84%	12
	R	-	-	-	-
Monahan Road (EB)	L/St	12%	1	14%	1
	R	50%	2	50%	2

It is seen in the above table that the junction has significant spare capacity in the morning peak period on the Marquee Road and Monahan Road (eastbound arms), and that on the Monahan Road (northbound arm), the junction increases from 81% to 84% RFC. The introduction of traffic signal control at this junction reduces the extent of free movement of vehicles compared to the existing (2019) situation; nevertheless the proposed development is considered to have a slight impact on the junction.

In the opening year, there is no traffic associated with the Monahan Road Extension and consequently there are no results provided for this arm.

Table 7.23 : Marquee Road/Monahan Road Junction – 2025 Opening Year Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Marquee Road	L/St/R	62%	5	69%	6
Monahan Road (WB)	L/St/R	-	-	-	-
Monahan Road (NB)	L/St	62%	5	70%	6
	R	-	-	-	-
Monahan Road (EB)	L/St	20%	1	25%	1
	R	62%	4	67%	4

It is seen in the above table that the junction has ample spare capacity in the evening peak period on all arms, with the largest increase in RFC on Monahan Road (northbound) (from 62% to 70%). However, the introduction of the proposed development has a slight impact on the junction.

In the opening year, as with the AM Peak there is no traffic associated with the Monahan Road Extension and consequently there are no results provided for this arm.

7.6.5.2.3 2030 Opening Year +5

Table 7.24 : Marquee Road/Monahan Road Junction – 2030 Opening Year +5 Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Marquee Road	L/St/R	57%	3	92%	8
Monahan Road (WB)	L/St/R	19%	1	19%	1
Monahan Road (NB)	L/St	86%	12	89%	13
	R	2%	<1	2%	<1
Monahan Road (EB)	L/St	12%	1	14%	1
	R	54%	3	54%	3

It is seen in the above table that the junction has significant spare capacity in the morning peak period on the Marquee Road and Monahan Road (eastbound arms), and that on the Monahan Road (northbound arm), the junction increases from 86% to 89% RFC. The introduction of traffic signal control at this junction reduces the extent of free movement of vehicles compared to the existing (2019) situation.

Although the analysis above indicates that the RFC of the Marquee Road approach to the junction increases from 57% to 92%; this is due to the junction being optimised to balance the available capacity across the four arms – the Monahan Road arms of the junction are seen to have minor RFC increases.

In 2030, traffic flows associated with the full build out of the proposed development are present on the road network, and in addition the full build out of the Former Ford Distribution Site will also be in place. A portion of the traffic associated with the Former Ford Distribution Site is assumed to enter and exit the site via a new entrance junction from the Monahan Road Extension, and consequently in 2030 there is additional traffic on the road network on this approach and there are results provided above for this arm, which is seen to have significant capacity.

Overall, it is seen that the introduction of the proposed development has a moderate impact on the junction.

Table 7.25 : Marquee Road/Monahan Road Junction – 2030 Opening Year +5 Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Marquee Road	L/St/R	66%	5	84%	7
Monahan Road (WB)	L/St/R	13%	1	13%	1
Monahan Road (NB)	L/St	65%	5	81%	8
	R	12%	1	12%	1
Monahan Road (EB)	L/St	19%	1	25%	1
	R	63%	4	63%	4

It is seen in the above table that the junction has ample spare capacity in the evening peak period on all arms, with the largest increase in RFC on Marquee Road (from 66% to 84%). However, the introduction of the proposed development has a slight impact on this arm of the junction and indeed on the junction as a whole.

7.6.5.3 Maryville/Blackrock Road Junction

The Maryville/Blackrock Road junction operates as a standard priority junction at present and is expected to continue as such in 2025 and 2030.

7.6.5.3.1 2019 Base Year

Table 7.26 : Maryville/Blackrock Road Junction – 2019 Base Year Results

Arm	Turning Movement	AM Base 07:30-08:30		PM Base 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Maryville Road	L	9%	<1	19%	<1
	R	11%	<1	37%	1
Blackrock Road (WB)	St/R	31%	1	12%	<1
Blackrock Road (EB)	L/St	-	-	-	-

It is seen above that the junction has ample spare capacity in the morning and evening peak periods.

7.6.5.3.2 2025 Opening Year

Table 7.27 : Maryville/Blackrock Road Junction – 2025 Opening Year Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Maryville Road	L	14%	<1	17%	<1
	R	19%	<1	22%	<1
Blackrock Road (WB)	St/R	41%	1	44%	2
Blackrock Road (EB)	L/St	-	-	-	-

It is seen above that the junction has ample spare capacity in the AM Peak period, with the introduction of the proposed development having no significant impact.

Table 7.28 : Maryville/Blackrock Road Junction – 2025 Opening Year Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Maryville Road	L	31%	<1	37%	1
	R	53%	1	59%	1
Blackrock Road (WB)	St/R	22%	1	26%	1
Blackrock Road (EB)	L/St	-	-	-	-

It is seen above that the junction has ample spare capacity in the PM Peak period, with the introduction of the proposed development having no significant impact.

7.6.5.3.3 2030 Opening Year +5

Table 7.29 : Maryville/Blackrock Road Junction – 2030 Opening Year +5 Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Maryville Road	L	20%	<1	26%	<1
	R	26%	<1	33%	1
Blackrock Road (WB)	St/R	48%	2	50%	2
Blackrock Road (EB)	L/St	-	-	-	-

It is seen above that the junction has ample spare capacity in the AM Peak period, with the introduction of the proposed development having a slight impact, increasing RFC values by approximately 7% on the Blackrock Road arm of the junction.

Table 7.30 : Maryville/Blackrock Road Junction – 2030 Opening Year +5 Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Maryville Road	L	44%	1	64%	2
	R	68%	2	80%	3
Blackrock Road (WB)	St/R	30%	1	40%	1
Blackrock Road (EB)	L/St	-	-	-	-

It is seen above that the junction has ample spare capacity in the PM Peak period, with the introduction of the proposed development having a slight impact, increasing RFC values by approximately 20% on the Maryville Road arm of the junction.

7.6.5.4 Victoria Roundabout/Victoria Signalised Junction

The junction of Victoria Road/Albert Road/Centre Park Road is a roundabout junction at present. However, it has been assumed that by 2025 this junction will be upgraded to a signalised junction as part of the Cork Docklands to City Centre Improvement Scheme. This scheme is intended to rationalise the number of arms at the junction and to introduce traffic signal control and also to facilitate a contra-

flow bus lane inbound on Victoria Road towards Albert Quay, as well as improving pedestrian and cyclist safety at the junction and its approaches.

Consequently, the introduction of traffic signal control will have the effect of reducing the capacity of the junction compared to the existing roundabout form.

The junction is assessed as a roundabout in 2019 and as a signalised junction in 2025 and 2030.

7.6.5.4.1 2019 Base Year

Table 7.31 : Victoria Roundabout Junction – 2019 Base Year Results

Arm	Turning Movement	AM Base 07:30-08:30		PM Base 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Victoria Road (SB)	L/St/R	24%	<1	25%	<1
Centre Park Road	L/St	23%	<1	32%	1
Victoria Road (NB)	L/R	42%	1	30%	<1
Albert Road	Exit Only	-	-	-	-

It is seen above that the roundabout has sufficient capacity in the AM and PM peak periods.

7.6.5.4.2 2025 Opening Year

Table 7.32 : Victoria Road Signalised Junction – 2025 Opening Year Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Victoria Road (SB)	L	41%	5	47%	6
	St/R	107%	37	112%	45
Centre Park Road	L/St	105%	28	114%	45
Victoria Road (NB)	L/R	110%	>50	112%	>50
Albert Road	Exit Only	-	-	-	-

It is seen above that the signalisation of the junction and the introduction of a contra-flow bus lane has a significant impact on the junction performance, with RFC values of over 100% on a number of arms. It must be noted that this is to be expected given the relative free-flowing operation of the junction at present and the impact of introducing traffic signal control and a contra-flow bus lane.

These changes mean that the Victoria Road (southbound and northbound) and Centre Park Road arms of the junction are now mostly separated out and stopped at the junction until their respective stages are in effect (due to potential conflict with opposing movements). In addition, this junction represents the convergence of a number of approach routes to the city from the south-eastern suburbs and therefore carries large traffic flows.

However, the proposed development itself is seen to have a slight impact at the junction, increasing RFC by up to 9%.

Table 7.33 : Victoria Road Signalised Junction – 2025 Opening Year Results (PM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Victoria Road (SB)	L	36%	5	42%	5
	St/R	99%	25	103%	31
Centre Park Road	L/St	101%	27	105%	38
Victoria Road (NB)	L/R	100%	26	105%	34
Albert Road	Exit Only	-	-	-	-

As with the AM Peak, a similar impact is seen at the junction as a result of signalisation of the roundabout. However, the proposed development itself is seen to have a slight impact at the junction, increasing RFC by up to 6%.

7.6.5.4.3 2030 Opening Year +5

Table 7.34 : Victoria Road Signalised Junction – 2030 Opening Year +5 Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Victoria Road (SB)	L	42%	5	43%	6
	St/R	119%	>50	125%	>50
Centre Park Road	L/St	120%	>50	123%	>50
Victoria Road (NB)	L/R	122%	>50	128%	>50
Albert Road	Exit Only	-	-	-	-

As with the 2025 Opening Year scenario, the introduction of signal control at the junction is seen to significantly increase RFC values on most of the arms/ movements.

However, the proposed development itself is seen to have a slight impact at the junction, increasing RFC by up to 6%.

Table 7.35 : Victoria Road Signalised Junction – 2025 Opening Year +5 Results (PM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
Victoria Road (SB)	L	42%	6	50%	7
	St/R	109%	46	114%	>50
Centre Park Road	L/St	108%	42	111%	>50
Victoria Road (NB)	L/R	111%	>50	113%	>50
Albert Road	Exit Only	-	-	-	-

As with the AM Peak, a similar impact is seen at the junction as a result of signalisation of the roundabout. However, the proposed development itself is seen to have a slight impact at the junction, increasing RFC by up to 8%.

7.6.5.5 Albert Road/N27 Junction

The junction of Albert Road and the N27 is a signalised T-junction at present (with Albert Road forming the minor arm). Albert Road is a one-way, two-lane road as it approaches the junction, widening locally to a total of 4 entry lanes (two turning north and two turning south). The N27 as it passes the junction is a 4-lane, dual carriageway route. The junction is heavily trafficked at present.

7.6.5.5.1 2019 Base Year

Table 7.36 : Albert Road/N27 Junction – 2019 Base Year Results

Arm	Turning Movement	AM Base 07:30-08:30		PM Base 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
N27 (SB)	St	75%	20	63%	16
Albert Road	L	73%	12	59%	7
	R	74%	12	64%	8
N27 (NB)	St	29%	6	26%	1

It is seen above that the junction has spare capacity in the AM and PM peak periods at present, although it is noted that the junction has RFC values of up to 75% in the AM period.

7.6.5.5.2 2025 Opening Year

Table 7.37 : Albert Road/N27 Junction – 2025 Opening Year Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
N27 (SB)	St	86%	26	86%	26
Albert Road	L	57%	7	63%	8
	R	84%	17	86%	18
N27 (NB)	St	33%	7	33%	7

It is seen above that the junction has spare capacity in the AM Peak in 2025, although it is noted that the junction has RFC values of up to 86% in the AM and PM in both "With" and "Without" development scenarios. However, the introduction of the proposed development is seen to have a slight impact, increasing RFC values by up to 6%.

Table 7.38 : Albert Road/N27 Junction – 2025 Opening Year Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
N27 (SB)	St	72%	20	75%	21
Albert Road	L	72%	10	76%	12
	R	73%	11	73%	11
N27 (NB)	St	30%	6	31%	6

It is seen above that the junction has spare capacity in the PM Peak in 2025. However, the introduction of the proposed development is seen to have a slight impact, increasing RFC values by up to 4%.

7.6.5.5.3 2030 Opening Year +5

Table 7.39 : Albert Road/N27 Junction – 2030 Opening Year +5 Results (AM Peak)

Arm	Turning Movement	AM Base 07:30-08:30		AM Base + Dev 07:30-08:30	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
N27 (SB)	St	95%	34	96%	36
Albert Road	L	63%	9	67%	10
	R	94%	24	96%	26
N27 (NB)	St	37%	7	37%	8

It is seen above that the junction has spare capacity in the AM Peak in 2030, although it is noted that the junction has RFC values of up to 95% in the AM in particular in the 'Without development' scenario. However, the introduction of

the proposed development is seen to have a slight impact, increasing RFC values by up to 4%.

Table 7.40 : Albert Road/N27 Junction – 2030 Opening Year +5 Results (PM Peak)

Arm	Turning Movement	PM Base 17:15-18:15		PM Base + Dev 17:15-18:15	
		RFC (%)	Mean Max Queue (PCU)	RFC (%)	Mean Max Queue (PCU)
N27 (SB)	St	81%	24	81%	24
Albert Road	L	76%	11	80%	13
	R	79%	13	82%	14
N27 (NB)	St	33%	7	33%	7

It is seen above that the junction has spare capacity in the PM Peak in 2030. However, the introduction of the proposed development is seen to have a slight impact, increasing RFC values by up to 4%.

7.6.5.6 Walking and Cycling

The junctions in the proposed development site vicinity currently experience relatively low pedestrian and cyclist movements compared to the junctions closer to Cork City Centre. The proposed development will have temporary negative impacts on pedestrians and cyclists during the construction phases due to the increased construction traffic on the local road network; however these impacts are considered to be not significant and will be temporary in nature.

Once the various phases are complete and occupied, there will be an increase in pedestrian and cyclist movements directly associated with the proposed development on the local road network. These are considered to have a long-term, not significant positive impact on the local road network.

7.6.5.7 Impact Assessment Summary

Table 7.41 below summarises the impact of the proposed development on the surrounding transport network and users.

Table 7.41 : Summary of Impact Assessment

Mode	Cause	Impact
Construction Phase		
Traffic	Increased construction traffic flows onto existing roads network.	Short-Term Slight Negative
Walking	Increased construction traffic flows resulting in an increased risk to existing pedestrian movements.	Short-Term Not Significant Negative
Cycling	Construction Traffic Flows resulting in an increased risk on the existing cycle network.	Short-Term Not Significant Negative
Operational Phase		
Traffic	Development-Generated Traffic added onto surrounding Road Network.	Long-Term Not Significant Negative
Walking	An increase in pedestrian traffic to local schools, shop, amenity and sports facilities, and to both Cork City Centre and the south-eastern suburbs.	Long-Term Not Significant Positive
Cycling	An increase in cycle activity utilising existing and proposed upgrades to the cycle network.	Long-Term Not Significant Positive

7.7 Mitigation Measures and Monitoring

7.7.1 Construction Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- During peak hours, ancillary, maintenance and other site vehicular movements will be discouraged;
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues; and
- The contractor will be required to promote travel by sustainable modes of transport. An indicative Construction Mobility Management Plan is outlined later in this section.

7.7.2 Hours of Working

Construction operations on site are proposed to be between the hours of 07:00-19:00, Monday to Friday, and 07:00-16:00 on Saturdays. Similarly, deliveries of materials to site will generally be between the hours of 07:00-19:00, Monday to Friday, and 07:00-16:00 on Saturdays.

The construction shift times will ensure construction traffic will have limited impact on the peak periods of 07:30-08:30 in the morning and 17:15-18:15 in the evening as it is envisaged most construction staff will arrive to work before 07:00 in the morning and leave after 19:00 in the evening.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Cork City Council.

7.7.3 Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be developed by the contractor and presented to Cork City Council for approval prior to commencement of the construction works. The CTMP will contain detailed temporary traffic management drawings for each construction stage and will include the mitigation measures described in this section, amongst others.

7.7.4 Construction Mobility Management Plan

The contractor will be required as part of the contract to introduce a Construction Stage Mobility Management Plan for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the measures the contractor will provide as part of the Mobility Management Plan.

The Construction Stage Mobility Management Plan will form part of the overall Construction Traffic Management Plan and will be agreed with Cork City Council prior to works beginning on site.

Walking: The pedestrian environment surrounding the site is considered to be good with footpaths provided along all roads. Good pedestrian routes exist between the site and nearby bus stops on the Monahan Road and on the Blackrock Road.

Cycling: Cycle parking spaces and associated showers and lockers will be provided on the site for construction staff.

Car Sharing: Car sharing among construction staff should be encouraged, especially from areas where construction staff may be clustered. The contractor will aim to organise shifts in accordance to staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to the site car parking facility and will minimise the potential traffic impact on the surrounding road network.

Public Transport: The contractor will issue an information leaflet to all staff as part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site, including bus routes that operate in the vicinity of the site. The Contractor will also offer the “Travel to Work Scheme” to employees.

7.7.5 Outline Mobility Management Plan

An Outline Mobility Management Plan for the residents of the proposed development has been prepared and is attached as **Appendix 7.1**. This document sets mode split targets for residents at the proposed development and sets out initiatives proposed in order to encourage travel by sustainable modes and meet the targets set.

7.8 Residual Impacts

Taking into account the analyses presented in the traffic and transport assessment and the progressive approach taken to car parking provision on site and promotion of alternative, sustainable modes of travel, the impact of the proposed development on the transport network in the site vicinity has been minimised. Whilst the development traffic impact on the junctions in the immediate site vicinity range from not significant to slight (and in some instances moderate), this is a consequence of these junctions being lightly trafficked at present (with significant residual capacity even after the introduction of the proposed development), and the impact of the proposed development on the junctions in closer proximity to Cork City Centre is seen to be slight. Collectively, therefore the residual impact associated with the proposed development will be a moderate increase in traffic flows in the immediate site vicinity and a slight impact in the vicinity of Cork City Centre.

Therefore, it is concluded that the proposed development as a whole will have a **not significant** residual impact on the traffic and transport network in the vicinity of the proposed development site.

7.9 Conclusion

This assessment has been carried out for the proposed development at the Former Tedcastles Site on the eastern urban fringe of Cork City, situated to the eastern end of the South Docklands, an area envisaged to play a major role in Cork's planned population and employment growth as outlined in the National Planning Framework.

The proposed development is located on a site owned by Tiznow Property Company Limited (Comer Group Ireland) situated between Centre Park Road and the Marina.

The proposed development is a strategic housing development and will consist of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities.

The assessment includes a comprehensive review of the area within which the proposed development will be located, a review of applicable transportation planning policy and proposed transportation infrastructure provision within the area. Car parking requirements are considered, and an overall traffic assessment has been carried out. Mitigating measures are proposed in the form of a Construction Traffic Management Plan and a Construction Mobility Management Plan which will be developed by the contractor and presented to Cork City

Council in advance of commencement of construction. An Outline Mobility Management Plan for the ultimate residents of the proposed development has also been prepared and is included in **Appendix 7.1**, and will inform the longer-term development of a full Mobility Management Plan for the proposed development.

This site of the proposed development avails of good public transport and cycle infrastructure connecting the site directly with Cork City Centre and other important areas in Cork City. In addition, further significant improvement and investment in sustainable and active travel is planned which will benefit the proposed development, including initiatives such as the Docklands to City Centre Road Network Improvement Scheme, new BusConnects Cork routes and supporting infrastructure adjacent to the site, and the planned regional and commuter bus and rail services, and the proposed rapid transit system envisaged to link Ballincollig to Mahon via the city centre.

These initiatives are expected to improve the accessibility of the proposed development site by sustainable modes of transportation and thereby reduce the dominance of car-based transportation in the medium to long term.

A total of 268 residential parking spaces are proposed across the proposed development, which represents 79% of the suggested maximum standards as per the ABTA guidance, and 28% of the maximum requirement as per the Cork City Development Plan.

The trips generated by the proposed development is low in the context of the existing traffic volumes within the vicinity. Generally, the additional traffic on the network added by the proposed development is less than 5%, except for Marquee Road, Centre Park Road and Maryville which have low baseline traffic flows.

The junction modelling shows that at these junctions the difference in the operation of the junction between the ‘with development’ and ‘without development’ scenarios is typically minor (up to 10%).

It is therefore concluded that the impact of the proposed development on the operation of the local road network would not be significant.

Mitigation measures are proposed for the proposed development in terms of the Construction and the Outline Residential Mobility Management Plans which promote sustainable modes of transportation, as well as a reduced parking provision on site in accordance with the most recent guidance from Cork City Council in line with their objectives for the sustainable development of the wider South Docks area.

7.10 References

Department of Transport, Tourism and Sport (DTTAS) (2009) Smarter Travel – A Sustainable Transport Future (2009-2020);

Department of Transport, Tourism and Sport (DTTAS) (2009) National Cycle Policy Framework (2009 – 2020);

Department of Transport, Tourism and Sport (DTTAS) (2019) Design Manual for Urban Roads and Streets;

Department of Housing, Planning and Local Government, (2018) The National Planning Framework;

Cork City Council (2015) Cork City Council Development Plan (2015-2021);

Southern Regional Assembly, 2020: Regional Spatial and Economic Strategy for the Southern Region (RSES);

Cork City Council (unpublished) Cork South Docklands, Area-Based Transport Assessment (ABTA);

Cork City and County Councils, 2017: Cork Metropolitan Area Cycle Network Plan;

Cork City Council, 2020: Pedestrianisation of the Marina:

(https://consult.corkcity.ie/en/consultation/pedestrianisation-marina);

Cork City Council, 2020: Interim Cycle Infrastructure Phase 1:

(https://consult.corkcity.ie/en/consultation/interim-cycle-infrastructure-phase-1-1);

Cork City Council, 2013: Cork City Centre Movement Strategy:

Cork City Council, 2019: Cork Docklands to City Centre Road Network Improvement Scheme:

(https://consult.corkcity.ie/en/consultation/cork-docklands-city-centre-roadnetwork-improvements-scheme);

Environmental Protection Agency (EPA), 2017: Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft August 2017);

National Transport Authority (NTA) 2020: Cork Metropolitan Area Transport Strategy 2040;

Transport Infrastructure Ireland (TII), 2019: Project Appraisal Guidelines, Unit 5.5: Link-Based Traffic Growth Forecasting; and

National Transport Authority (NTA), 2021: Cork Draft New Bus Network:

(https://corkdraftnetwork.s3-eu-west-1.amazonaws.com/index.html).

8 Air Quality and Climate

8.1 Introduction

This chapter describes the likely significant effects on air quality and climate resulting from the construction and operation of the proposed development. Potential effects are most likely to arise from traffic related pollutants namely, nitrogen oxides (NOx), carbon monoxide (CO), benzene and particulate matter (PM_{10} and $PM_{2.5}$). The likely significant effects of dust emissions and asbestos disturbance during construction were also assessed.

This chapter also addresses the potential effects on the climate with reference to Ireland's climate commitments.

This chapter was prepared by Dan Garvey. Details of Dan's qualifications and experience are included in **Chapter 1** of this EIAR *Introduction*.

8.2 Assessment Methodology

8.2.1 General

This assessment has been prepared having regard to the requirements of the Transport Infrastructure Ireland (TII), formerly the National Roads Authority (NRA) document Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes. These guidelines[19] are relevant to the project as the proposed development will affect traffic volumes in its vicinity during the construction and operational phases.

The effect of the proposed development on air quality is assessed for both the construction and operational phases by considering the pollutant background concentrations, emissions from road traffic and the potential for construction dust. Predicted concentrations are compared to the relevant limit values.

Carbon emissions are considered with reference to Ireland's climate commitments.

8.2.2 Guidance and Legislation

8.2.2.1 Statutory Air Quality Standards

To reduce the risk of poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values are set for the protection of human health and ecosystems.

[19] Transport Infrastructure Ireland (2011) *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes*; *https://www.tii.ie/technical-services/environment/planning/Guidelines-for-the-Treatment-of-Air-Quality-during-the-Planning-and-Construction-of-National-Road-Schemes.pdf*

On 12th April 2011, the Air Quality Standards (AQS) Regulations[20] 2011 (S.I. No. 180 of 2011) came into force and transposed EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe (CAFE Directive) into Irish law.

The purpose of the AQS Regulations is to:

- to provide for the assessment of certain pollutants using methods and criteria common to other European Member States;
- to ensure that adequate information on certain pollutant concentrations is obtained and made publicly available; and
- to provide for the maintenance and improvement of ambient air quality where necessary.

The limit values established under the AQS Regulations relevant to this assessment are included in **Table 8.1**.

Table 8.1: Limit values in the AQS Regulations

Pollutant	Limit value for the protection of:	Averaging period	Limit value ($\mu g/m^3$)	Basis of application of limit value	Limit value attainment date
CO	Human Health	8 Hours	10,000	Not to be exceeded	1 January 2005
NO_2	Human Health	1-hour	200	≤ 18 exceedances p.a. (99.79%ile)	1 January 2010
		Calendar year	40	Annual mean	1 January 2010
NO_x	Vegetation	Calendar year	30	Annual Mean	1 January 2010
PM_{10}	Human Health	24-hours	50	≤ 35 exceedances p.a. (90%ile)	1 January 2005
		Calendar year	40	Annual mean	1 January 2005
$PM_{2.5}$	Human Health	Calendar year	20 *Note 1*	Annual mean	1 January 2020
Sulphur Dioxide (SO_2)	Human Health	1-hour	350	≤ 24 exceedances p.a. (99.7%ile)	1 January 2005

[20] Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011).

Pollutant	Limit value for the protection of:	Averaging period	Limit value (µg/m^3)	Basis of application of limit value	Limit value attainment date
	Human Health	24-hour	125	≤ 3 exceedances p.a. (99.2%ile)	1 January 2005
	Human Health	Calendar year	20	Annual mean	1 January 2001

Note 1: Limit value to be reviewed by the Commission in light of further information on health and environmental effects, technical feasibility and experience of the Target Value in Member States.

There are no statutory limits for dust at a European or national level. However, TA Luft[21] provides a guideline for the rate of dust deposition of 350 mg/m^2/day averaged over one year. The Environmental Protection Agency (EPA) concurs that this guideline may be applied, although the EPA typically applies the guideline limit as a 30-day average[22].

8.2.2.2 Climate

National

The *Climate Action and Low Carbon Development (Amendment) Act 2021*[23] sets out the national objective of transitioning to a climate resilient, biodiversity rich and climate neutral economy by no later than 2050. The Act provides for the preparation of carbon budgets, Climate Action Plans (CAPs), National Mitigation Plans and Sectoral Plans which will specify policies to reduce greenhouse gas emissions for each sector, including, Electricity Generation, the Built Environment, Transport, Agriculture and Forestry. In accordance with the Act, successive National Mitigation Plans will be prepared, at least every five years.

Ireland has set a target to reduce non-Emissions Trading Scheme (ETS) sector emissions by 30% by the year 2030[24], compared to the 2005 emission levels. Non-ETS sectors include agriculture, transport, residential, commercial, non-energy intensive industry, and waste.

In addition, the Act refers to the National Adaptation Framework (NAF)[25]. Ireland's first NAF was published in January 2018 and sets out the national strategy to reduce the State's vulnerability to the negative effects of climate change and avail of the positive impacts. The NAF complements the work already carried out under the National Climate Change Adaptation Framework (NCCAF)[26], which was published in December 2012. The aim of the NCCAF is to

[21] TA Luft (2002) *Technical Instructions on Air Quality*.
[22] EPA (2006) *Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*.
[23] Climate Action and Low Carbon Development (Amendment) Act 2021. Available at: https://data.oireachtas.ie/ie/oireachtas/act/2021/32/eng/enacted/a3221.pdf [Accessed February 2022]
[24] 2030 targets for EU Member States as per EU Effort Sharing Regulation.
[25] National Adaptation Framework (January 2018), Planning for a Climate Resilient Ireland
[26] National Climate Change Adaptation Framework (December 2012), Building Resilience to Climate Change

ensure adaptation measures are taken across different sectors at a local level to reduce Irelands susceptibility to climate change which were identified as:

- increase in average temperatures;
- more extreme weather conditions including storms and rainfall events;
- an increased likelihood of river and coastal flooding;
- water shortages, particularly in the east of the country;
- changes in types and distribution of species; and
- the possible extinction of vulnerable species.

The Government of Ireland's *Climate Action Plan*[27] was published in 2021 and sets out Ireland's plan to address climate disruption and the impact it has on the environment, society, economy and our natural resources. It commits to achieving a net zero carbon energy systems objective for Ireland. The plan sets out a detailed sectoral roadmap to deliver a cumulative reduction in emissions. In addition to reducing Ireland's greenhouse gas emissions, many of the changes proposed in the Plan will have positive economic and societal co-benefits, including cleaner air, warmer homes, and a more sustainable economy for the long term.

Regional

Cork City Council Climate Change Adaptation Strategy (2019-2024)

Cork City Council Climate Change Adaptation Strategy (2019-2024)[28] was published in September 2019 in response to dealing with climate change at a local level. The Climate Change Adaptation Strategy 2019 – 2024 represents the first such strategy prepared for Cork City and builds on significant work conducted by Cork City Council in both adapting and mitigating for climate change. The strategy sets out the risks that climate change will pose to Cork City along with key goals, and actions that the City Council seeks to implement for Cork City to adapt to climate change.

The two main goals of this strategy are:

- To make Cork City as climate-resilient as possible, reducing the impacts of current and future climate change-related conditions and events; and
- To pro-actively engage with all citizens on the subject of climate action, such as climate change, climate change adaptation and climate change mitigation.

In order to prepare for the challenges of climate change and adapting to its effects in Cork City, seven key thematic areas of equal priority have been identified within the Cork City Council Climate Change Adaptation Strategy (2019-2024):

- Local Adaptation Governance and Business Operations;

[27] Climate Action Plan, Government of Ireland 2021. Available at: https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/
[28] Cork City Council Climate Change Adaptation Strategy (2019-2024). Available: https://www.corkcity.ie/en/media-folder/environment/final-cork-city-council-climate-change-adaptation-strategy-30-sept-2019-.pdf [Accessed January 2022]

- Infrastructure and Built Environment;
- Land Use and Development;
- Drainage, Water and Flood Management;
- Nature, Natural Resources and Cultural Infrastructure;
- Citizen Safety, Health and Wellbeing; and
- Partnerships with other Sectors and Agencies.

The development of these thematic areas is supported by named objectives and actions that form that basis of the strategy.

8.2.3 Categorisation of Baseline Environment

A desk-based study of the baseline environment of the proposed development area was undertaken to inform this assessment. The EPA's Air Quality Reports[29] were used to determine the baseline air quality for the years 2017 to 2020 (refer to **Section 8.3.1** for further details).

Traffic modelling (as described in **Chapter 7** *Traffic and Transportation*) was used for projected traffic volumes within the study area.

8.2.4 Impact Assessment Methodology

8.2.4.1 Air Quality

Construction Phase

This section is prepared having regard to the requirements of the TII guidelines[19]. The guidelines state that dust emissions from construction sites can lead to soiling, elevated PM_{10} concentrations and can have adverse effects on vegetation. The assessment criteria are outlined in **Table 8.2**.

Emissions from construction vehicles are assessed where construction traffic results in a significant (>10%) increase in Annual Average Daily Traffic (AADT) flows near sensitive receptors in accordance with the TII guidance.

[29] EPA (2020) Annual Air Quality Reports, Available: https://www.epa.ie/publications/monitoring--assessment/air/ [Accessed January 2022]

Table 8.2: Assessment criteria for the effects of dust emissions from construction activities with standard mitigation in place

Source		Potential distance for Significant Effects (Distance from Source)		
Scale	**Description**	**Soiling**	**PM_{10}** *Note 2*	**Vegetation Effects**
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

Note 2: Significance based on the PM_{10} Limit Values specified in AQS, which allows 35 daily exceedances/year of 50 µg/m³

The effect of dust emissions during the construction phase is assessed by estimating the area over which there is a risk of significant effects, in line with the TII guidelines. The effect of construction dust is also considered, and additional mitigation measures proposed, as required.

Traffic Emissions

The DMRB (UK Highways Agency, 2011) states that if daily traffic flows change by less than 1,000 Annual Average Daily Traffic (AADT) or Heavy Duty Vehicle (HDV) flows change by less than 200 AADT then the impact on air quality can be considered neutral.

The traffic modelling as described in **Chapter 7** addresses construction-phase traffic as an integral part of the overall projected increases in traffic volumes, so the associated potential air quality impacts are comprehensively addressed under the 'Operational Phase' heading in this chapter.

Operational Phase

The TII guidelines[19] specify that the changes in pollutant concentrations alongside roads with a significant change in traffic should be assessed. It states that receptors should be considered at all road links where a greater than 5% change in traffic flows or speeds is predicted for the "Do-Something" option.

Significance criteria have been adopted from the TII air quality guidelines. These are presented in **Table 8.3** to **Table 8.5.**

Table 8.3: Definition of Impact Magnitude for Changes in Ambient Pollutant Concentrations

Magnitude of Change	Annual Mean NO_2/ PM_{10}	No. days with PM_{10} concentration greater than 50 ug/m^3	Annual Mean $PM_{2.5}$
Large	Increase/decrease ≥4 µg/m^3	Increase/decrease >4 days	Increase/decrease ≥2.5 µg/m^3
Medium	Increase/decrease 2-<4µg/m^3	Increase/decrease 3 or 4 days	Increase/decrease 1.25 -<2.5µg/m^3
Small	Increase/decrease 0.4-<2µg/m^3	Increase/decrease 1 or 2 days	Increase/decrease 0.25-<1.25µg/m^3
Imperceptible	Increase/decrease <0.4µg/m^3	Increase/decrease <1 day	Increase/decrease <0.25µg/m^3

Table 8.4: Air quality effect descriptors for changes to annual mean nitrogen dioxide and PM_{10} and $PM_{2.5}$ concentrations at a receptor

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration [Note 3]		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value with scheme (≥40 µg/m^3 of NO_2 or PM_{10}) (≥25µg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with scheme (36≤40 µg/m^3 of NO_2 or PM_{10}) (22.5≤25µg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with scheme (30≤36 µg/m^3 of NO_2 or PM_{10}) (18.75≤22.5 µg/m^3 of $PM_{2.5}$)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with scheme (<30 µg/m^3 of NO_2 or PM_{10}) (<18.75µg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value without scheme (≥40 µg/m^3 of NO_2 or PM_{10}) (≥25µg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Substantial Positive
Just Below Objective/Limit Value without scheme (36<40 µg/m^3 of NO_2 or PM_{10}) (22.5<25µg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value without scheme (30<36 µg/m^3 of NO_2 or PM_{10}) (18.75<22.5 µg/m^3 of $PM_{2.5}$)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value without scheme (<30 µg/m^3 of NO_2 or PM_{10}) (<18.75µg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Beneficial

Note 3: where the impact magnitude is imperceptible then the impact description is negligible.

Table 8.5: Air quality effects descriptors for changes to number of days with PM_{10} concentration greater than 50 µg/m^3 at a receptor

Absolute Concentration in Relation to Objective/Limit Value	Changes in Concentration [Note 4]		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value with scheme (≥35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with scheme (32-<35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with scheme (26-<32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with scheme (<26 days)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value without scheme (≥35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value without scheme (32-<35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value without scheme (26-<32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value without scheme (<26 days)	Negligible	Negligible	Slight Beneficial

Note 4: where the impact magnitude is imperceptible then the impact description is negligible.

Traffic Assessment Methodology

The TII guidelines state that increases in Annual Average Daily Traffic (AADT) flows of less than 5% and 10% during the operational and construction phases respectively are unlikely to result in significant air quality effects. Likely significant effects on air quality are therefore assessed when the AADT flows increase above these thresholds during construction and operation of the proposed development.

The air quality assessment utilises traffic predictions for the opening year when the development will be occupied (2025 – Opening Year) and 5 years after that (2030) as outlined in **Chapter 7** *Traffic and Transportation*.

8.2.4.2 Climate

Carbon Emissions

In line with the Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities[30] (hereafter referred to as the

[30] Department of Housing, Local Government and Heritage (2020) Sustainable Urban Housing: Design Standards for New Apartments - *Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)*

Apartment Guidelines), details on the management and maintenance the proposed apartments have been included as part of the planning application documentation.

Specifically, Section 6.13 of the Apartment Guidelines requires apartment applications to:

"...planning applications for apartment development shall include a building lifecycle report which in turn includes an assessment of long term running and maintenance costs as they would apply on a per residential unit basis at the time of application, as well as demonstrating what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents."

A Building Life Cycle Report has been included in the planning application documentation to address these requirements and includes the assessment of energy performance and carbon emissions, building design, materials used, building installations, waste management, building management, landscaping and transport.

8.3 Baseline Conditions

8.3.1 Air Quality

8.3.1.1 Air Quality Zoning

The Air Quality Standards (AQS) Regulations describe the air quality zoning adopted in Ireland as follows:

- Zone A (Dublin Conurbation);
- Zone B (Cork Conurbation);
- Zone C (16 Cities and Towns with population greater than 15,000); and
- Zone D (Rural Ireland: areas not in Zones A, B and C).

The proposed development is in Zone B.

The annual mean background levels of NO_2, NO_x, PM_{10}, $PM_{2.5}$ and Carbon Monoxide (CO) from EPA monitoring undertaken from 2017 to 2020, are presented in **Table 8.6.** Concentrations of each pollutant recorded in Zone B are averaged to represent typical background levels. In accordance with AQS, the average concentrations obtained from all stations complied with 90% data capture.

Table 8.6: Annual Mean Background Pollutant Concentrations for Zone B

Years	Annual Average NO_2 (µg/m³)	Annual Average NO_x (µg/m³ NO_2)	Annual Average PM_{10} (µg/m³)	Annual Average $PM_{2.5}$ (µg/m³)	8-hour average CO (µg/m³)
2018	11.0	15.0	17.0	9	400 *Note 5*
2019	15.5	-	8.0	8.5	300
2020	11.0	22.6	13.3	7.0	600
Average	12.5	18.8	12.8	8.2	433.3
Limit *Note 5*	*40*	*30* *Note 6*	*40*	*20* *Note 7*	*10,000*

Note 5: Only one concentration was provided in the report tables which includes an 89% data capture (below the required 90% capture rate). Nevertheless, this figure was used in calculations for this assessment
Note 6: Limit for the protection of human health.
Note 7: Limit for the protection of vegetation. As stated by the EPA this limit only applies to rural stations in Zone B

Concentrations of each pollutant recorded in Zone B are averaged to represent typical background levels. Average concentrations were obtained from all Zone B stations where 90% data capture was achieved. This is in accordance with the air quality standards which specifies that any site used for assessment purposes must comply with 90% data capture. For pollutants where the 90% capture rule was not achieved at any Zone B sites, the average of Zone A was taken instead.

Air quality monitoring at Zone B has indicated that average background concentrations for NO_2, NO_x, PM_{10}, $PM_{2.5}$ and CO are all below the standard air quality limits outlined in **Table 8.6**.

8.3.1.2 National Ambient Air Quality Network

The EPA's National Ambient Air Quality Network[31] records air quality at several monitoring stations around the country, including at locations in the vicinity of the proposed development site. These include stations at Cork Lower Glanmire Road (Station 104), Heatherton Park (Station 10), South Link Road (Station 56) and University College Cork (Station 21), and as identified in **Figure 8.2**. 2021 air quality data from these sensors and monitoring stations located near the proposed development have been summarised in **Table 8.7.**

Cork Lower Glanmire Road (Station 104)

The Cork Lower Glanmire Road Station was commissioned in February 2022. It is located approximately 195m to the north of the proposed development, on the opposite side of the River Lee. This station measures nitrogen dioxide and ozone. As this station is relatively new and measurements are only available from the 10th of February 2022, data could not be obtained for 2021. At present[32], mean nitrogen dioxide (NO_2) and ozone (O_3) levels are approximately 33.86 µg/m³ and

[31] www.airquality.ie
[32] March 2022

55.79 µg/m³, respectively. These are below the 40 µg/m³ (NO_2) and 150 µg/m³ (O_3) limit values.

Heatherton Park (Station 10)

The PM_{10} and $PM_{2.5}$ monitors are located in a suburban housing estate (Heatherton Park) immediately north of Tramore Valley Park (former Kinsale Road Landfill) and approximately 2.2km southwest of the proposed development site. These monitors are operated by Cork City Council, where hourly values are recorded.

Mean annual PM_{10} and $PM_{2.5}$ values recorded for 2021 were 11.6 µg/m³ and 7.9 µg/m³ respectfully. These are below the limit values of 40 µg/m³ and 20 µg/m³ for PM_{10} and $PM_{2.5}$.

South Link Road (Station 56)

The South Link Road site is located on the south side of Cork City, at Tramore Valley Park (former Kinsale Road Landfill), approximately 2.8m southwest of the proposed development site. The monitoring station is operated by Cork City Council and continuous monitoring is conducted for measurements of sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O_3), particulates (PM_{10}), and benzene.

Mean annual values for 2021 include 18.3 µg/m³ (PM_{10}), 15.79 µg/m³ (NO_2), and 0.3 mg/m³ (CO), all of which are below the limit values outlined in **Table 8.1**. Equally, mean values for O_3 (43.33 µg/m³) and SO_2 (2.68 µg/m³) were respectively below the target annual value of (120 µg/m³ (O_3)[33]) and limit value (20 µg/m³ (SO_2)).

University College Cork (Station 21)

The Distillery Fields air monitoring site is located on the grounds of the University College Cork (UCC) campus, approximately 2.9km west of the proposed development site. The site is currently operated in partnership by EPA and UCC, and monitoring is performed using continuous monitors for NO_x, O_3 and $PM_{2.5}$. Mean values for $PM_{2.5}$, NO_2 and O_3 recorded for 2021 were 6.48 µg/m³, 8.8 µg/m³ and 55.54 µg/m³, respectively. All of which are below the limit values outlined in **Table 8.1**.

[33] Maximum daily 8-hour mean with a permitted exceedance of 25 days averaged over 3 years

Table 8.7: Air quality data from Heatherton Park, South Link Road and University College Cork| Source: EPA (www.airquality.ie)

Monitoring Station	2021 Average					
	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	O_3 (µg/m³)	SO_2 (µg/m³)	CO (µg/m³)
Heatherton Park *Note 8*	11.6	7.9	-	-	-	-
South Link Road *Note 9*	18.3	-	15.79	43.33	2.68	300
University College Cork *Note 10*	-	6.48	8.8	55.54	-	-
Cork Lower Glanmire Road Note 11			33.86	55.79		

Note 8: Data does not include measurements from 29th November to the 6th December 2021.
Note 9: Data does not include measurements 14th September to 6th October 2021 (due to instrument repair).
Note 10: Data does not include all measurements for each parameter (due to instrument downtime)
Note 11: Data is only indicative of 10th February 2022 to March 2022.

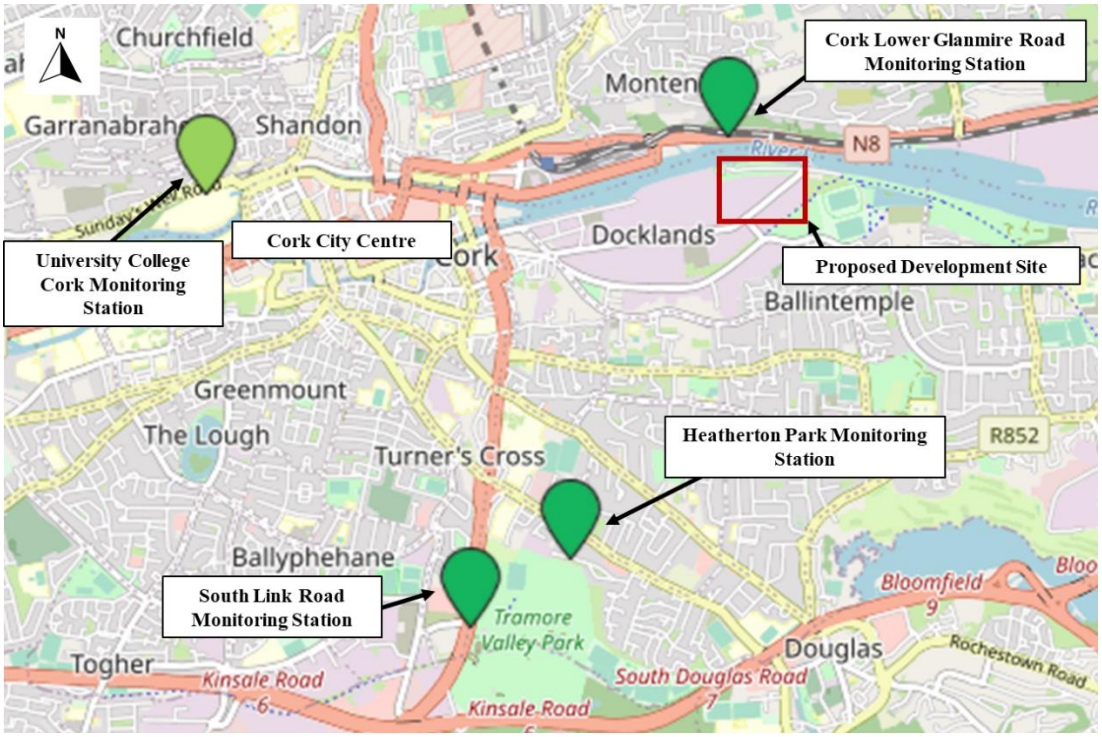

Figure 8.2: National Ambient Air Quality Network monitoring stations within proximity to the proposed development site | not to scale | Source: EPA www.airquality.ie |

8.3.1.3 Cork City Council Air Quality Sensors

In addition to the National Ambient Air Quality Network, Cork City Council has procured a number of air quality sensors from PurpleAir[34] and installed them at locations across Cork City[35]. The sensors use laser particle counters to provide

[34] https://www2.purpleair.com/
[35] www.corkairquality.ie

real time measurements of $PM_{2.5}$ (Particulate Matter with a diameter of less than 2.5 micrometres). A robust correction factor is incorporated and provides a cost-effective method for indicative information about air quality across the city and at different times of the day. Sensors identified close to the proposed development include Blackrock Castle, Ballinlough and City Centre South Mall air quality sensors as indicated in **Figure 8.3.** All sensors are indicated as having a *Good* to *Moderate* air quality (i.e., within $PM_{2.5}$ range of 1-10 µg/m³ and 11-35 µg/m³).

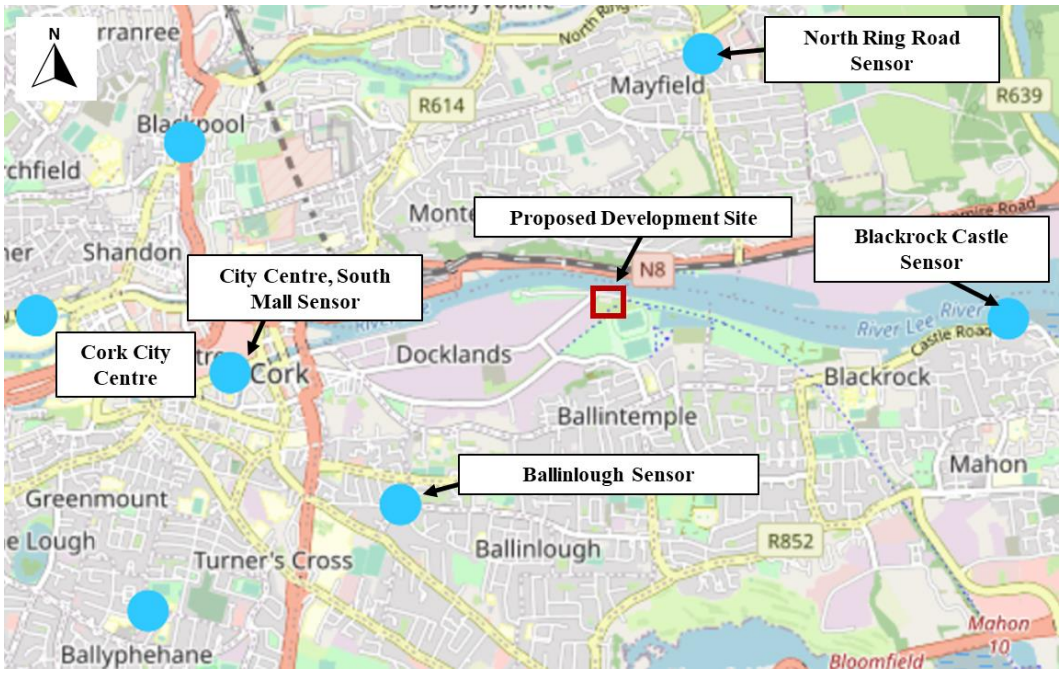

Figure 8.3: Cork City Council air quality sensors near the proposed development site | not to scale | Source: www.corkairquality.ie |

8.3.1.4 Air Quality Index for Health

Air Quality Index for Health has been measured from the EPA's Network to indicate good (1-3), fair (4-6), poor (7-9), and very poor (10) air quality calculated from Ozone (8-hour mean), NO_2 (1-hour mean), SO_2 (1-hour mean), $PM_{2.5}$ (24-hour mean) and PM_{10} (24-hour mean) values. Health advice is given for each air quality index band, for example it indicates if outdoor activities can be carried out without discomfort to eyes, coughing or sore throats.

Currently[36], the index value for monitoring stations identified in Cork City (**Figure 8.2**) has been classified as *Good* (Index value 1-3; green).

[36] March 2022

8.3.2 Climate

8.3.2.1 Macro Climate

The EPA published a report[37] in 2021 which projected Ireland's total greenhouse gas emissions from 2020-2040. The report states that the total national greenhouse gas emissions in Ireland in 2021 were estimated to be 58.9 Mt CO_2 eq. emissions. This represents a 2.96% increase (1.69 Mt CO_2 eq. emissions) from 2020.

In preparing the projection report the EPA considered two scenarios in determining projected greenhouse gas emissions: a "*With Existing Measures*" scenario and a "*With Additional Measures*" scenario.

As can be seen from **Table 8.8** total emissions are projected to decrease from current (latest Inventory 2019) levels by 3% by 2030 respectively under the "*With Existing Measures*" scenario. Under the "*With Additional Measures*" scenario emissions are estimated to decrease by 20% by 2030. In addition, total emissions are projected to increase by 5.8% by 2040 under the "*With Existing Measures*" scenario and decrease by 14.6% under the "*With Additional Measures*" scenario.

Table 8.8: Projected Total Emissions

Year	Projected Total Emissions "With Existing Measures"	Projected Total Emissions "With Additional Measures"
2030	Decrease of 3%	Decrease of 20%
2040	Increase of 5.8%	Decrease of 14.6%

8.3.2.2 Micro-Climate

The nearest representative Met Éireann synoptic meteorological station to proposed development is at Cork Airport which is situated approximately 7.2km southwest of the proposed development. All climate data cited below is taken from the 3-year averages reported for 2021, 2020 and 2019 for Cork Airport meteorological station[38].

- The annual mean temperature is 10.03ºC.
- The annual mean rainfall is 1305mm.
- The annual mean wind speed is 9.86 knots.

[37] Environmental Protection Agency (2021) Ireland's Greenhouse Gas Emissions Projections 2020-2040. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2020-2040.php
[38] www.met.ie Accessed November 2021. Available: https://www.met.ie/climate/available-data/monthly-data

8.4 Likely Significant Effects

8.4.1 Do-Nothing Scenario

In the scenario where the proposed development did not proceed as planned, none of the likely significant construction or operational effects set out in this chapter would occur.

8.4.2 Construction Phase

The proposed development is anticipated to be constructed from East to West in four phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase (as described in **Chapter 5** *Construction Strategy*). An opening year of 2025 is assumed for Phase 1 and Phase 2 of the development. Following this, construction will commence at Phase 3 and Phase 4, for completion in 2030.

8.4.2.1 Dust

The primary air quality issues associated with the construction of the proposed development would be short-term dust and exhaust emissions during the construction phase. Dust emissions during the construction phase are likely to result from the following activities:

- Site earthworks;
- Handling of construction materials;
- Wind blow from temporary stockpiles;
- Construction traffic movements; and
- Landscaping.

In general, any additional airborne concentrations of particulate matter arising from construction would be small and very local to the construction activity (minimising human exposure). Particles generated by most construction activities tend to be larger than 10µm in diameter which are too large to enter the human lung.

As stated in the TII guidelines, it is "*very difficult to accurately quantify dust emissions arising from construction activities … A semi quantitative approach is recommended to determine the likelihood of a significant effect, which should be combined with an assessment of the proposed mitigation measures*".

The semi-quantitative assessment methodology outlined in **Table 8.2** is used to assess the effect of dust during the construction phase. This approach considers sensitive receptors within 50m of the construction site. Based on the definitions provided in **Table 8.2**, the proposed construction site would be of a '*moderate'* scale. This has the potential for significant soiling effects within 50m and PM_{10} and vegetation effects within 15m of the site boundary with standard mitigation measures in place.

The guidance defines sensitive receptors as locations including residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e., locations where members of the public are likely to be regularly present. Properties near the development site (within 50m), some of which are considered 'sensitive' in terms of air quality, include the following:

- Shandon Boat Club, located to the north of the development site (within 10m);
- Lee Rowing Club, located to the east of the development site (within 60m);

Other sensitive properties such as the Marina Park (130m) and Páirc Uí Chaoimh (200m), are located in the area beyond 50m of the site. As the works are over 50m from these properties, no significant effect is likely, with standard mitigation in place.

Most properties surrounding the proposed development site are public amenities and industrial developments. There are no hospitals, schools or places of worship within 50m of the site boundary at present.

The nearest residential areas include existing residences on the north side of the River Lee, such as Myrtle Hill Terrace circa 220m to the north, existing residences to the southeast, such as Birch Grove and Botanika, circa 300m distant, future residences that are already subject to planning consent, such as the those on the neighbouring former Ford Distribution Site to the east, future residents within the site of the proposed development that may be affected by the later phases of the proposed development, and the neighbouring amenity areas of the Marina Walk and the Marina Park Development.

Other sensitive receptors in the wider area include the School of the Divine Child (Lavanagh Centre) circa 600m southeast of the subject site, Ballintemple National School on Crab Lane circa 670m to the south, and the St Joseph's SMA Church on Blackrock Road, circa 570m to the south.

Following the completion of construction Phase 2, new sensitive receptors will be present on site during subsequent construction Phases 3 and 4, including residential Blocks A, B and C. During construction Phases 3 and 4, these new sensitive receptors may be exposed to significant soiling within 50m and PM_{10} and vegetation effects within 15 metres of the works. Specific mitigation measures will be implemented to ensure that these adverse effects do not arise as a result of the continued construction at the proposed development site.

8.4.2.2 Asbestos and Contaminated Lands

Based on the investigation and assessments carried out to date, the biggest risk to human health or the environment during construction and operation of the proposed development is the presence of asbestos in soil (AiS) and per- and poly-fluoroalkylated substances (PFAS) in sediment. Other soil contaminants exist but will be dealt with by the same measures that shall be employed for the AiS.

Asbestos in Soil (AiS)

During construction and the operation of the development, there is the potential for asbestos fibres to become airborne. The likely airborne fibre concentrations

released from AiS will depend on the types of activities involved (hand digging or mechanic digging etc), the amount and the types of asbestos being disturbed.

Suitable standard measures such as continued dampening of soil during excavation, disposal or stockpiling will help prevent generation of dust. The CIRIA C733 provides suitable guidelines on how to reduce the risks from the presence of AiS during construction and operation of the proposed development.

Per- and Poly-fluoroalkylated substances (PFAS)

Exposure to the surface water and the sediment in the drainage channel is considered potentially harmful to the environment. Further investigation shall be carried out to understand the extent of the PFAS contamination in the sediment of the drainage channel. PFAS may reach environmental receptors downstream through mobilisation of contaminated sediment or transport of dissolved PFAS present in the sediment. A risk assessment will be carried out to determine a safe concentration that can be left in the sediment. If necessary, the sediment that possess a risk shall be excavated and removed from site.

In line with best practice and subject to regulatory approval, during the detailed design, options to reduce disposal of soil will be followed. The re-use of soil containing asbestos shall be subject of a risk assessment and discussed and agreed with Local Authorities or the EPA, as necessary. Where disposal of waste is unavoidable, this shall be done in accordance the necessary waste regulations

Further details on the contaminants identified within soils has been described in **Chapter 13** *Land, Soils, Geology and Hydrogeology.* Refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** *Construction Environmental Management Plan (CEMP)* for details on mitigation measures to be implemented for contaminants during construction activities.

8.4.2.3 Construction Traffic Emissions

The proposed development is anticipated to be constructed in four sequential phases. Due to the phasing of the proposed development, the level of construction traffic will vary over the course of the construction programme. In addition, the construction phasing may change subject to internal and external factors that may develop.

It is anticipated that the average number of construction workers employed during the construction phases including supervision will be in the region of 350, with a peak of up to 400 personnel at the most intensive fit-out and landscaping phases. This will result in a total of 250 vehicles travelling to the site on a daily basis for construction workers. Allowing for a 10% increase to account for miscellaneous trips and a further 10% increase for lunchtime, this increases the total to 300 vehicles per day at the site. Refer to **Chapter 7** *Traffic and Transportation* for further details.

As outlined in **Section 8.2.4** the TII guidelines specify that pollutant concentrations should be calculated at receptors located adjacent to roads where construction traffic increases by 10% or more. The traffic assessment carried out for the construction phase of the proposed development concluded that the

predicted traffic increases at all off-site locations would be less than that predicted for operation, and therefore the operational impact assessment represents the worst-case scenario. **Figure 8.1** illustrates the traffic monitoring locations used in the assessment in relation to the proposed development.

8.4.2.4 Odour

There are two open channels within the site of the proposed development, one located to the north and one located to the south-east of the proposed development site both of which are connected to the River Lee. These drains have signs of pollution/eutrophication and water quality is generally poor with sluggish flows. There is an existing odour issue associated with these channels.

During construction, the northern open channel will be reprofiled to suit the landscaping proposals. The south-eastern channel will be culverted. As such, odour emissions are likely to be elevated during the brief periods that the channel beds will be disturbed.

Any odorous material which requires removal will be removed to a suitable licenced offsite facility. The construction works will lead to a temporary moderate negative effect.

8.4.3 Operational Phase

An opening year of 2025 is assumed for Phase 1 and Phase 2 of the development. Following this, construction will commence at Phase 3 and Phase 4. Completion of the proposed development is planned for 2030.

Some construction impacts will occur during initial operational phases as a result of continued construction at the site. These have been considered within the construction phase of the proposed development, as outlined in **Section 8.4.2.**

8.4.3.1 Air Quality

Operational Traffic Emissions

As mentioned previously, the TII guidelines specify that pollutant concentrations should be calculated at receptors located adjacent to roads where operational traffic increases by 5% or more.

The concentrations of relevant pollutants were modelled for two scenarios:

- Worst Case Scenario for the Proposed Development (at one location) **Table 8.9**
- Worst Case Cumulative Scenario for the Proposed Development, The Former Cork Warehouse Company and The Former Ford Distribution (at eight locations) **Table 8.10**

Note that this detailed assessment was based on conservatively high traffic volumes.

Table 8.9: Worst Case Proposed Development

Worst Case Scenario Proposed Development							
Receptor	**Road Name**	**Scenario**	**NO_2 (µg/m³)**	**PM10 (µg/m³)**	**NOx (µg/m³)**	**CO (µg/m³)**	**Benzene (µg/m³)**
		Limit Values	*40*	*40*	*25*	*10,000*	*5*
R01	Centre Park Road (east of Marquee Road)	DN	12.91	14.78	31.09	380	0.42
		DS	13.16	14.88	31.94	390	0.43
		Increase/Decrease DS- DN	0.25	0.1	0.85	10	0.01
		Impact Rating	Negligible	Negligible			
R02	Centre Park Road (east of Marquee Road)	DN	12.91	14.78	31.09	380	0.42
		DS	13.16	14.88	31.94	390	0.43
		Increase/Decrease DS- DN	0.25	0.1	0.85	10	0.01
		Impact Rating	Negligible	Negligible			
R03	Centre Park Road (east of Marquee Road)	DN	12.67	14.68	30.27	370	0.42
		DS	12.77	14.71	30.61	380	0.42
		Increase/Decrease DS- DN	0.1	0.03	0.34	10	0
		Impact Rating	Negligible	Negligible			
R04	Centre Park Road (east of Marquee Road)	DN	12.63	14.66	30.13	370	0.41
		DS	12.70	14.69	30.39	380	0.42
		Increase/Decrease DS- DN	0.07	0.03	0.26	10	0.01
		Impact Rating	Negligible	Negligible			
R05	Centre Park Road (east of Marquee Road)	DN	12.49	14.60	29.68	370	0.41
		DS	12.49	14.60	29.68	370	0.41
		Increase/Decrease DS- DN	0	0	0	0	0

Worst Case Scenario Proposed Development							
Receptor	**Road Name**	**Scenario**	**NO_2 (µg/m³)**	**PM10 (µg/m³)**	**NOx (µg/m³)**	**CO (µg/m³)**	**Benzene (µg/m³)**
		Limit Values	*40*	*40*	*25*	*10,000*	*5*
		Impact Rating	Negligible	Negligible			

Table 8.10: Worst Case Cumulative

Worst Case Scenario Cumulative							
Receptor	**Road Name**	**Scenario**	**NO2 (µg/m³)**	**PM10 (µg/m³)**	**NOx (µg/m³)**	**CO (µg/m³)**	**Benzene (µg/m³)**
		Limit Values	*40*	*40*	*25*	*10,000*	*5*
R01	Centre Park Road (east of Marquee Road)	DN	12.91	14.78	31.09	380	0.42
		DS	13.33	14.93	32.54	390	0.43
		Increase/Decrease DS- DN	0.42	0.15	1.45	10	0.01
		Impact Rating	Negligible	Negligible			
R02	Centre Park Road (east of Marquee Road)	DN	12.91	14.78	31.09	380	0.42
		DS	13.33	14.93	32.54	390	0.43
		Increase/Decrease DS- DN	0.42	0.15	1.45	10	0.01
		Impact Rating	Negligible	Negligible			
R03	Centre Park Road (east of Marquee Road)	DN	12.67	14.68	30.27	370	0.42
		DS	12.84	14.74	30.86	380	0.42
		Increase/Decrease DS- DN	0.17	0.06	0.59	10	0
		Impact Rating	Negligible	Negligible			
R04		DN	12.63	14.66	30.13	370	0.41

Worst Case Scenario Cumulative							
Receptor	**Road Name**	**Scenario**	**NO2 (µg/m³)**	**PM10 (µg/m³)**	**NOx (µg/m³)**	**CO (µg/m³)**	**Benzene (µg/m³)**
		Limit Values	*40*	*40*	*25*	*10,000*	*5*
	Centre Park Road (east of Marquee Road)	DS	12.76	14.70	30.57	380	0.42
		Increase/Decrease DS- DN	0.13	0.04	0.44	10	0.01
		Impact Rating	Negligible	Negligible			
R05	Centre Park Road (east of Marquee Road)	DN	12.49	14.60	29.68	370	0.41
		DS	12.49	14.60	29.68	370	0.41
		Increase/Decrease DS- DN	0	0	0	0	0
		Impact Rating	Negligible	Negligible			
R06	Centre Park Road (west of Marquee Road)	DN	13.21	14.88	32.12	390	0.43
		DS	13.59	15.02	33.44	390	0.44
		Increase/Decrease DS- DN	0.38	0.14	0.32	0	0.01
		Impact Rating	Negligible	Negligible			
R07	Marquee Road	DN	12.97	14.77	31.30	380	0.42
		DS	13.14	14.85	31.87	380	0.43
		Increase/Decrease DS- DN	0.17	0.08	0.57	0	0.01
		Impact Rating	Negligible	Negligible			
R08	Victoria Road (north of Victoria roundabout)	DN	13.82	15.05	34.28	390	0.44
		DS	13.99	15.11	34.90	400	0.44
		Increase/Decrease DS- DN	0.17	0.06	0.62	10	0
		Impact Rating	Negligible	Negligible			
R09	Albert Road (west of Victoria Road)	DN	14.44	15.27	36.55	400	0.45
		DS	14.68	15.35	37.43	410	0.45

Worst Case Scenario Cumulative							
Receptor	**Road Name**	**Scenario**	**NO2 (µg/m³)**	**PM10 (µg/m³)**	**NOx (µg/m³)**	**CO (µg/m³)**	**Benzene (µg/m³)**
		Limit Values	*40*	*40*	*25*	*10,000*	*5*
		Increase/Decrease DS- DN	0.24	0.08	0.88	10	0
		Impact Rating	Negligible	Negligible			
R10	Albert Road (east of N27)	DN	12.58	14.63	29.96	370	0.41
		DS	12.59	14.63	30.00	370	0.41
		Increase/Decrease DS- DN	0.01	0	0.04	0	0
		Impact Rating	Negligible	Negligible			
R11	Maryville (north of Blackrock Road)	DN	13.04	14.83	31.54	380	0.43
		DS	13.14	14.89	31.89	390	0.43
		Increase/Decrease DS- DN	0.1	0.06	0.35	10	0
		Impact Rating	Negligible	Negligible			

Odours

During the operational phase of the proposed development, the existing odour emissions associated with the open channels will be minimised as a result of the reprofiling and culverting works to be carried out. The northern open channel will be enhanced as part of landscaping works for the proposed development. The culverting of the south-eastern channel will aid in containing any odour emissions.

As such, the operational phase of the proposed development will have a long-term, positive effect on odour emissions.

8.4.3.2 Climate

Carbon Emissions

A Building Lifecycle report has been prepared for the proposed development.

The following sustainable solutions are being considered for the proposed development:

- **Building Energy Rating (BER) Certificates:** BER Certificates will be provided for each apartment and will detail energy performance and carbon emissions associated with each of the dwellings to ensure that the targeted Building Energy Ratings (BERs) of A2 (or better) will be achieved across the site.
- **Fabric Energy Efficiency:** In accordance with TGD Part L 2019 (current edition for Dwellings) the following checks are made to reduce the consumption of fuel and associated carbon emissions and operating costs:

  h) A compliance check will be carried out to ensure that the average U-value complies with the maximum permitted by the TGD standard;
  i) Maximum elemental U-value Check will be carried out using SEAI approved software (DEAP);
  j) The Energy Performance Coefficient (EPC) for the proposed dwellings will be calculated to ensure it is less than 0.3;
  k) The Carbon Performance Coefficient (CPC) for the proposed dwellings will be calculated ensure it is less than 0.35;
  l) Minimum level of renewable energy technology to be provided check will be carried out;
  m) TM 59 Overheating analysis carried out on apartments; and
  n) Airtightness to be under $3m^3/m^2/hr$ at 50Pa where Mechanical Ventilation is installed.

- **Energy Labelled White Goods:** High standard white goods with high energy efficiency ratings will be supplied to all units to reduce the amount of electricity required for occupants. It is expected that appliances of the following ratings will be installed:

  - Oven – A+
  - Fridge Freezer – A+
  - Dishwasher – AAA

  - Washer / Dryer – B

- **External Lighting:** The external lighting for the development has been designed and specified with high-end, high efficiency LED light fittings throughout with required colour temperatures in accordance with the Bat Ecologist requirements. Automatic daylight lighting control (automatic dimming) complete with combined Passive Infrared (PIR) detection will be specified where appropriate. This will minimise energy consumption and associated carbon emissions.
- **Electric Car Charging Points:** It is the design intent to specify a few electric car charging points within the carpark, with electrical infrastructure provided to all parking spaces for the future upgrade to electric charging. This will offer an opportunity to reduce the carbon output of the transport sector, as they emit zero exhaust pipe emissions. Providing electric car charging points will encourage the buildings users towards this sustainable mode of transport.
- **Energy performance strategy commercial units:** The commercial units will be completed to the shell and core stage. This means that the HVAC plant will be provided by the future tenants during the Fit-Out stage. The likely strategy will include heating and cooling being provided by Variable Refrigerant Flow (VRF) units, natural ventilation utilised where possible and artificial lighting provided by means of an energy efficient LED lighting design. Electrical and water connections will be provided to all retail units to enable the future Fit-Outs to be completed.
- **Exhaust Air Heat Pumps:** The use of all-in-one units (heat recovery ventilation, heating and water) will be suitable for apartments that will be at a high level of airtightness and low heat loss. An Exhaust Air Heat Pump (EAHP) will also be considered as it extracts heat from the exhaust air and transfers the heat to domestic hot water and/or hydronic heating system (underfloor heating, radiators). These options allow for low emission heating system but are also future proofed for future grid improvements.
- **Low Energy LED Lighting:** The design has allowed for lighting provided by LED luminaires. Automatic daylight lighting control (automatic dimming) complete with combined PIR detection will be specified where appropriate. This will allow for significant electrical energy savings, as well as increasing the occupant's exposure to natural daylight – thereby promoting a healthier environment.
- **Biodiversity & Planting:** The landscape spaces will be planted with a variety of species suited and adapted to the Irish climate, including a proportion of native plants. Pollinator-friendly plants will also be included to enhance insect populations. By encouraging wildlife, this will improve local biodiversity and animate the amenity spaces and wider urban landscape. Planting will also provide a contact with nature in the urban environment for the residents, and will have strong aesthetic characteristics, including tactile and aromatic qualities. This will promote ecological enhancement of the local area and contribute to the wider environmental quality of the city, ultimately creating improved air quality and sensory environment.

- **Materiality:** The materials selected are of a high quality and will enhance the feel and quality of the spaces. Materials are robust and will be sourced sustainably where feasible, with low-carbon products preferred. This will allow for environmental benefits through the sourcing and longevity of the specified landscape elements.
- **Maintenance & Management:** Maintenance and Management operations will follow sustainable practices, encouraging natural growth habits, and minimizing chemical inputs. Plant species have been selected that will not require mechanical irrigation, which can be wasteful, as they are adapted to the Irish climate.

Climate Assessment

The predicted increase in traffic associated with the proposed development will have negligible effects on Ireland's national greenhouse gas emissions.

Considering the increase in extreme weather events occurring in Ireland, the potential for flooding of the site to occur has been identified. A Flood Risk Assessment, which is provided in **Appendix 14.1**, determined that the risks relating to flooding can be managed to comply with the DoEHLG/OPW and Cork City Council planning guidance. The risk of fluvial, pluvial, tidal and groundwater flooding have all been identified as *low*.

8.4.4 Decommissioning Phase

It is intended that the proposed development will endure into the future, with modifications and refurbishments carried out as required, in response to changing commercial requirements. Should some or all of the proposed development be decommissioned, planning consent and environmental assessments would be required to ensure that adverse effects on the environment would be minimised. No significant adverse effects on air quality and climate are predicted.

8.5 Mitigation Measures and Monitoring

8.5.1 Construction Phase

Emissions to air during earthmoving and construction will occur. The focus of the control procedures will therefore be to reduce the generation of airborne material.

The assessment of construction impacts (contained in **Section 8.4**) includes for the implementation of 'standard mitigation', as stated in the TII guidance[19]. This will include the following measures:

- Spraying of exposed earthwork activities and site haul roads during dry weather;
- Provision of wheel washes at exit points;
- Covering of temporary stockpiles;
- Control of vehicle speeds and speed restrictions; and
- Sweeping of hard surface roads.

In addition, the following measures will be implemented. These measures are based on best practice as outlined in the British Research Establishment (BRE) document *Controlling particles, vapour and noise pollution from construction sites* (BRE, 2003) and the Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2016).

- Exhaust emissions from vehicles operating within the working areas, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery;
- During dry periods when dust generation is likely or during windy periods, working areas and vehicles delivering material with dust forming potential will also be sprayed with water, as appropriate;
- Areas where materials will be handled and stockpiled will be designed to minimise their exposure to wind – all temporary stockpiles shall be kept to the minimum practicable height with gentle slopes;
- There shall be no long-term stockpiling within the working areas and storage time will be minimised;
- Material drop heights from plant to plant or from plant to stockpile will be minimised;
- Dust screens will be implemented at locations where there is the potential for air quality effects during the construction phase e.g. mesh netting to be erected around the scaffolding to minimise dust emissions from the site; and
- Truck loads will be covered when carrying material likely to generate dust.

Employee awareness is also a most important way that dust may be controlled on any site. Staff training and the vigilant management of operations ensure that all dust suppression methods are implemented and continuously inspected.

A dust minimisation plan, forming part of the Construction Environmental Management Plan (CEMP) (Refer to **Appendix 5.1**) has been finalised and implemented by the building contractor during the construction phase of the project.

In addition, due to its location and proximity to sensitive receptors, the following measures shall also be implemented to minimise off-site dust impacts:

- Provision of hoarding around the site;
- Covering of all trucks exiting the site with tarpaulin;
- Locating plant likely to generate emissions away from sensitive receptors; and
- Any stockpiled material will be covered/dampened during periods of dry weather to prevent the spreading of dust.

The technique adopted for all works will minimise the release of dust into the atmosphere. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected.

CO_2 emissions will be minimised during the construction phase through the implementation of the following mitigation measures:

- A Construction Traffic Management Plan to be prepared by the contractor in advance of the commencement of the construction will be implemented in full. This will minimise congestion and encourage car sharing and the use of public transport, where practicable;
- Materials will be handled efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions;
- Engines will be turned off when machinery is not in use; and
- The regular maintenance of plant and equipment will be carried out.

Further details on mitigation measures are provided in **Appendix 5.1** *Construction Environmental Management Plan.*

8.5.2 Operational Phase

Traffic Emissions

The proposed development promotes the use of public transport, pedestrian walkways and cycle lanes to reduce the number of private vehicles on the road. In addition, E-car charging facilities will be provided to encourage the use of electric cars, as well as bike storage. These measures will contribute towards reducing potential traffic emissions as a result of the operation of the proposed development.

Carbon Emissions

The following energy and carbon emission reduction measures will be implemented in the proposed development to reduce fuel consumption and associated carbon emissions and promote sustainability:

- A Building Energy Rating (BER) Certificate will be provided for each apartment and will detail energy performance and carbon emissions associated with each of the dwellings;
- Fabric Energy Efficiency will be implemented to reduce the consumption of fuel and associated carbon emissions and operating costs;
- Energy Labelled White Goods will be supplied to all units to reduce the amount of electricity required for occupants;
- The external lighting for the development has been designed and specified with high-end, high efficiency LED light fittings throughout with required colour temperatures, automatic daylight lighting control and combined PIR detection (where appropriate). This will minimise energy consumption and associated carbon emissions;
- Electric Car Charging Points will be specified within the carpark, to offer an opportunity to reduce the carbon output of the transport sector, as they emit zero exhaust pipe emissions;
- Energy performance strategy commercial units will be used across commercial areas;
- Exhaust Air Heat Pumps will be used to provide low emission heating systems;
- Low Energy LED Lighting will be used to allow for significant electrical energy savings, and increasing the occupant's exposure to natural daylight;
- Biodiversity & Planting will be used throughout the development to promote ecological enhancement, improved air quality and sensory environment;
- Sustainably sourced materials will be used where feasible, with low-carbon products preferred; and
- Maintenance and Management operations will follow sustainable practices, encouraging natural growth habits, and minimizing chemical inputs.

8.6 Cumulative Effects

A review of Cork City Council online planning records has indicated that several other developments have been proposed within the surrounding area that may give rise to cumulative effects. Appropriate mitigation measures as well as a Construction Environmental Management Plan (CEMP) will be implemented to mitigate any potential negative cumulative effects arising from these developments.

8.6.1 Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site, Centre Park Road, Cork City which will be located immediately north of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the predicted increased in traffic volumes and the implementation of the Construction Environmental Management Plans for both projects, no significant cumulative negative effects on air quality and climate are predicted.

8.6.2 Other Developments

Several local developments have the potential to give rise to cumulative effects. Developments which have been granted planning permission or currently under construction include the following:

8.6.2.1 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

Due to the absence of significant effects on air quality and climate associated with this permitted development and the implementation of a Construction Environmental Management Plan, significant cumulative effects are not predicted.

8.6.2.2 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and “nature” zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

Due to the minor nature of the air quality and climate impacts associated with the works required for the projects outlined above and the implementation of the *Construction Environmental Management Plan* (**Appendix 5.1**) and Construction Traffic Management Plan, no significant negative cumulative effects are predicted.

8.7 Residual Effects

8.7.1 Construction Phase

Following the implementation of the mitigation measures outlined in **Section 8.5.1**, no significant impacts on air quality or climate are envisaged during the construction phase.

8.7.2 Operational Phase

No significant impacts on air quality or climate are envisaged during the operational phase.

8.8 References

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9 Noise and Vibration

9.1 Introduction

This chapter describes the likely noise and vibration effects of the proposed development.

The existing baseline noise levels in the vicinity of the site are described, construction and operational noise levels are predicted and the impact of the change in noise levels is evaluated. Noise and vibration mitigation measures are proposed as required. Mitigation measures are identified, and the potential residual construction and operational effects are described.

This chapter was prepared by Dan Garvey. Details of Dan's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

9.2 Methodology

9.2.1 General

The noise and vibration impact of the proposed development has been assessed for both the construction and operational phases.

During the construction phase, noise and vibration impacts are considered at the nearest sensitive receptors due to construction activities and construction traffic to and from the site. Recommendations regarding the relevant limits are outlined and mitigation measures proposed as required.

During the operational phase, the principal noise impacts are likely to arise from traffic generated by users of the proposed development and mechanical plant items serving residential and commercial units including childcare facilities. Consideration is also given to the potential effects of noisy off-site activities on the users of the proposed development. These potential impacts are also discussed in the following sections.

9.2.2 Guidance and Legislation

The noise and vibration assessment has been undertaken in accordance with the overarching EIA guidance identified in **Chapter 1** and in accordance with the following:

- EPA (2016) *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*;
- Transport Infrastructure Ireland (TII, formerly NRA) (2014) *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes*;
- TII (2004) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*;

- British Standards Institution (BSI) (2014) 5228-1 and 2:2014+A1:2014. *Code of practice for noise and vibration control on construction and open sites. Noise and Vibration*; and
- *Design Manual for Roads and Bridges*, 2020. LA 111 Noise and Vibration.

9.2.3 Construction Phase

Transport Infrastructure Ireland`s (TII) document *Good Practice Guidance for the Treatment of Noise during the planning of National Road Schemes* (TII, 2014) contains information on the permissible noise and vibration levels during the construction phase. These limits are outlined in **Table 9.1** and **9.2**.

Table 9.1: Maximum permissible noise levels at the façade of nearby dwellings during construction

Days and Times	$L_{Aeq\ (1hr)}$ dB	$L_{pAmax,\ slow}$ dB
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60	65
Saturday 07:00 to 16:30hrs	65	75
Sundays and Bank Holidays 08:00 to 16:30hrs	60	65

It should be noted that the noise criteria quoted in the table are specific to construction activities only (i.e., these levels are not cumulative with the existing noise environment from road traffic and other surrounding sources).

The TII Guidelines recommend that in order to ensure that there is no potential for vibration damage during construction, vibration from construction activities should not exceed the values as set out in the TII guidance and detailed in **Table 9.2**.

Table 9.2: Maximum allowable vibration levels during construction phase

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

BS 5228-1 and 2:2014+A1:2014 (British Standards, 2014) Code of Practice for noise and vibration control on construction and open sites was also referred to in the consideration of noise mitigation measures.

9.2.4 Traffic Volumes

The TII *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (TII, 2004) state that routes should be considered for further assessment

where traffic flow is likely to increase or decrease by 25% or more in both the construction and operational phases.

The predicted change in traffic arising from the construction of the proposed development does not exceed 25% on any external road, but the change in operational traffic on two local roads, Centre Park Road (east of Marquee Road), and on Marquee Road is predicted to exceed the 25% criterion in 2025 and 2030. Further analysis of potential noise impacts arising for traffic at these two locations is therefore required.

9.2.5 Environmental Noise Survey Methodology

An environmental noise survey was undertaken to quantify the existing noise environment within and near the site. The survey was conducted in general accordance with ISO 1996: Acoustics – Description, Measurement and Assessment of Environmental Noise (Part 1 & Part 2) (ISO, 2003 & 2007). Specific details are set out below.

9.3 Baseline Conditions

9.3.1 Categorisation of Baseline Environment

The baseline noise environment at the proposed development site is characterised by noise generated by vehicles on the surrounding roads.

The site is subject to strategic noise mapping by Cork City Council. The noise mapping for roads in the vicinity of the proposed development is reproduced in **Figure 9.1** (L_{den}) and **Figure 9.2** (L_{night}). L_{den} represents the average decibel value for day, evening and night, while L_{night} represents the average decibel value for the period 23:00 – 07:00.

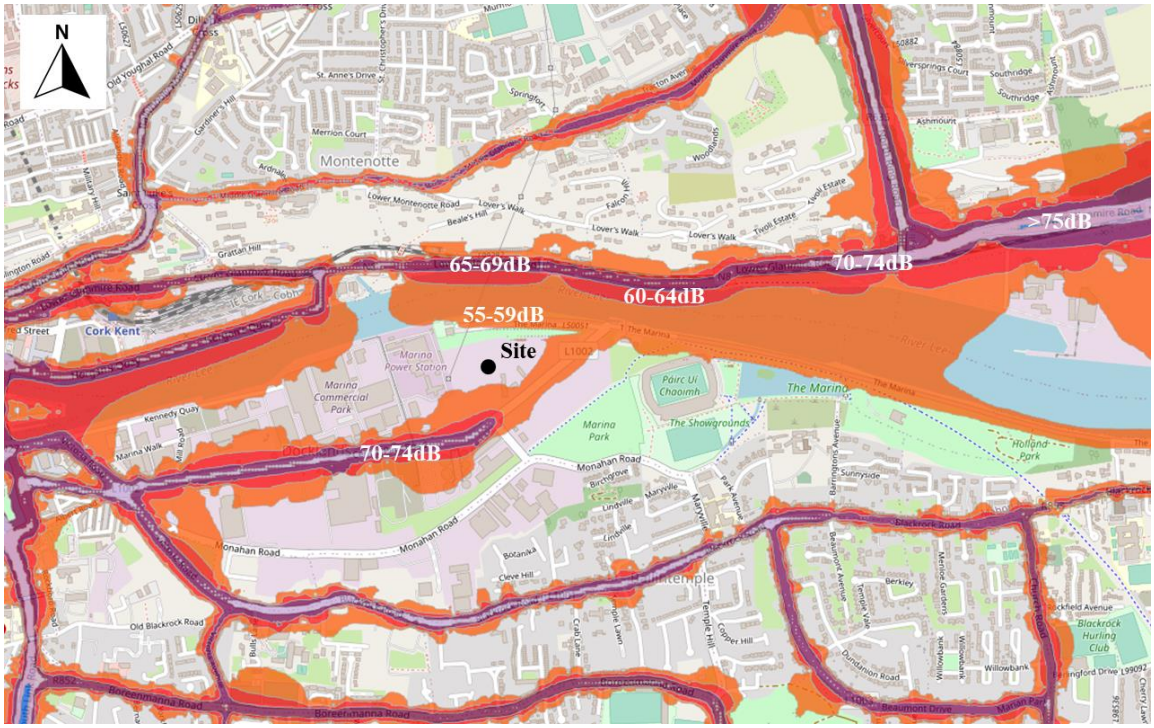

Figure 9.1 Noise Mapping for Roads near the Site | L_{den} | Strategic Noise Mapping, Round 3 | Cork City Council | not to scale [Source: EPA Maps]

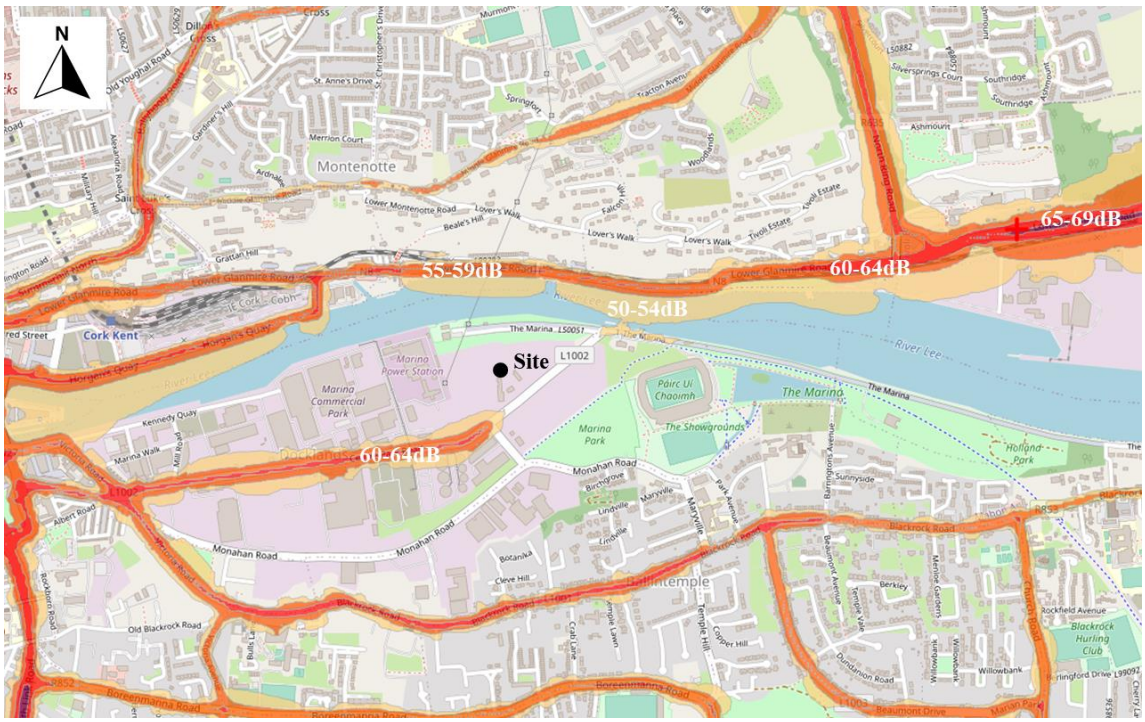

Figure 9.2 Noise Mapping for Roads near the Site | L_{night} | Strategic Noise Mapping, Round 3 | Cork City Council | not to scale [Source: EPA Maps]

9.3.2 Baseline Noise Survey

A baseline noise survey was carried out at three locations within the subject site, and one location immediately north of the subject site on 20 January 2022 and 07 and 08 February 2022. The monitoring locations NM1, NM2, NM3 and NM4 are indicated in **Figure 9.3**.

Figure 9.3 Noise Monitoring Locations | not to scale [background mapping © Google Maps 2020]

Table 9.3: Noise Monitoring Location Details

Monitoring Label	Location	ITM Easting	ITM Northing	Comments
NM1	North-western part of Site	569, 375	572, 149	Distant steady traffic noise predominated at this location, with some local intermittent noise from the boat club to the north.
NM2	North-eastern part of Site	569, 728	572, 169	Distant steady traffic noise again predominated here, with intermittent local traffic accessing the Marina, and some birdsong.
NM3	Site Entrance	569, 610	572, 074	Distant steady traffic noise again predominated here, with intermittent local traffic accessing the Marina, some intermittent conversation noise from

Monitoring Label	Location	ITM Easting	ITM Northing	Comments
				walkers on Centre Park Road, and some birdsong.
NM4	Off-site Location on the Marina, to the North of the Site	569, 787	572, 219	Steady traffic noise from across the River Lee to the north predominated at this location, with intermittent conversation noise from walkers on the Marina, birdsong and occasional local traffic accessing the parking spaces at this location.

9.3.2.1 Instrumentation

A Brüel & Kjær 2250 Light Type 1 Sound Level Meter was utilised to carry out the noise assessment. This meter complies with the International Electrotechnical Commission (IEC) Specification for Sound Level Meters: IEC 61672-1:2002 (IEC, 2002). The noise meter was calibrated prior to the commencement of the monitoring using a Brüel & Kjær 4231 Acoustic Calibrator.

9.3.2.2 Weather Conditions

The weather conditions for the monitoring at NM1, NM2 and NM3 were clear and dry, with no noticeable wind, and temperatures were in the range 6 to 7 degrees Celsius. At NM4, the weather was dry, with a gentle breeze, and evening and night-time temperatures were both 11 degrees Celsius.

9.3.2.3 Measuring Parameters

The following parameters were recorded to assess the potential impact of environmental noise:

- L_{Aeq} – A-weighted equivalent continuous steady sound level during the sample period, effectively representing an average value;
- L_{Amax} – maximum A-weighted sound pressure level occurring in a specified time period;
- L_{A10} – the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise; and
- L_{A90} – the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing.

Figure 9.4 Noise Monitoring Location NM1 Looking West

Figure 9.5 Noise Monitoring Location NM2 Looking East

9.3.3 Recorded Noise Levels

The proposed development will be in an area which is currently relatively quiet. Baseline noise is principally associated with distant road traffic. The strategic noise mapping illustrated in **Figures 9.2 and 9.3** correlates with the monitoring carried out at the four monitoring locations. These data are summarised in **Tables 9.4, 9.5** and **9.6** below.

Table 9.4: Daytime Noise Levels (07:00 to 19:00)

Location	$L_{Aeq, 30\ min}$ (dB)	$L_{Amax, 30\ min}$ (dB)	$L_{A10, 30\ min}$ (dB)	$L_{A90, 30\ min}$ (dB)
NM1	47	67	48	45
NM2	51	66	54	45
NM3	52	67	56	44

Table 9.5: Evening Noise Levels (19:00 to 23:00)

Location	$L_{Aeq, 15\ min}$ (dB)	$L_{Amax, 15\ min}$ (dB)	$L_{A10, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
NM4	57	73	59	49
NM4	56	75	58	49
NM4	56	78	57	49

Table 9.6: Night-time Noise Levels (23:00 to 07:00)

Location	$L_{Aeq, 15\ min}$ (dB)	$L_{Amax, 15\ min}$ (dB)	$L_{A10, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
NM4	51	67	54	46

9.3.4 Sensitive Receptors

The key noise and vibration sensitive receptors that could be affected by the proposed development are the existing residences on the north side of the River Lee, such as Myrtle Hill Terrace circa 220m to the north, existing residences to the southeast, such as Birch Grove and Botanika, circa 300m distant, future residences that are already subject to planning consent, such as the those on the neighbouring former Ford Distribution Site to the east, future residents within the site of the proposed development that may be affected by the later phases of the proposed development, the nearby boat and rowing clubs (Shandon Boat Club and Lee Rowing Club) and the neighbouring amenity areas of the Marina Walk and the Marina Park Development. Other sensitive receptors in the wider area include the School of the Divine Child (Lavanagh Centre) circa 600m southeast of the subject site, Ballintemple National School on Crab Lane circa 670m to the south, and the St Joseph's SMA Church on Blackrock Road, circa 570m to the south. Existing residential addresses in the surrounding area are indicated by yellow dots in **Figure 9.6.**

Figure 9.6: Sensitive Receptors Near the Subject Site | not to scale [source: myplan.ie]

9.3.5 Other Baseline Noise Data

An unattended survey on the site of the Former Ford Distribution Centre was completed by Damian Brosnan Acoustics between 01 July 2019 and 03 July 2019, and on 03 July 2019, an attended survey was completed at the closest residential receptor to the southeast of the site at Birch Grove. Additional unattended surveys were completed on the Former Ford Distribution Centre site between 04 February 2020 and 06 February 2020. This survey information is reported in the EIAR for a strategic housing development on that site (McCutcheon Halley 2020).

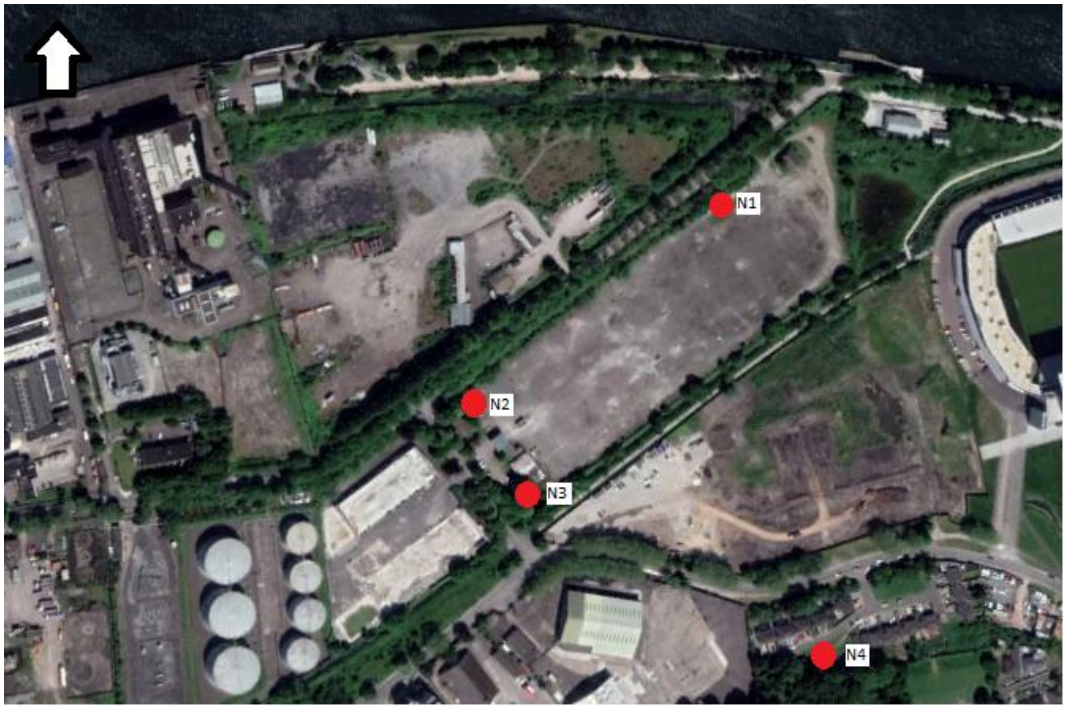

Figure 9.7 2019-2020 Baseline Noise Monitoring Locations | not to scale [background mapping © Google Earth 2020]

Table 9.7: Daytime Noise Levels (07:00 to 19:00)

Location and time	$L_{Aeq, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
N1 July 2019	57	45
N1 February 2020	60	50
N2 February 2020	60	51
N3 July 2019	50	43
N4	47 (1-hour sampling period)	n/a

Table 9.8: Evening Noise Levels (19:00 to 23:00)

Location	$L_{Aeq, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
N1 July 2019	54	41
N1 February 2020	58	46
N2 February 2020	57	44
N3 July 2019	42	37

Table 9.9: Night-time Noise Levels (23:00 to 07:00)

Location	$L_{Aeq, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
N1 July 2019	45	36
N1 February 2020	47	40
N2 February 2020	48	41

Location	$L_{Aeq, 15\ min}$ (dB)	$L_{A90, 15\ min}$ (dB)
N3 July 2019	41	37

9.3.6 Future Changes to the Baseline

The baseline environment, and in particular the noise and vibration baseline conditions, is likely to evolve over time, reflecting ongoing changes to land use, activities and traffic movements.

Likely changes include the planned extension to Monahan Road, which will facilitate some increase in local traffic movements. In the longer-term, there is an objective to construct a new bridge over the River Lee, which may lead to significant increases in local traffic, and associated traffic noise. The possible future light-rail system would give rise to intermittent noise peaks with different characteristics to those currently generated by road traffic. No design information is available for these projects at this stage, and the relevant impact assessments for them should have regard to potential cumulative effects with the proposed development, at such time as their predicted impacts have been assessed.

9.4 Characteristics of the Proposed Development

9.4.1 The Existing Site

The existing subject site is bounded by Centre Park Road to the southeast, by the Marina to the north and by a disused ESB power station to the west. The site is a brownfield site with some structures. There are two open drainage channels, one adjacent to the southeastern boundary and one adjacent to the northern boundary, which join at the northeastern corner of the site.

9.4.2 Construction Activities

The proposed development will be constructed on a phased basis, as described in detail in **Chapter 5**, and in summary as follows:

Phase 1: Lower Ground Floor to Podium for Blocks A, B, C, D and F

Phase 2: Blocks A, B and C

Phase 3: Blocks D and E

Phase 4: Block F.

9.4.3 The Proposed Development

The proposed development will include the demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car

parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

9.5 Likely Significant Effects

9.5.1 'Do-Nothing' Effects

If the proposed development does not proceed, the noise and vibration environment near the site will continue to be dominated by traffic and industrial noise into the future.

9.5.2 Construction Phase

As described in **Chapter 5**, the construction of the proposed development will be completed in four principal phases. The construction phases with the greatest potential for noise and vibration generation are those related to earthworks, foundation and podium structure works: Phase 1B for Blocks A, B, C, D and F, and Phase 3A for Block E.

Other activities such as superstructure works, façade and fit-out works, drainage and utilities, landscaping works, and the traffic movements associated with these activities will also generate some noise and occasional potential vibration, and mitigation measures associated with all construction activities are described in **Section 9.6.1**, to ensure that noise and vibration associated with the full construction phase is appropriately and sufficiently measured, controlled and monitored to prevent significant impacts at the identified sensitive receptors.

As the construction of the proposed development will be carried out on a phased basis, there will be sensitive receptors (residents) on the site from initial phases while later phases are being constructed.

Noise levels associated with construction were calculated in accordance with the methodology set out in BS 5228: Part 1, in accordance with Transport Infrastructure Ireland guidance.

This Standard sets out sound power levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels at selected locations. The TII guidance notes that definitive construction methods and number of plant items are not usually set out at the EIAR stage and that the overriding requirement of the contractor will be to construct the proposed development to the final design within the constraints of the Construction Noise Criteria. These limits are set out in **Table 9.1**.

A variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors, piling equipment and generators. There will be vehicular movements to and from the site that will make use of existing roads and site access points. It is not envisaged that site lighting will generate significant noise.

BS 5228: 2009 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise* sets out typical noise levels for items of construction plant. During the phases with the potential for peak noise and vibration generation, Phases 1B and 3A, it is likely that the noise-generating plant items set out in **Tables 9.10** and **9.11** will be in operation. A number of practical construction scenarios were considered to establish a realistic combination of noise-generating construction equipment. For Phase 3A in particular, the closest sensitive receptors to the noisy activity will be the early-phase blocks in operation while Block E is under construction. The proximity to noisy activity could be as close as 10 metres from occupied residences.

Construction noise calculations have therefore been conducted at distances of 10 metres to 120 metres from the works for the construction phase of the proposed development and at distances of 10 metres to 120 metres from the works for the site preparation phase of the proposed development, representing the distances from nearest properties to the proposed works.

The calculations assume that plant items are operating for 66% of the time and that all plant items associated with the individual phases are operating simultaneously and at the same distance for any one scenario. Screening provided by site works or boundary walls etc. has not been included in the calculated results, but the proposed 2.4-metre-high site hoarding has been included for the receptors which are closest to the proposed works (the 10m proximity scenario). Applying the correction for the hoarding is appropriate for the 10m proximity scenario as the entire construction site will be securely hoarded, and the acoustic benefit of the hoarding will be most effective at close proximity.

Table 9.10: Indicative Construction Noise Calculations during Site Preparation

Site preparation	Calculated (dB) LAeq, T at distance from works (m)			
	10 m (with hoarding)	30 m	60 m	120 m
Tracked Excavator	59	60	54	48
Articulated Dump Truck (Tipping Fill)	62	63	57	51
Roller	61	62	56	50
Dozer	63	64	58	52
Combined L_{Aeq} from all plant	**68**	**68**	**62**	**56**

Table 9.11: Indicative Construction Noise Calculations during Site Construction

Site construction	Calculated (dB) LAeq, T at distance from works (m)			
	10m (with hoarding)	30 m	60 m	120 m
Tracked Excavator	59	60	54	48
Concrete Pump + Cement Mixer Truck (Discharging)	55	56	50	44
Diesel Generator	49	50	44	38
Wheeled Backhoe loader	55	56	50	44
Vibratory Tamper	51	52	46	40
Bored Piling	56	57	51	45
Combined L_{Aeq} from all plant	**63**	**64**	**58**	**52**

*Current indications from the site investigation are that a piled/ raft slab solution will be the preferred foundation type. If piling is deemed the preferred solution, either rotary cored or continuous flight auger (CFA) piles will be used.

The results of the site preparation and construction assessment (**Tables 9.10** and **9.11**) indicate that at all sensitive residential locations, the construction daytime noise limit (for 07:00 to 19:00) of 70dB L_{Aeq} can typically be complied with for the scenarios assessed. This includes future residents of the initial phases of the development who will experience construction noise associated with the later phases of development.

Note that these calculations are indicative only and are used for the purposes of comparison only with the adopted criteria and only assume hoarding as mitigation for activity closest to sensitive receptors. It will be a requirement of the works contractor to ensure that the various best practice working methods used to control noise and vibration are adopted during all works to comply with the relevant criteria.

No rock-breaking or blasting is predicted to be required for the construction of the proposed development, as all excavation will be in soils, and the piling will be bored. Vibration effects associated with construction activities are likely to be negligible to slight.

Construction traffic is discussed in **Chapter 7** *Traffic and Transportation*. It is not predicted that construction traffic volumes will result in an overall increase of 25% or more on any of the routes near the proposed development. Further assessment is therefore not required.

9.5.3 Operational Phase

Noise and vibration associated with the operation of the proposed development will arise from traffic accessing the site, mechanical plant and equipment operating on the site, and typical noise sources associated with residential

developments – domestic radios/ music, voices and play activities in the amenity areas within the proposed development. These potential noise sources are addressed in turn below. No significant vibration is predicted to arise from the operation of the proposed development.

9.5.3.1 Operational Road Traffic Noise

As identified in **Section 9.2.4**, traffic associated with the operation of the proposed development has the potential to cause noise impacts on two roads adjacent to the site, Centre Park Road (east of Marquee Road), and Marquee Road. An additional segment of road, Centre Park Road (west of Marquee Road) has predicted traffic levels that exceed the 25% threshold in the cumulative scenario, and this impact is described and assessed in **Section 9.8**.

The dB L_{10} values for the predicted noise increase at locations 10 metres from the identified roads (a typical worst-case scenario), were generated using the Calculation of Road Traffic Noise (CRTN) tool (UK Department of Transport DMRB). The L_{10} value represents the noise levels exceeded 10% of the time and is considered to closely represent the intermittent character of traffic noise.

Table 9.12 Predicted Change in Noise Levels Attributed to Traffic Movements

Centre Park Road (East of Marquee Road)			
	Predicted Noise Level (L_{10})	**Magnitude of Change**	**Significance of Change**
2025 Baseline (no development)	62dB	Not applicable	Not applicable
2025 Proposed Development	64dB	2dB	Imperceptible
2030 Baseline (no development)	63dB	Not applicable	Not applicable
2030 Proposed Development	64dB	1dB	Imperceptible
Marquee Road			
2025 Baseline (no development)	61dB	Not applicable	Not applicable
2025 Proposed Development	62dB	1dB	Imperceptible
2030 Baseline (no development)	62dB	Not applicable	Not applicable
2030 Proposed Development	63dB	1dB	Imperceptible

In all cases, the predicted noise impacts associated with traffic generated by the proposed development will be imperceptible.

9.5.3.2 Mechanical Plant and Equipment

There will be air handling units, extraction units and other items of mechanical plant provided to service the proposed development. At the current stage of preliminary design development, these units have not been specified in detail, but it will be a design requirement to ensure that a satisfactory noise environment is provided for all future residents in the proposed development, in accordance with industry-standard CIBSE[39] guidelines for noise levels. This may require appropriate shielding and attenuation of fans and other equipment, to meet the standards, but this will be readily achievable. Ensuring this level of noise comfort for on-site residents will ensure that there will be no consequent potential for off-site impacts at the identified sensitive receptors. No significant noise and vibration impacts are predicted to arise from the operation of mechanical plant and equipment on the site.

9.5.3.3 Residential Noise

Noise associated with routine activities of residents within the proposed development will be typical for an urban environment, and it is not predicted that there will be any associated adverse impacts relating to noise or vibration arising from these activities.

9.5.4 Decommissioning

Decommissioning activities would include the deconstruction/ demolition of the main structures, and removal of street furniture and landscaping features, as appropriate. No significant excavation would be carried out. The noise generated by these activities will be similar to that described and assessed in **Section 9.2** above, but of a shorter duration. No significant adverse noise and vibration effects are predicted.

9.6 Mitigation Measures and Monitoring

9.6.1 Construction Phase

The following section describes typical measures which will be employed by the contractor to ensure the construction noise and vibration effects on the surrounding area are minimised both in intensity and duration.

The Contractor will take specific noise abatement measures and comply with the recommendations of *BS 5228 Code of practice for Noise and Vibration Control on Construction and Open Sites (+A2014)* and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001.*

[39] CIBSE Guide B4 Noise and Vibration Control for Building Services Systems (2016)

In general, BS5228 advises the following, where necessary:

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials; and
- Start-up plant and vehicles sequentially rather than all together.

The following more specific measures are also advised:

- In accordance with Best Practicable Means, plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Where required, improved sound reduction methods, e.g. enclosures should be used;
- Site equipment should be located away from noise sensitive areas, as much as is feasible;
- Regular and effective maintenance by trained personnel should be carried out to reduce noise and/or vibration from plant and machinery;
- A 2.4 metre high hoarding will be provided around the construction site;
- Limiting the hours during which site activities likely to create high levels of noise or vibration are carried out;
- Establish channels of communication between the contractor/developer, Local Authority and residents;
- Appointing of a site representative responsible for matters relating to noise and vibration; and
- Monitoring typical levels of noise and vibration during critical periods and at sensitive locations for comparison with limits and background levels.

9.6.2 Operational Phase

With the implementation of the necessary screening and attenuation as required to meet CIBSE guidelines, no further mitigation of operational noise and vibration impacts are required.

9.7 Cumulative Effects

9.7.1 Masterplan Development

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The potential for cumulative noise impacts relating to traffic have been identified, and these are addressed below.

9.7.2 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

The potential for cumulative noise impacts relating to traffic has been identified, and these are addressed below.

9.7.3 Other Developments

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

- Marina Park Development: Phase 2 (Design stage)
- Monahan Road Extension (Part 8 Approval)

Marina Park Development: Phase 2 (Design stage)

In accordance with the ratified Marina Park Masterplan, Phase 2 will extend from the Atlantic Pond to Church Avenue and will include the "Nature" zone of the park, accommodating picnic areas, boating facilities, adventure play areas, preserved marshland zone and several architectural heritage sites. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage)

The road will be designed to meet the requirements of the Cork Metropolitan Area Transport Plan. A four-lane carriageway with a traffic lane and dedicated bus lane in each direction, segregated cycle ways and pathways are to be provided. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

At present, the above projects are in planning and preliminary design stages. Should there be an overlap in construction durations with the proposed development, the appointed Contractor will liaise with Cork City Council and any

contractors appointed for the above works as required, to ensure coordination of construction works in the area.

Due to the minimal environmental effects associated with the proposed development, significant cumulative effects are not envisaged.

Any potential cumulative effects will be managed with the implementation of the Construction Environmental Management Plan (**Appendix 5.1**).

9.7.4 Potential Cumulative Noise Impacts Relating to Traffic

As potential cumulative noise impacts relating to the nearby strategic housing developments at the former Ford Distribution Site, and the former Cork Warehouse Company Site have been identified during the operational phase (as noted in **Section 9.5.3.1**), the predicted cumulative traffic noise impacts have been calculated and recorded in **Table 9.13**.

Table 9.13 Predicted Cumulative Change in Noise Levels Attributed to Traffic Movements

Centre Park Road (East of Marquee Road)			
	Predicted Noise Level (L_{10})	**Magnitude of Change**	**Significance of Change**
2025 Baseline (no development)	62dB	Not applicable	Not applicable
2025 Proposed Cumulative Development	65dB	3dB	Not Significant
2030 Baseline (no development)	63dB	Not applicable	Not applicable
2030 Proposed Cumulative Development	65dB	2dB	Imperceptible
Marquee Road			
2025 Baseline (no development)	61dB	Not applicable	Not applicable
2025 Proposed Cumulative Development	63dB	2dB	Imperceptible
2030 Baseline (no development)	62dB	Not applicable	Not applicable

2030 Proposed Cumulative Development	64dB	2dB	Imperceptible
Centre Park Road (West of Marquee Road)			
2025 Baseline (no development)	64dB	Not applicable	Not applicable
2025 Proposed Cumulative Development	66dB	2dB	Imperceptible
2030 Baseline (no development)	64dB	Not applicable	Not applicable
2030 Proposed Cumulative Development	66dB	2dB	Imperceptible

In all scenarios, the predicted change in cumulative noise levels will be imperceptible, except in 2025 along Centre Park Road (East of Marquee Road) where the predicted 3dB change in noise levels will be perceptible, but is rated as not significant.

9.8 Residual Effects

Following the implementation of the mitigation measures outlined above and compliance with limit values, no significant effect on the environment in terms of noise and vibration at construction, operation or decommissioning stages is predicted.

9.9 References

British Standards Institution (BSI) (2014) 5228-1 and 2:2014+A1:2014. *Code of practice for noise and vibration control on construction and open sites.*

CIBSE (2016) Guide B4 Noise and Vibration Control for Building Services Systems

EPA (2016) *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*

International Electrotechnical Commission (IEC) (2002) *IEC Specification for Sound Level Meters: IEC 61672-1:2002*

ISO (2003 & 2007). ISO 1996: *Acoustics – Description, Measurement and Assessment of Environmental Noise (Part 1 & Part 2)*

LA 111 Noise and Vibration - *Design Manual for Roads and Bridges*, 2020.

McCutcheon Halley (2020) *Proposed Strategic Housing Development at Former Ford Distribution Site, Centre Park Road, Cork EIAR*

TII (2004) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*

TII (2004) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*

TII (2014) *Good Practice Guidance for the Treatment of Noise during the planning of National Road Schemes*

Transport Infrastructure Ireland (TII, formerly NRA) (2014) *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes*

10 Biodiversity

10.1 Introduction

This chapter describes the likely significant effects of the proposed development on biodiversity, including flora (plants), fauna (animals), and habitats in both the terrestrial and aquatic environment. Mitigation measures are also described, where applicable or appropriate, that avoid or minimise adverse biodiversity effects.

Chapter 4 provides a full description of the proposed development whilst **Chapter 5** describes the construction strategy. An Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) has also been prepared for the proposed development, and this will be submitted to An Bord Pleanála as part of the planning application documentation.

The potential effects on biodiversity in this chapter should be considered in conjunction with the other chapters of the EIAR including **Chapter 4** *Proposed Development,* **Chapter 5** *Construction Strategy,* **Chapter 8** *Air Quality and Climate,* **Chapter 9** *Noise and Vibration,* **Chapter 13** *Land, Soils, Geology and Hydrogeology,* **Chapter 14** *Water,* **Chapter 18** *Major Accidents and Disasters* and the **Construction Environmental Management Plan (CEMP) Appendix 5.1.**

This report was prepared by Carl Dixon MSc (Ecological Monitoring) and Dr. Sorcha Sheehy PhD (Ecology/ornithology). Fieldwork was conducted by Cian Gill MSc (Ecological Monitoring). Details of Carl, Sorcha and Cian's qualifications and experience are included in **Chapter 1** of this EIAR *Introduction*.

10.2 Assessment Methodology

10.2.1 General

The biodiversity assessment addresses the potential likely significant direct, indirect and cumulative effects of the proposed development on terrestrial and aquatic biodiversity, including flora, fauna, and habitats in proximity to the site.

The assessment has been carried out in three stages:

1. Desktop assessment to determine existing information and records in relation to:
    - Sites, species, and habitats protected under Council Directive 92/43/EEC (Habitats Directive), and sites and species protected under Council Directive 2009/147/EC (Birds Directive), within the zone of influence of the proposed development and more distant hydrologically linked sites. The Zone of Influence (ZoI) comprises the area within which the proposed development may potentially affect the conservation objectives (or qualifying interests) of a Natura 2000 site

- Biodiversity, habitats, and species present near the proposed development.

2. Site visits and field surveys by the specialist ecologists to establish the existing ecological conditions within the footprint of the proposed development and within the vicinity of all the proposed development elements.
3. Evaluation of the proposed development and determination of the scale and extent of potential likely direct and indirect significant effects on biodiversity (i.e., flora, fauna, and habitats) and the identification of appropriate mitigation and monitoring which may be required.

10.2.2 Relevant Legislation

Flora and fauna in Ireland are protected at a national level by the Wildlife Act 1976, as amended, and the European Communities (Birds and Natural Habitats) Regulations 2011. They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC).

Under this legislation, sites of nature conservation importance are then designated in order to legally protect faunal and floral species and important/vulnerable habitats. The relevant categories of designation are as follows:

- Special Areas of Conservation (SAC) are designated under the European Communities (Birds and Natural Habitats) Regulations 2011 to meet the EU Habitats Directive (92/43/EEC);
- Special Protection Areas (SPAs) are designated under the EU Birds Directive (79/409/EEC) amended in 2009 as the Directive 2009/147/EC; and
- Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHA) are listed under the Wildlife (Amendment) Act 2000. A NHA is designated for its wildlife value and receives statutory protection. A list of proposed NHAs (pNHAs) was published on a non-statutory basis in 1995, but these have not since been statutorily proposed or designated.

Relevant European Legislation

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive);
- Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (The Birds Directive);
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (The Water Framework Directive);
- Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life (The Fish Directive (consolidated)).

Relevant Irish Legislation

- The Wildlife Act 1976, as amended by the Wildlife Act 1976 (Protection of Wild Animals) Regulations, 1980, the Wildlife (Amendment) Act 2000, the Wildlife (Amendment) Act 2010, Wildlife (Amendment) Act 2012, European Communities (Wildlife Act, 1976) (Amendment) Regulations 2017. (The Wildlife Act);
- European Communities (Conservation of Wild Birds) Regulations 1985 (S.I. 291/1985) as amended by S.I. 31/1995;
- European Communities (Natural Habitats) Regulations, S.I. 94/1997 as amended by S.I. 233/1998 & S.I. 378/2005 (The Habitats Regulations);
- Fisheries (Consolidation) Act, 1959 (as amended), hereafter referred to as the Fisheries Act;
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011);
- The Flora (Protection) Order, 2015 (S.I. No. 356/2015).

10.2.3 Guidance

This chapter of the EIAR follows the Environmental Protection Agency's Draft *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017). It also takes account of the draft *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Environment, Community and Local Government, August 2018), *Guidelines on Ecological Impact Assessment in the UK and Ireland, 2nd edition* (Chartered Institute of Ecology and Environmental Management CIEEM 2016) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.1* (CIEEM, 2018). Reference was also made to the following documents where relevant:

- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)* (European Union (EU), 2017);
- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (EC Environment Directorate-General, 2018);
- *Guidance on integrating climate changes and biodiversity into environmental impact assessment* (EU Commission 2013);
- *Assessment of plans & projects in relation to N2K sites – Methodological Guidance* (EC 2021);
- *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive* (EC 2021);
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority 2009);
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011);
- *A Guide to Habitats in Ireland* (Fossitt, 2000);

- *Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. National Roads Authority, Dublin* (National Roads Authority (NRA) 2005a);
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (National Roads Authority (NRA) 2005b).
- *Guidelines for the treatment of bats during the construction of national road schemes* (National Roads Authority (NRA) 2005c);
- *Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post construction of national road schemes.* (National Roads Authority (NRA) 2006).
- *Guidelines for the treatment of Otters prior to the construction of National Road Schemes (*National Roads Authority (NRA) 2008);
- *Bird Census Techniques* Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000) and
- *Bird Monitoring Methods - a Manual of Techniques for Key UK Species.* Gilbert, G., Gibbons, D.W. & Evans, J. (1998).

10.2.4 Consultation

The consultation process which informed the scope of this EIAR is described in **Chapter 1** *Introduction*. No specific comments or guidance with regard to biodiversity were provided during the consultation process for the scheme as proposed.

10.2.5 Desktop Study

A desktop study was carried out to collate the available information on the local ecological environment. The purpose of the desktop study was to identify features of ecological value occurring within the proposed development site and those occurring near to it which have the potential to be affected by the proposed development. A desktop review also allows the key ecological issues to be identified early in the assessment process and facilitates the planning of surveys. Sources of information utilised for this report include the following:

- National Parks and Wildlife Service (NPWS) - www.npws.ie;
- Environmental Protection Agency (EPA) – www.epa.ie;
- National Biodiversity Data Centre (NBDC) – www.biodiversityireland.ie;
- Bat Conservation Ireland - www.batconservationireland.org;
- Birdwatch Ireland - www.birdwatchireland.ie;
- British Trust for Ornithology (BTO)-www.BTO.org and
- National Biodiversity Action Plan 2017-2021 (NPWS 2017).

10.2.5.1 Site Surveys

Surveys were carried out on the 20 July, 3 September, 15 September, 23 September, 24 September, 26 of September 2021. The survey area included all lands within the proposed development site boundary as outlined in **Figure 1.2**.

The following surveys were carried out:

- Habitats were mapped according to the classification scheme outlined in the Heritage Council Publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and following the guidelines contained in *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). Habitats were cross referenced with Habitats Directive Annex I habitats.
- All bird species observed during the habitat survey were recorded.
- A general mammal survey was carried out in conjunction with the habitat surveys.
- A bat surveys were carried out utilising guidelines set out in '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed)*' (Collins, 2016).

Site visits and surveys were carried out in accordance with best practice and in the expert opinion of the authors, are considered sufficient to assess potential significant ecological effects associated with the project.

The standard literature was checked for reference to the site and locality, as were the listings of sites of conservation importance in Cork held by the NPWS of the Department of the Environment, Heritage and Local Government (www.npws.ie).

10.2.6 General Landscape

The proposed development site is located on a brownfield site is the South Docks area of Cork City, within an area of mixed commercial and light industrial development. The site is separated from the main channel of the River Lee by the Marina which runs along the northern boundary of the site. The site is accessed via Centre Park Road which runs along its southern boundary.

The site is a brownfield site containing several storage containers and external storage areas. Ground levels vary across the site, with a high point along the northern boundary, varying between 5.3m above Ordnance Datum (OD) at the western end and 3.6m OD at the eastern end. There are two open channels, one adjacent to the southern boundary and one adjacent to the northern boundary, which join at the eastern end of the site. The bed levels of the open channels vary between -0.46m and -3.15m across the site. The centre of the site generally falls from a high point of 2.67 to the open channels along the northern and southern boundaries.

10.2.7 Designated Sites/Conservation Areas

10.2.7.1.1 European Sites

Special Areas of Conservation (SACs) and candidate SACs are protected under the Habitats Directive 92/43/EEC and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Special Protection Areas (SPAs) are protected under the Birds Directive 2009/147/EC and European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Collectively, these sites are referred to as Natura 2000 or European sites.

In accordance with the European Commission Methodological Guidance (EC 2018), a list of Natura 2000 Sites that can be potentially affected by the proposed project has been complied. All candidate SACs (cSAC) and SPAs sites which could potentially be impacted by the proposed development have been identified. **Table 10.1** lists the relevant Natura 2000 sites, the location of which are shown in **Figure 10.1**.

The proposed development is not located within a Natura 2000 site. The proposed development is potentially hydrologically connected to two Natura 2000 sites, which are listed in **Table 10.1**, i.e. Cork Harbour SPA and Great Island Channel SAC. Surface water runoff during the construction and/or operational phases of the proposed development could potentially discharge into Cork Harbour via existing drainage channels and the River Lee. Therefore, qualifying species and habitats within these Natura sites could potentially be impacted via potential reductions in water quality and the spread of invasive species during the construction and/or operational phases and collision during the operational phase.

Table 10.1. Designated sites within the zone of influence of the proposed development site

Site	Code	Distance at the closest point (approximate)
Special Area of Conservation (SAC) or candidate Special Area of Conservation (cSAC)		
Great Island Channel SAC	001058	6.6km northeast
Special Protection Areas (SPA)		
Cork Harbour SPA	004030	1.9km east
Natural Heritage Areas (NHA) or proposed Natural Heritage Areas (pNHA)		
Douglas River Estuary pNHA	001046	2.0km east
Dunkettle Shores pNHA	001082	2.8km northeast
Glanmire Wood pNHA	001054	3.0km northeast
Cork Lough pNHA	001081	3.2km southwest
Rockfarm Quarry Little Island pNHA	001074	5.8km southeast
Lee Valley pNHA	000094	6.2km west
Great Island Channel pNHA	001058	6.6km northeast
Blarney Bog pNHA	001857	6.8km northeast

Site	Code	Distance at the closest point (approximate)
Monkstown Creek pNHA	001979	8.7km southeast
Ardamane Woods pNHA	001799	9.5km northwest
Blarney Lake pNHA	001798	9.7km northeast

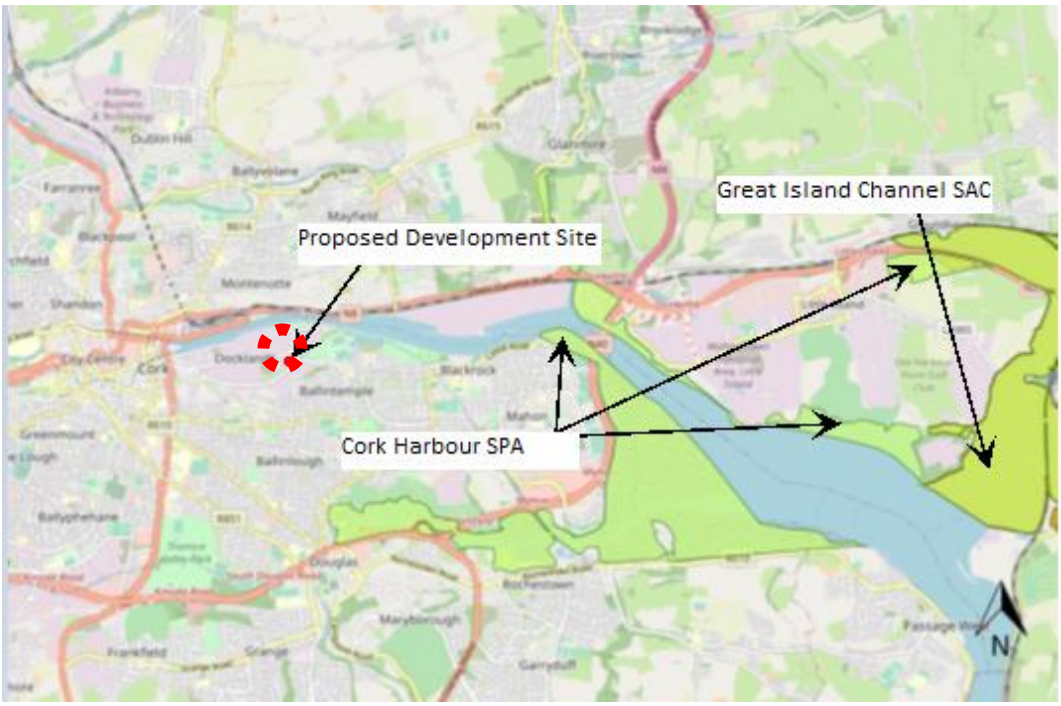

Figure 10.1 Natura 2000 sites within zone of influence of the proposed development site | Source: EPA envision mapping | Not to scale

Cork Harbour SPA is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poulnabibe inlets.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica, Scrobicularia plana, Hydrobia ulvae, Nepthys hombergi, Nereis diversicolor* and *Corophium volutator.* Green algae species occur on the flats, especially *Ulva* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Some shallow bay water is included in the site. Rostellan Lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

The Great Island Channel SAC stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and, compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers. These rivers, which flow through Midleton, provide the main source of freshwater to the North Channel.

Potential impacts on designated Natura 2000 sites (SAC/cSAC/SPA) are specifically addressed in the AA screening and Natura Impact Statement (NIS) reports which has been submitted as part of this application (*Report in Support of Appropriate Assessment Screening, Strategic Housing Development (SHD) at the Former Tedcastles Site, Cork* (DixonBrosnan 2022) and *Natura Impact Statement (NIS) City Park Development at the Former Tedcastles Site, Cork* (DixonBrosnan 2022)). The conclusions of the AA screening were as follows:

Although the likelihood of effects on the Cork Harbour SPA is low, applying the precautionary principle, potential impact pathways have been identified and a NIS is being prepared for the proposed development.

The conclusions of the NIS were as follows:

It has been objectively concluded following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted effects from the proposed development and with the implementation of the mitigation measures proposed, that the construction and operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion. The competent authority will make the final determination in this regard.

10.2.7.2 Nationally Protected Sites

Natural Heritage Areas (NHAs/pNHAs) are national designations under the Wildlife Act 1976, as amended. A Natural Heritage Area (NHA) is designated for its wildlife value and receives statutory protection. A list of proposed NHAs (pNHAs) was published on a non-statutory basis in 1995, but these have not since been statutorily proposed or designated.

The NHAs (pNHAs) located in the vicinity of the proposed development site are listed in **Table 10.1** and as shown in **Figure 10.2.**

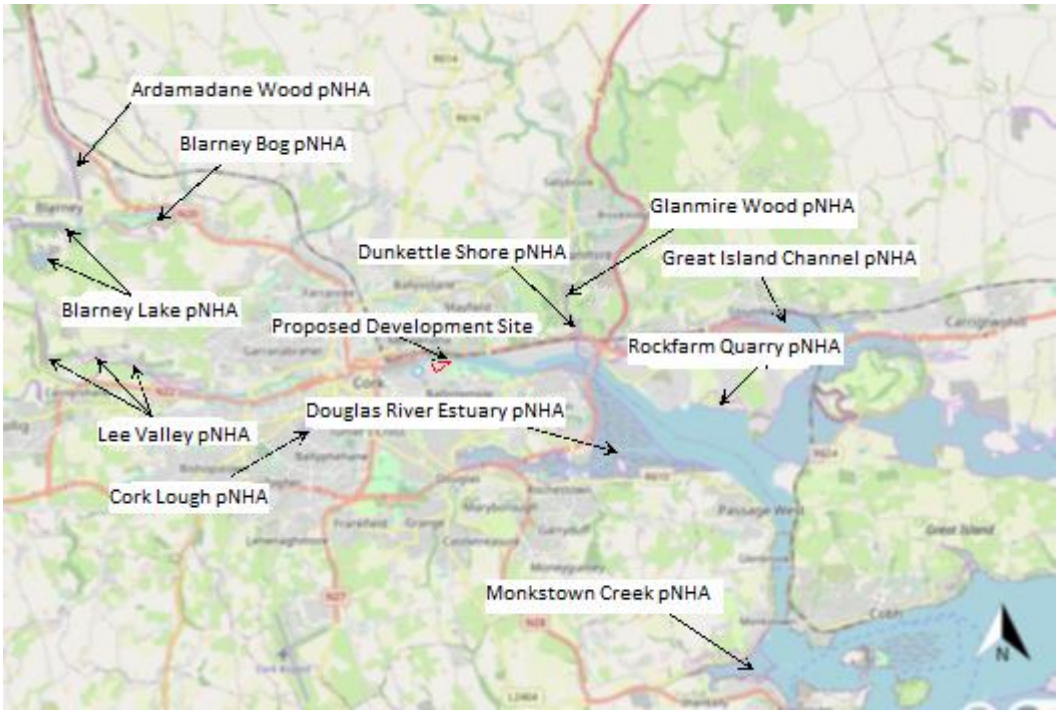

Figure 10.2 Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA) in the vicinity of the proposed development site | Source EPA envision mapping | Not to scale

A number of pNHAs form part of the Cork Harbour complex; Douglas Estuary pNHA, Monkstown Creek pNHA, Dunkettle Shore pNHA and Great Island Channel pNHA. The River Lee, into which surface water discharges from the proposed development site will be diverted, is hydrologically connected to the Douglas River Estuary pNHA (2.0km downstream). Therefore, surface water discharges during construction and operation could potentially impact this pNHA. The proposed development site is hydrologically connected to Cork Harbour and therefore potentially connected to other pNHAs within Cork Harbour via surface water and wastewater discharges during construction and operation. No connection to any other pNHA listed in **Table 10.1** has been identified.

10.2.7.3 Ramsar Sites

The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. A key commitment of Ramsar Contracting Parties is to identify and place suitable wetlands onto the List of Wetlands of International Importance. Cork Harbour is listed as a Ramsar site, which is a non-statutory designation.

10.2.7.4 Important Bird Areas

Important Bird and Biodiversity Areas (IBAs) are sites selected as important for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or congregator bird species or highly representative bird assemblages. The European IBA programme aims to

identify, monitor, and protect key sites for birds all over the continent. It aims to ensure that the conservation value of IBAs in Europe (now numbering more than 5,000 sites or about 40% of all IBAs identified globally to date) is maintained, and where possible enhanced. The programme aims to guide the implementation of national conservation strategies, through the promotion and development of national protected-area programmes.

Through their designation they aim to form a network of sites ensuring that migratory species find suitable breeding, stop-over and wintering places along their respective flyways.

The function of the Important Bird Area (IBA) Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate. The proposed development site lies adjacent to the Cork Harbour IBA (Site Code: IE088).

The Cork Harbour IBA site qualifies for designation under the following IBA Criteria (2000):

- A4iii - The site is known or thought to hold, on a regular basis, ≥ 20,000 waterbirds or ≥ 10,000 pairs of seabird of one or more species.
- B1i - The site is known or thought to hold ≥ 1% of a flyway or other distinct population of a waterbird species.
- B2 - The site is one of the most important in the country for a species with an unfavourable conservation status in Europe and for which the site-protection approach is thought to be appropriate.
- C3 - The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (not listed on Annex 1 of The Birds Directive).
- C4 - The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory species of one or more species.
- C6 - The site is one of the five most important in the European region in question for a species or subspecies considered threatened in the European Union.

Table 10.2 Summary of Cork Harbour IBA Trigger Species

Species	Current IUCN Red List Category	Season	Year(s) of estimate	Population estimate	IBA Criteria Triggered
Eurasian Curlew (*Numenius arquata*)	NT	winter	1995	1,669 individuals	B2
Bar-tailed Godwit (*Limosa lapponica*)	NT	winter	1996	456 individuals	B2

Species	Current IUCN Red List Category	Season	Year(s) of estimate	Population estimate	IBA Criteria Triggered
Black-tailed Godwit (*Limosa limosa*)	NT	winter	1996	1,399 individuals	B1i, C3
Dunlin (*Calidris alpine*)	LC	winter	1995	12,050 individuals	B1i, B2, C3
Common Redshank (*Tringa tetanus*)	LC	winter	1996	1,344 individuals	B1i, C3
Common Tern (*Sterna hirundo*)	LC	breeding	1995	102 breeding pairs	C6
A4iii Species group - waterbirds	n/a	winter	-	20,000 individuals	A4iii, C4

10.3 Baseline Conditions

10.3.1.1 Habitats

Habitat surveys were carried out on the 20 July, 23 September and 26 September 2021. Habitat mapping was carried out in line with the methodology outlined in the Heritage Council Publication, *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). The terrestrial and aquatic habitats within the proposed development site were classified using the classification scheme outlined in the Heritage council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross referenced with Annex I Habitats where required.

The ecological value of habitats has been defined using the classification scheme outlined in the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) which is included in **Appendix 10.1**. It should be noted that the value of a habitat is site specific and will be partially related to the amount of that habitat in the surrounding landscape. Habitats that are considered to be good examples of Annex I and Priority habitats are classed as being of International or National Importance. Semi-natural habitats with high biodiversity in a county context and that are vulnerable, are considered to be of County Importance. Habitats that are semi-natural, or locally important for wildlife, are considered to be of Local Importance (higher value) and sites containing small areas of semi-natural habitat or maintain connectivity between habitats are considered to be of Local Importance (lower value).

The habitats recorded within and close to the proposed development site, along with their ecological value, are discussed in **Table 10.3**. The location of these habitats within the proposed development site boundary is illustrated in **Figure 10.3**. Site photographs are also included below.

Table 10.3. Habitats within and close to the proposed development site and their ecological value

Habitats	Comments	Habitat value (NRA Guidelines)
Dry meadows and grassy verges GS2/Scrub WS1	Where there are deeper soils, on the margins of hard surfaces and where areas have been left unmanaged for longer periods, a mixture of Dry meadows and grassy verges GS2/Scrub WS1 have become established. Patches of this habitat occurs as a mosaic with a scattered distribution throughout the site on the margins of yards and along boundaries. As such it generally does not form a distinct area of habitat within the site boundary. The exception is the eastern section of the site which was not as actively utilised by the previous owners. This area is now dominated by this habitat type, whereas elsewhere within the site it occurs in a patchwork with other habitat types. Common species noted include False Oat Grass *Arrhenatherum elatius*, Yorkshire Fog *Holcus lanatus*, Meadow grass *Poa pratensis*, Wild Carrot *Daucus carota*, Smooth Sow Thistle *Sonchus oleraceus*, Bramble *Rubus* spp., Dandelion *Taraxacum* spp, Ribwort Plantain *Plantago lanceolata*, Meadow Vetchling *Lathyrus pratensis*, Spear Thistle *Cirsium vulgare*, Ragweed *Ambrosia* spp., Willow *Salix* spp., Ivy *Hedera helix* and Red Fescue *Festuca rubra*. Scrub is also becoming established with willow and buddleia the most common species. Silver and Downey Birch *Betula* spp. are also present. GS2 has links to the Annex I habitat Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510). However, the habitat mosaic within the proposed development site is not an example of this Annex I habitat.	Local importance (Higher value)
Treelines WL2/ /Scrub WS1	Running along the northern and southern boundaries of the site and forming the external boundary is a mixture of poor-	Local importance (Higher value)

Habitats	Comments	Habitat value (NRA Guidelines)
	quality hedgerow and treeline. Species noted include Hawthorn *Crataegus monogyna*, non-native *Grisilinea* and Sycamore with Ivy, Nettle *Urtica dioica*, Bramble and Bindweed are also common. Some dead elm trees *Ulmus* spp. are also prominent along the northern boundary. Within the site boundary, along the southern boundary, there is an existing treeline which includes Lime *Tilia* spp. and Monteray Cypress *Cupressus macrocarpa*. It is considered of low ecological value. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.	
Scrub WS1	An open channel runs along the full extent of the northern boundary of the site. Along its southern boundary there is a broad band of vegetation formed primarily by dense stands of Buddleia with climbing species such as Traveller's Joy *Clematis virginiana* and Bindweed *Convolvulus* spp. forming dense thickets. Trees are limited in extent with occasional Sycamore *Acer pseudoplatanus* and Willow the dominant species. Japanese Knotweed *Fallopia japonica* has become established at a number of locations and forms dense thickets. Elsewhere within the site there are pockets of scrub. In general the boundaries between habitats within this site are indistinct.	Local importance (Higher value)
Drainage ditch FW4	There are existing open channels running along the northern and southern boundary of the site. Surface water runoff from the existing site currently drains to these existing open channels. The southern channel is understood to be interconnected with existing channels to the west and south of the site which form part of the south docklands drainage network that ultimately discharges to the River Lee via the Atlantic Pond. Both	Northern Channel - Local importance (Higher value) Southern Channel – Local importance (Lower value)

Habitats	Comments	Habitat value (NRA Guidelines)
	open channels ultimately discharge to an estuarine section of the River Lee. Both drains have a deep substrate of mud are largely devoid of aquatic vegetation. Some signs of surface water pollution/eutrophication were noted, and water quality is generally poor with sluggish flows. Both open channels are of negligible value for fish. However, the northern channel is of value for local wildlife, with bird species, Grey Heron, Moorhen, Cormorant, Mallard and bats recorded foraging along this channel. Therefore this channel has been classified as a higher local value habitat. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.	
Buildings and artificial surfaces BL3/Recolonising Bare ground ED3/Scrub WS1	The existing complex of industrial buildings within the overall land ownership area are largely intact but in a poor state of repair. All of the windows within the office block are broken. Other buildings within this complex include a disused garage and open shed with corrugated roofs. These buildings are of low potential as bat roosts. Large areas of the site have either a gravel of tarmac surface. Overtime disused areas of the site have been colonised by a range of early successional species which are able colonise areas with gravel or a thin layer of subsoil. Species noted include Buddleia which forms dense thickets, Bindweed, Herb Robert *Geranium robertianum*, Ribbed Melliot *Melilotus officinalis*, and Red Centaury *Centaurium erythraea*. The introduced species Narrow Leaved Ragwort *Senecio inaequidens* and Canadian Fleabane *Erigeron canadensis* are also common. The invasive species Giant Knotweed *Fallopia sachalinensis* was recorded within this habitat.	Local importance (Lower value)

Habitats	Comments	Habitat value (NRA Guidelines)
	This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.	

Figure 10.3. Habitats recorded within proposed development site | not to scale

10.3.2 Flora

The National Biodiversity Data Centre's (NBDC) online database provides data on the distribution of species within 10 Km grid squares. The site of the proposed development lies within 10 km square W67 of Ordnance Survey Ireland's National Grid System. The NBDC lists some 500 flora species as being present within grid square W67. Endangered and protected species recorded by the NBDC are listed in **Table 4**. Two species recorded within W67 are listed under the Flora Protection Order 2015 (S.I. 356 of 2015), Little-robin *Geranium purpureum* and Chives *Allium schoenoprasum*.

These species were not recorded within study area during the site survey. No rare species were recorded during the site survey, nor are they expected to occur given that the habitats within the study area are common.

Table 10.4. NBDC listed flowering and endangered flowering plants for hectad W67

Hectad	Flowering plant Species	Latin Name	Designations
W67	Little-robin	*Geranium purpureum*	Flora Protection Order (S.I. 356 of 2015) & Endangered
	Round-leaved Crane's-bill	*Geranium rotundifolium*	Endangered
	Corncockle	*Agrostemma githago*	Threatened Species: Regionally Extinct
	Chives	*Allium schoenoprasum*	Flora Protection Order (S.I. 356 of 2015) & Vulnerable

Source NBDC database 06/01/22

10.3.3 Invasive Species

Non-native plants are defined as those plants which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality. The NBDC lists a number of both aquatic and terrestrial high impact invasive plant species which have been recorded within hectad W67 (**Table 10.5**). It should be noted that this data relates to the entire 10km^2 area and these species will not necessarily occur within the proposed development boundary.

Table 10.5. NBDC records of high impact invasive species from W67

Species Group	Species Name
Canada Goose	*Branta canadensis*
Canadian Waterweed	*Elodea canadensis*
Cherry Laurel	*Prunus laurocerasus*
Curly Waterweed	*Lagarosiphon major*
	Fallopia japonica x sachalinensis = F. x bohemica
Giant Hogweed	*Heracleum mantegazzianum*

Species Group	Species Name
Giant-rhubarb	*Gunnera tinctoria*
Indian Balsam	*Impatiens glandulifera*
Japanese Knotweed	*Fallopia japonica*
Nuttall's Waterweed	*Elodea nuttallii*
Rhododendron	*Rhododendron ponticum*
Harlequin Ladybird	*Harmonia axyridis*
American Mink	*Mustela vison*
Brown Rat	*Rattus norvegicus*
Coypu	*Myocastor coypus*
Feral Ferret	*Mustela furo*
House Mouse	*Mus musculus*
Sika Deer	*Cervus nippon*

Source: NBDC 06/01/22

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that:

'Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof'][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed *Fallopia japonica*, as follows: "*any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence*."

Japanese Knotweed dominates an area of scrub and has become established at multiple locations within the site including dense thickets along the open channels that run along the northern boundary and along the western and southern boundary (**Figure 10.4)**. Japanese knotweed is a highly invasive, non-native species which was originally introduced as an ornamental plant but has since spread along transport routes and rivers to become a serious problem. From an

ecological viewpoint it out-competes native species by forming dense stands which suppresses growth of other species. It grows extremely vigorously and can penetrate through small faults in tarmac and concrete and thus can damage footpaths, roads and flood defence structures. As it can survive in poor quality soils, including spoil, it often thrives in brownfield sites and in urban areas.

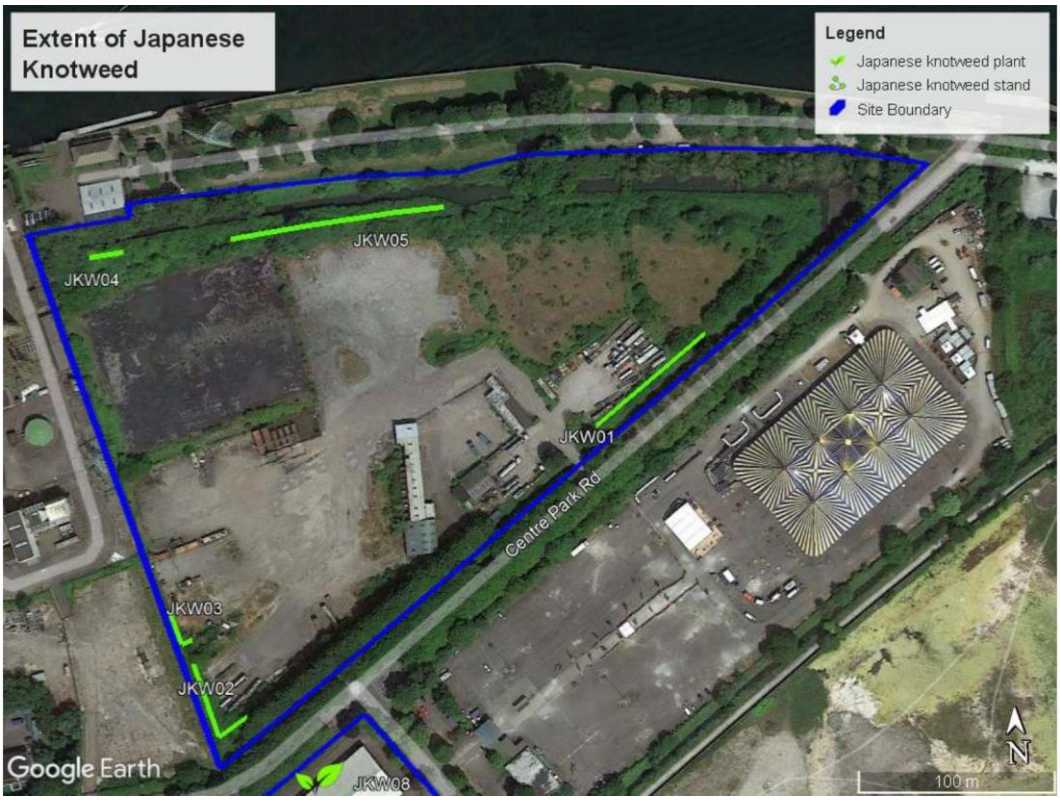

Figure 10.4. Extent of Japanese Knotweed within and adjacent to the proposed development site | not to scale | note that a wider site boundary is indicated as treatment will be provided within and outside the subject site planning boundary, to ensure comprehensive treatment

Three medium impact non-native invasive species were recorded at the site i.e., Buddleia *Buddleja davidii*, Traveller's Joy *Clematis virginiana* and Pampas grass *Cortaderia selloana* have a scattered distribution within the site and in some places are the dominant species. Other invasive species recorded including *Cotoneaste*r spp., Montbretia *Crocosmia x crocosmiiflora* and Winter heliotrope *Petasites fragrans* were recorded at the site.

Buddleia, Traveller's Joy and Pampas Grass are considered medium impact invasive species by the NBDC. Japanese knotweed, Traveller's Joy, Montbretia, Winter heliotrope and Buddleia are included in the NRA *Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads* (NRA, 2010) as these species have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure. While Montbretia, Winter heliotrope and *Cotoneaster* spp., have not been classified as 'high' and or 'medium' impact species, or have yet to be risk assessed, they are recognised as having invasive qualities and under certain environmental conditions are known to spread locally.

With the exception of Japanese Knotweed, the invasive species described above are not included in the Third Schedule and therefore, their presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011). However, the NBDC notes that under the right ecological conditions this species may have an impact on the conservation goals of a European site or impact on a water body achieving good/high ecological status under the Water Framework Directive (Directive 2000/60/EC).

Further detail on the extent of invasive species at the proposed development site is included in **Appendix 10.2** *Invasive Species Management Plan.*

10.3.4 Fauna

10.3.4.1 Bats

In Ireland, nine species of bat are currently known to be resident. These are classified into two Families: the Rhinolophidae (Horseshoe bats) and the Vespertilionidae (Common bats). The Lesser Horseshoe Bat *Rhinolophus hipposideros* is the only representative of the former Family in Ireland. All the other Irish bat species are of the latter Family and these include three pipistrelle species: Common *Pipistrellus pipistrellus*, Soprano *Pipistrellus pygmaeus* and Nathusius' *Pipistrellus nathusii*, four Myotids: Natterer's *Myotis nattereri*, Daubenton's *Myotis daubentonii*, Whiskered *Myotis mystacinus*, Brandt's *Myotis brandtii*, the Brown Long-eared *Plecotus auritus* and Leisler's *Nyctalus leisleri* bats.

Whiskered and Natterer's bats are listed as '*Threatened in Ireland'*, while the other species are listed as '*Internationally Important*' in the Irish Red Data Book 2: Vertebrates (Whilde, 1993). The population status of both Whiskered and Natterer's Bats was considered '*indeterminate*' because of the small numbers known of each, a few hundred and approximately a thousand respectively. Ireland is considered to be an international stronghold for Leisler's Bat, whose global status is described as being at '*low risk, near threatened*' (LR; nt) by the IUCN (Hutson, *et al*., 2001).

Near threatened status is applied to those taxa that are close to being listed as vulnerable (facing a high risk of extinction in the wild in the medium-term future on the basis of a range of criteria defined by the IUCN). The Irish population of the Lesser Horseshoe Bat is estimated at 14,000 individuals and is considered of International Importance because the species has declined dramatically and become extinct in many other parts of Europe. Data collected shows that the species increased significantly between from the early 1990s to present.

A review of existing bat records within the hectad of the planning boundary (sourced from Bat Conservation Ireland's (BCI) National Bat Records Database via the NBDC) indicates that six of the nine Irish bat species listed in **Table 10.6**, have been recorded within W67.

It is noted that Nathusius's Pipistrelle have not been included in this database, but they could potentially occur in this general area. However, the closest record for

Nathusius's Pipistrelle is approximately 18km southwest of the site (BCI 2011). Lesser Horseshoe Bat is the only species of bat listed on Annex II of the Habitats Directive (Directive 92/43/EEC). The closest record of this species is approximately 11km west of the proposed development site near Ballincollig (Clare Heardman and Danny O'Keeffe 2013).

Table 10.6. Presence of Irish bat species within hectad W67

Common name	Scientific name	Presence
Brown Long Eared Bat	*Plecotus auritus*	Present
Daubenton's Bat	*Myotis daubentoniid*	Present
Leisler's Bat/ Lesser Noctule	*Nyctalus leisleri*	Present
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	Absent
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Absent
Natterer's Bat	*Myotis nattereri*	Present
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Present
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Present
Whiskered Bat	*Myotis mystacinus*	Absent

Source NBDC 09/03/22

All bat species are protected under the Wildlife Act 1976, as amended, which make it an offence to wilfully interfere with or destroy the breeding or resting place of all species; however, the Acts permit limited exemptions for certain kinds of development. All species of bats in Ireland are listed in Schedule 5 of the 1976 Act and are therefore subject to the provisions of Section 23 which make it an offence to:

- Intentionally kill, injure, or take a bat
- Possess or control any live or dead specimen or anything derived from a bat
- Wilfully interfere with any structure or place used for breeding or resting by a bat
- Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose.

All bats are listed on Annex IV of the EU Habitats Directive. The domestic legislation that implements this Directive gives strict protection to individual bats and their breeding and resting places. It should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a licence to derogate under the European Communities (Birds and Natural Habitats) Regulations 2011 (which transposed the EU Habitats Directive into Irish law) issued by NPWS.

The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order, in relation to the planning and development regulations, such licences should be obtained, are set out in Circular Letter NPWS 2/07 "*Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 – strict protection of certain species/applications for derogation licences*" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16th of May 2007.

Table 10.7 summarises the protection given to bats by national and international legislation and conventions.

Evidence of bat activity associated with potential roost sites includes bat droppings, urine staining, feeding remains and dead/alive bats. Indicators that potential roost locations and access points are likely to be inactive include the presence of cobwebs and general detritus within the apertures. Bats generally make use of large mature trees that contain natural holes, cracks/splits in major limbs, loose bark, hollows/cavities, dense epicormic growth (bats may roost within it) and bird and bat boxes. The importance of trees to bats varies with species, season, and foraging behaviour. Evidence indicating bat presence, includes dark stains running below holes or cracks, bat droppings, odours, or scratch marks.

Table 10.7 Legislative protection for bats in Ireland

Legislation/Convention	Relevance to Irish bats
The Wildlife Act 1976, as amended	It is an offence to wilfully interfere with or destroy the breeding or resting place of bats, (with some exemptions for certain kinds of construction development). Provides for the creation of NHAs.
EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Directive 92/43/EEC), commonly known as the 'Habitats Directive, transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011	Lists all the vesper bats in Annex IV as in need of strict protection and also encourages Member States to conserve landscape features such as river corridors, field boundaries, ponds, and woodlands. It also requests that Member States establish a system to monitor the incidental capture and killing of the animals listed in Annex IV. The lesser horseshoe bat is further listed in Annex II of the EU Habitats Directive The level of protection offered to lesser horseshoe bats effectively means that areas important for this species are designated as Special Areas of Conservation.

Legislation/Convention	Relevance to Irish bats
The Convention on the Conservation of European Wildlife and Natural Habitats, commonly known as the 'Berne Convention'.	It obliges states to protect and conserve animals and their habitats, especially those listed as endangered or vulnerable. Also obliges parties to promote national policies for the conservation of wild fauna and natural habitats
The Convention on the Conservation of Migratory Species of Wild Animals, commonly known as the 'Bonn Convention'.	This led to the European Bats Agreement (EUROBATS), which lists a wide range of objectives, including promoting research programmes relating to the conservation and management of bats, promoting bat conservation and public awareness of bats, and identifying and protecting important feeding areas of bats from damage and disturbance.

A study by Lundy *et al.* (2011) examined the relative importance of landscape and habitat associations across Ireland. Maximum Entropy Models (MEM) were constructed for each bat species using records from the National Bat Database from 2000-2009. This method allows species' records that have not been collected in a systematic survey to be analysed. The results help explain patterns of species' occurrence and predict where species might occur. Landcover (CORINE), topography, climate, soil pH, riparian habitat and human bias factors were incorporated into the models. The analyses provide a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species. This also provides a '*habitat suitability*' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. The habitat indices for all Irish bats for the landscape within the vicinity of the proposed development sit is shown in **Table 10.8**.

Table 10.8. Model Predicted Habitat suitability indices for All Irish bat species at the study area

Latin Name	Common Name	Habitat indices
All Bats		35.44
Pipistrellus pygmaeus	Soprano pipistrelle	49
Plecotus auratus	Brown long-eared bat	51
Pipistrellus pipistrellus	Common pipistrelle	48
Rhinolophus hipposideros	Lesser horseshoe	0
Nyctalus leisleri	Leisler's bat	50
Myotis mystacinus	Whiskered bat	47
Myotis daubentoniid	Daubenton's bat	30
Pipistrellus nathusii	Nathusius' pipistrelle	11
Myotis nattereri	Natterer's bat	33

Source: NBDC 09/03/22

Bat building surveys

Buildings within the entire extent of the Former Tedcastles Site were surveyed to determine their value as bat roosts (with only one building to be demolished located within the proposed development boundary). An internal and external inspection of the buildings was conducted during daylight hours to identify possible emergence points as well as the bat presence.

The value of buildings as potential bat roosts was classified using the criteria specified in Collins (2016) to assess the potential value of structures as bat roosts (Potential Roost Features (PRF)). Evidence of bat activity associated with potential roost sites includes bat droppings, urine staining, feeding remains and dead/alive bats. Indicators that potential roost locations and access points are likely to be inactive include the presence of cobwebs and general detritus within the apertures.

Bats that use buildings can generally be divided into four categories, although there is regional variation, and some species can occupy more than one category.

- Crevice-dwelling bats (which tend to be hidden from view) include the common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Brandt's Bat and Whiskered Bat.
- Roof-void dwelling bats (that may be visible on roof timbers) are Leisler's bat and Daubenton's bat.
- Bats that need flight space in certain types of roost are Natterer's Bat, and Brown Long-Eared Bat.
- Bats that need flight space and flying access into the roost include the lesser horseshoe bat.

Bats generally require a variety of elements that need to be taken into consideration when roosting within a building, these range from temperature and humidity regime within the roost, aspect and orientation of the roost, size of roost, access points, lighting, materials and perching points. Important roosting sites for bats in buildings include crevices in stonework of old and modern structures, crevices in brick work of chimneys, attics of buildings – old and modern buildings – often behind roofing felt, under ridge tiles or in wall cavities and underground structures associated with older buildings (**Figure 10.5**).

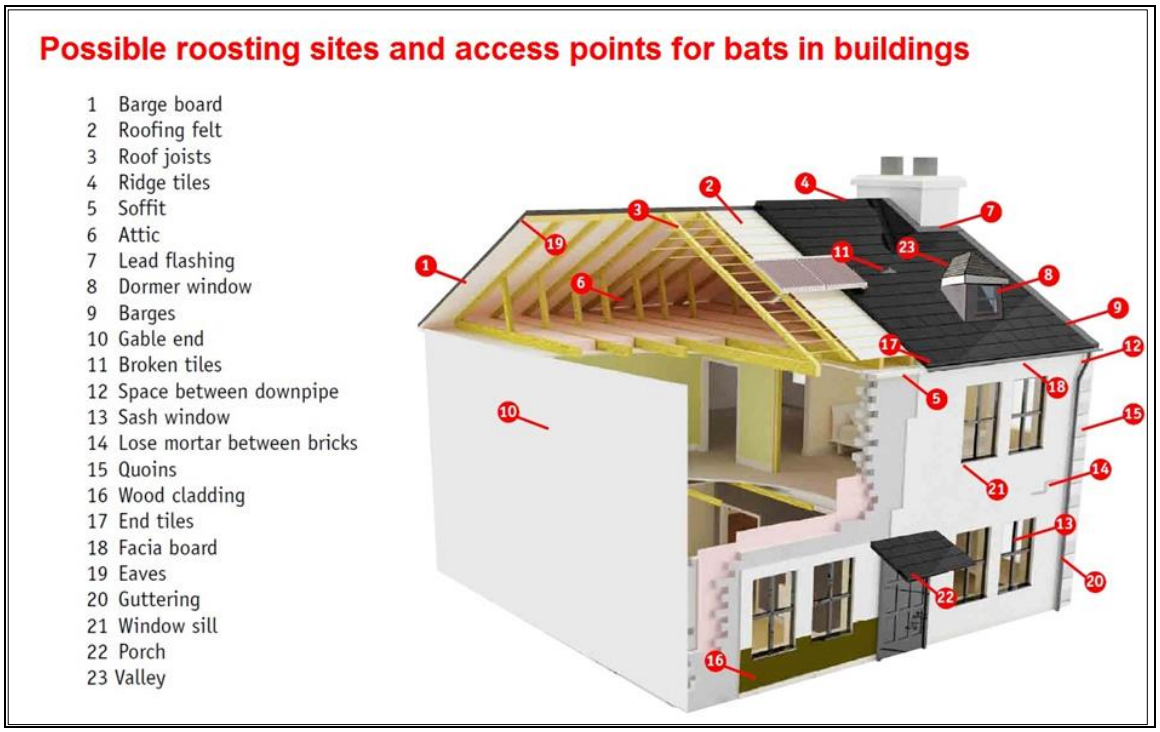

Figure 10.5. Possible roosting sites for bats in buildings.

To maximise warmth, maternity roosts for example are often located on the south and west of houses or close to sources of heat such as chimneys and boilers. Most species prefer to roost in quite small spaces and are not usually found in open draughty areas like barns. Common and Soprano Pipistrelles for example are generally found in the inaccessible parts of the roof structure and around its edges and rarely enter the loft space. Where bats are seen in buildings during the winter, they tend to be alone or in small, scattered groups, hidden in crevices or under slates and away from sources of heat.

There are a number of buildings within the overall extent of the Former Tedcastles site which was previously an industrial/commercial site (with only one building located within the proposed development boundary). These include a maintenance garage, open storage sheds, a single storey office block and a number of small, prefabricated structures. All of these buildings were checked for PRFs including around all potential access points, windowsills, and peeling paintwork etc.

The garage is of concrete block/corrugated iron construction and is accessed by large double doors, which are open. Internally the building is cold and drafty and without suitable roosting habitat. Similarly, the large, open fronted storage sheds are constructed of corrugated iron, are open and drafty and without the structural elements that would support bats. The smaller prefabricated structures are also considered of negligible value for bats. Utilising the criteria specified in Collins (2016) to assess the potential value of structures as bat roosts these buildings are considered of negligible value.

The office block consists of a single storey block of modern construction with a damaged felt roof and wooden fascia. It is in a poor state of repair with broken windows and doors and internally there are piles of general office waste. Utilising

the criteria specified in Collins (2016) to assess the potential value of structures as bat roosts, these buildings are considered of low to negligible value.

Overall, the buildings on and adjacent to the site are not considered of high potential value for roosting bats and no signs of bats or of bat emergence was recorded during bat surveys (See below).

Photograph 1. Disused office buildings in poor state of repair.

Photograph 2. Storage sheds of negligible value for bats.

Photograph 3. Portacabin of negligible value for bats.

Photograph 4. Garage of negligible value for bats.

Bat tree surveys

Evidence indicating bat presence, includes dark stains running below holes or cracks, bat droppings, odours, or scratch marks. PRFs that can occur in trees as detailed in Collins (2016) include the following:

- rot holes
- hazard beams
- other vertical or horizontal cracks and splits (such as frost cracks) in stems or branches
- partially detached platey bark
- knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar

- man-made holes (e.g cavities that have developed from flush cuts) otr cavities created by branches tearing from the parent stems
- cankers (caused by localised bark death) in which cavities have developed
- other hollows or cavities including butt rot
- double-leaders forming compression forks which included bark and potential cavities
- gaps between over lapping stems or branches
- partially detached ivy with stem diameters in excess of 50mm
- bat or bird boxes.

As the proposed development site was previously used as an industrial facility it is largely devoid of taller vegetation including mature trees. Running along the northern and southern boundaries of the site and forming the external boundary is a mixture of poor-quality hedgerow and treeline. Species noted include Sycamore *Acer pseudoplatanus*, Willow *Salix* sp Hawthorn *Crataegus monogyna*, non-native *Grisilinea* and some dead elm trees *Ulmus* spp. are also prominent along the northern boundary. Within the site boundary, along the southern boundary, there is an existing treeline which includes Lime *Tilia* spp. and Monteray Cypress *Cupressus macrocarpa*.

Trees are generally not of sufficient maturity to be of value as potential roosting habitats for bats as they lack the necessary structural elements such as cracks, crevices, mature ivy etc. No Potential Roost Features (PRFs) were recorded during the preliminary ground level roost assessment and the trees within the site boundary are considered of negligible value as potential bat roosting habitat.

Bat activity/emergence surveys

Night-time bat emergence surveys were carried out 3, 15 and 24 September 2021. The survey followed the guidelines set out in '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed*)' (Collins, 2016). Weather conditions were suitable with bright dry conditions and suitable temperatures. The building and site boundaries were surveyed for signs of bat emergence and foraging/commuting activity.

Surveys focused on linear features and areas of semi-natural habitat within the study area as well as trees and buildings within the overall Former Tedcastles site is to be earmarked for removal (only one building is to be demolished). Moderate levels of bat activity were recorded within the study area during the bat surveys carried out in 2021. Three species were recorded namely Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat. However, no bats were recorded emerging from any of the buildings or trees within the site boundary.

Common and Soprano Bats were predominantly recorded commuting/foraging along linear features along or adjacent to external boundaries. There was no significant bat usage of yards and hardstanding areas and other habitats within the interior of the site.

The area with the most activity was the treeline/scrub/open channel along the northern boundary of the site. This area is heavily overgrown and provides foraging habitat for Common Pipistrelle and Soprano Pipistrelle. Numbers were relatively low (5-6 bats) and evenly spaced along the length of this linear mosaic of habitats.

Soprano Pipistrelle, Common Pipistrelle foraging activity was also recorded northeast and southwest from the existing site entrance along the treeline/open channel which forms the southern boundary of the site. Soprano Pipistrelle was also recorded in the south-western corner of the site foraging along boundary vegetation. Common Pipistrelle was recorded foraging along the vegetation along the western boundary, however usage was very sporadic.

Leislers's Bat were recorded commuting/overflying the site on two occasions however no foraging was recorded within the interior of the site. Leislers's Bat was recorded sporadically foraging along the treeline/open channel which forms the southern boundary of the site close to the site entrance and along the treeline/scrub/open channel along the northern boundary of the site.

Only small numbers of bats were recorded. No bat emergence was recorded from any of the buildings within the overall Former Tedcastles Site, of which only one is earmarked for demolition and/or repurpose. Surveys of the buildings did not record any signs of bats including dropping, staining and prey remains (See above). The proposed development site is generally of low value for bats but boundary habitats provides low to moderate foraging/commuting habitat for populations of Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat.

10.3.4.2 Otter

Otter *Lutra lutra*, along with their breeding and resting places are protected under the provisions of the Wildlife Act 1976, as amended. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive which is transposed into Irish law in the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I 477 of 2011), as amended. Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats and are included in the Convention on International Trade of Endangered species (CITES).

Although rare in parts of Europe, they are widely distributed in the Irish countryside in both marine and freshwater habitats. Otters are solitary and nocturnal and as such are rarely seen. Thus, surveys for Otters rely on detecting signs of their presence. These include spraints (faeces), anal gland secretions, paths, slides, footprints, and remains of prey items.

Spraints are of value as they are used as territorial markers and are often found on prominent locations such as grass tussocks, stream junctions and under bridges. In addition, they are relatively straightforward to identify.

Otters occasionally dig out their own burrows but generally they make use of existing cavities as resting places or for breeding sites. Suitable locations include eroded riverbanks, under trees along rivers, under fallen trees, within rock piles or in dry drainage pipes or culverts etc. If ground conditions are suitable, the holt

may consist of a complex tunnel and chamber system. Otters often lie out above ground especially within reed beds where depressions in the vegetation called "couches" are formed. (NRA, 2006b). Generally, holts or resting areas can be located by detecting signs such as spraints or tracks.

In contrast natal holts which are used by breeding females can be extremely difficult to locate. They are often located a considerable distance from any aquatic habitats and Otters may also use habitats adjoining small streams with minimal or no fish populations. In addition, natal holts are usually carefully hidden and without obvious sprainting sites. Otters do not have a well-defined breeding season.

It is noted that Otters are largely nocturnal, particularly in areas subject to high levels of disturbance as evidenced by the presence of Otters in the centre of Cork and Limerick City.

A review of existing records within hectad W67 showed that Otter or signs of Otter have been recorded on 85 occasions, with the most recent record from December 2018. Otters are active throughout this area of the South Docks, the proposed development is located approximately 30m to the south of the River Lee and while the Atlantic Pond is located approximately 430m east of the proposed development site.

No signs of Otter were recorded during the site survey and no holts were detected within 150m of the proposed development site. While there are number of open channels at the site which are connected to the River Lee, these drains have signs of pollution/eutrophication and water quality is generally poor with sluggish flows. Both open channels are of negligible value for fish and amphibians and are of low potential value as Otter foraging habitat. Overall, the proposed development site is of low to negligible value for Otter.

10.3.4.3 Other Mammal Species

Eighteen other species of terrestrial mammal have been recorded within hectad W67. Seven of these are protected under the Irish Wildlife Act; namely Badger *Meles meles*, Red Squirrel *Sciurus vulgaris*, Pygmy Shrew *Sorex minutus*, Irish Hare *Lepus timidus subsp. Hibernicus*, Irish Stoat *Mustela erminea subsp. hibernica*, Sika Deer *Cervus nippon* and Hedgehog *Erinaceus europaeus*.

10.3.4.3.1 Badger

Badgers and their setts are protected under the provisions of the Wildlife Act 1976, as amended. Badger setts are formed by a complex group of interlinked tunnels, and therefore works in proximity to setts can potentially cause damage to this protected species.

The size of the home range of a Badger will vary depending on the local habitat, food availability, landscape features and local Badger density. A home range may be as small as 30 hectares in a good rural habitat, but as large as 300 hectares in a poor habitat. On average a territory may be around 50 hectares.

Field signs are characteristic and sometimes quite obvious and include tufts of hair caught on barbed wire fences, conspicuous Badger paths, footprints, small, excavated pits, or latrines in which droppings are deposited, scratch marks on trees, and snuffle holes, which are small scrapes where Badgers have searched for insects and plant tubers.

The NBDC has 29 records of Badger within W67, the most recent sighting in August 2017. No signs of Badger were recorded during the proposed development site surveys and site is of negligible value for this species.

10.3.4.3.2 Hedgehog

Hedgehog also listed on Appendix III of the Berne Convention, can be found throughout Ireland, with male Hedgehogs having an annual range of around 56 hectares. A number of factors are thought to influence the distribution of Hedgehogs in a habitat, with nest sites, food availability and the presence of predators believed to be major contributory factors. Generally, Hedgehogs prefer edge habitat and pasture but in recent years have begun to colonize urban areas. Considering the type of habitat recorded within the proposed development area, Hedgehog could potentially occur.

10.3.4.3.3 Red Squirrel

Red Squirrel also listed on Appendix III of the Berne Convention, can be found throughout Ireland. Red Squirrels feed mainly on tree seeds, although they can utilise fungi, fruit, and buds as they become available in the woodland. They are found in all types of habitat but typically are in higher densities in mature mixed broadleaved forests. They can also survive in monoculture coniferous woodland. Red Squirrel is known to occur in the wider area (NBDC records). However, no signs of Red Squirrel were recorded during the site surveys and the habitats noted within the proposed development area are considered of negligible value for this species.

10.3.4.3.4 Irish hare

Irish hare is listed on Appendix III of the Berne Convention, Annex V(a) of the EC Habitats Directive (92/43/EEC) and as an internationally important species in the Irish Red Data Book. The Irish hare is adaptable and lives in a wide variety of habitats. It typically reaches its highest densities on farmland, particularly where there is a mix of grassland and arable fields along with hedgerows and other cover. The habitats noted within the proposed development area are considered of negligible value for this species

10.3.4.3.5 Irish Stoat

Irish Stoat occur in most habitats with sufficient cover, including urban areas. It is unlikely that Stoat occurs within the proposed development area given the lack of suitable habitat for prey species.

10.3.4.3.6 Sika Deer

Sika Deer are a non-native species which prefer forest with dense understorey, thickets, natural woodlands, and commercial plantations, but will also forage in open grassy areas with dense cover nearby. Sika Deer are highly opportunistic feeders, foraging on grasses to a range of shrubs and tree species. The habitats recorded within the proposed development area are considered of negligible value for this species.

10.3.4.3.7 Pygmy Shrew

Pygmy Shrew is common throughout mainland Ireland and has a preference for habitats such as hedgerows and grasslands. Due to the habitats present within the proposed site Pygmy Shrew are likely to be present.

10.3.4.4 Birds

The National Biodiversity Centre online data base lists 154 species of bird recorded within grid square W67. Of these 154 species 13 are listed under Annex I of the Birds Directive namely, Bar-tailed Godwit (*Limosa lapponica*), Kingfisher (*Alcedo atthis*), Corn Crake (*Crex crex*), Dunlin (*Calidris alpina*), Golden Plover (*Pluvialis apricaria*), Hen Harrier (*Circus cyaneus*), Little Egret (*Egretta garzetta*), Little Gull (*Larus minutus*), Mediterranean Gull (*Larus melanocephalus*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*), Red-billed Chough (*Pyrrhocorax pyrrhocorax*) and Whooper Swan (*Cygnus cygnus*).

A bird survey was carried out in conjunction with habitat surveys in July 2021 and March 2022. The majority of birds utilising the proposed works areas were common in the local landscape. Bird species listed in Annex I of the Birds Directive are considered a conservation priority. During the survey, all birds seen or heard within the development site were recorded. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists (Gilbert *et al.* 2021). Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable. Species recorded within the site are shown in **Table 10.9**.

In general, the species recorded at the site were common bird species typical of an urban landscape. The scrub and treeline habitat does provide some foraging and potential nesting habitat for birds in the context of an industrialised area. Early successional plant species within recolonising bare ground habitat provides foraging opportunities for seed feeding birds such as Goldfinch, however overall, the high modified habitats at the site provide limited foraging opportunities for birds.

Table 10.8. Bird Species recorded during site visits

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
Black Headed Gull (OF)	*Chroicocephalus ridibundus*			x
Blackbird	*Turdus merula*			
Blue Tit	*Parus Caeruleus*			
Cormorant	*Phalacrocorax carbo*			x
Dunnock	*Prunella modularis*			
Goldfinch	*Carduelis carduelis*			
Grey Heron	*Ardea cinerea*			
Grey Wagtail	*Motacilla cinerea*		x	
House Sparrow	*Passer domesticus*			x
Jackdaw	*Corvus monedula*			
Long Tailed Tit	*Aegithalos caudatus*			
Mallard	*Anas platyrhynchos*			x
Moorhen	*Gallinula chloropus*			
Peregrine Falcon	*Falco peregrinus*	x		
Pigeon	*Columba livia domestica*			
Raven	*Corvus corax*			
Robin	*Erithacus rubecula*			
Rook	*Corvus frugiligus*			
Snipe	*Gallinago gallinago*		x	
Song Thrush	*Turdus philomelos*			

The Annex I species Peregrine Falcon *Falco peregrinus*, was recorded perching on buildings to the west of the proposed development site. While this species is known to nest in this area, there is no suitable nesting habitat for this species in the proposed development site. The Red List species Grey Wagtail *Motacilla cinerea* and Snipe *Gallinago gallinago* were recorded at the site. Grey Wagtail are breeding within the site's drainage channel. Four Snipe were recorded within dry meadows/scrub habitat. Grey Heron *Ardea cinerea*, which is a SCI species for Cork Harbour SPA, Mallard *Anas platyrhynchos and* Moorhen *Gallinula chloropus* were recorded within the site's open channels. Cormorant utilise dead trees in the open channel at the northeastern boundary of the site as perches. Occasional Black Headed Gull *Chroicocephalus ridibundus*, also a SCI species were also recorded overflying the site.

Overall, the proposed development site is of a local importance (lower value) for terrestrial bird species that are relatively common in the Irish countryside. With

the exception of Grey Wagtail, Cormorant and Grey Heron, the site is largely used by common bird species.

10.3.4.5 Reptiles and Amphibians

According to records held by the NBDC, Common Frog (*Rana temporaria*) is the only amphibian recorded from grid square W67. Common Frog is listed on Annex V of the EU Habitats Directive and is protected under the Wildlife Acts. While there are number of drainage ditches at the site which are connected to the River Lee, these drains have signs of pollution/eutrophication and water quality is generally poor with sluggish flows. Both drainage ditches are of negligible value amphibians. Common Frog was not recorded during the site visit. Given the lack of suitable habitat within the proposed development site, this area is of negligible value for Common Frog and other amphibians.

Common Lizard (*Zootoca vivipara*) is Ireland's only native terrestrial reptile and is so protected under the Wildlife Act. Ideal habitats for the species are south-facing, damp tussocky grassland, scrub covered hillsides, dunes or banks, and woodland tracks, and it also resides in peat bogs, dry grasslands and heathlands. The species has not been recorded in the surrounding landscape (NBDC) and it is unlikely that the species occurs within or in proximity to the proposed development site. The site of negligible value for reptiles.

10.3.4.6 Other Species

A search of the NBDC database was carried out to determine if any protected, rare or notable species of invertebrates within 2km of the proposed development site (W67W and W67V).

Four threated invertebrate species has been recorded within W67W and W67V i.e., *Andrena (Melandrena) nigroaenea*, Dark Green Fritillary (*Argynnis a*glaja), Large Red Tailed Bumble Bee (*Bombus (Melanobombus) lapidarius*) and *Megachile (Delomegachile) willughbiella*. During the habitats survey no rare or notable species of invertebrate species were observed within the application site. Whilst no site is without invertebrate interest, it is considered unlikely, given the habitat types, that the proposed development site would support any protected invertebrate species.

While there are a number of open channels at the site which are connected to the River Lee, these drains signs of pollution/eutrophication were noted, and water quality is generally poor with sluggish flows. Both open channels are of negligible value for fish and/or aquatic invertebrates.

10.4 Likely Significant Effects

10.4.1 Impact Assessment

Potential effects have been described according to Section 3.7 of the *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'*, (EPA 2017) which provides standard definitions to classify

the effects in respect of ecology. Further information on the description of environmental effects is outlined in **Chapter 1** *Introduction*.

10.4.2 Do-Nothing Scenario

Most of the habitats to be affected have been significantly modified from the natural state by human activity. Formally disturbed areas and areas that have been left unmanaged are being recolonised by vegetation, including invasive species such as Japanese Knotweed and Buddleia. The general pattern of succession from recolonising bare ground to patches of grassland to scrub to woodland would be expected to continue. In the absence of development, it is expected that the proposed development area would largely remain under the same management regime. In the absence of management invasive species are likely to continue to spread within and potentially outside the proposed development site.

10.4.3 Construction

10.4.3.1 Potential Effects on Habitats

Effects on terrestrial habitats are generally restricted to direct removal of habitats and possible impacts from the spread of invasive species. Based on the criteria outlined by EPA, 2017, the predicted impacts are detailed in **Table 10.9**.

Table 10.9. Impacts on Habitats During Construction

Habitats	Habitat value (NRA Guidelines)	Potential impacts in absence of mitigation
Dry meadows and grassy verges GS2/Scrub WS1	Local importance (Higher value)	This habitat will be removed during construction. Negative, slight, long-term
Treelines WL2/ Scrub WS1	Local importance (Higher value)	This habitat will be removed during construction. Negative, slight, long-term
Scrub WS1	Local importance (Higher value)	This habitat will be removed during construction. Negative, slight, long-term
Drainage ditch FW4	Local importance (Higher value)	The open channels along the northern boundary will be reprofiled and open channel along the southern boundary will be culverted Negative, slight, long-term

The habitats within the proposed development area have been significantly modified from their original state and are of limited ecological value. As detailed above the loss of habitats considered of higher local value will have a slight impact in the absence of mitigation.

10.4.3.2 Potential Effects from Non-native Invasive Species

One high-risk invasive species was recorded within the proposed development area i.e., Japanese Knotweed. Three medium impact (NBDC) invasive species, Buddleia, Pampas Grass and Traveller's Joy were recorded within the proposed development area as well as a number of other non-native species. There is potential during the construction phase for invasive species to be spread within the boundary of the proposed development, thus impacting negatively on adjoining habitats.

It is noted that while there is a statutory obligation under S.I. 477 of 2011 of the European Communities (Birds and Natural Habitats) Regulations 2011 to address invasive species in Ireland including Japanese Knotweed. Other invasive species recorded at the proposed development site e.g., Buddleia, Pampas Grass and Traveller's Joy are not listed under these regulations. In the absence of mitigation measures the ecological impact from the spread of invasive species during the construction phase is predicted to be slight, negative and short-term.

10.4.3.3 Potential Effects on Water Quality and Aquatic Ecology

Surface water emissions associated with the construction phase of the proposed development could have potential effects on aquatic habitats via increased silt levels in surface water run-off and inadvertent spillages of chemicals such as hydrocarbons from fuel and hydraulic fluid.

Inadvertent spillages of hydrocarbon and/or other chemical substances during construction could introduce toxic chemicals into the aquatic environment via direct means, surface water run-off or groundwater contamination. Some hydrocarbons exhibit an affinity for sediments and thus become entrapped in deposits from which they are only released by vigorous erosion or turbulence. Oil products may contain various highly toxic substances, such as benzene, toluene, naphthenic acids and xylene which are to some extent soluble in water; these penetrate into the fish and can have a direct toxic effect. The lighter oil fractions (including kerosene, petrol, benzene, toluene and xylene) are much more toxic to fish than the heavy fractions (heavy paraffins and tars). In the case of turbulent waters, the oil becomes dispersed as droplets into the water. In such cases, the gills of fish can become mechanically contaminated and their respiratory capacity reduced.

If of sufficient severity, aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Cement can also affect fish, plant life and macroinvertebrates by altering the pH levels of the water.

Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted, and photosynthesis may be reduced.

Potentially, impacts could arise from any inadvertent spills of hydrocarbons or other chemicals during construction. High levels of suspended solids in surface water run-off could potentially have localised impacts on aquatic ecology.

It is noted that construction works will be short-term and standard mitigation measures will be implemented to prevent any minor impacts on water quality from occurring. The open channels along the boundaries of the site are not of significant ecological value. High levels of dilution are ultimately provided within the estuary. The impact on water quality and aquatic habitats will be Negative, slight and short-term.

Based on the results of the ground investigation with the exception of the presence of asbestos in the made ground, no significant risks were noted in relation to contaminants in the soil. Water quality monitoring carried out at the site did not highlight any impacts from the site on water quality in the groundwater under the site or the drainage channels surrounding the site. Hence the site is not seen to impact on water quality in the River Lee. Mitigation measures have been outlined in **Appendix 5.1** *Construction Environmental Management Plan* will ensure that the disposal of asbestos during construction works will not impact on local water quality. As outlined in **Chapter 14** *Water* no effect on local water quality or aquatic receptors is predicted to occur during the construction phase of the development.

Further details on the impact of proposed development on water quality within Cork Harbour SPA is discussed in the NIS, which has been included as part of the planning application documentation.

10.4.3.4 Potential Effects on Air Quality

Dust emissions during the construction phase could impact on habitats and theoretically could have impacts on associated flora and fauna. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for effects from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations.

Given that there are no sensitive or high value habitats within the proposed development area or in immediately proximity to it and the limited duration of the construction works likely to generate dust, the impacts from dust generation, if any, will be short-term and imperceptible.

10.4.3.5 Potential Effects on Bats

The buildings and trees within the proposed development site do not provide significant roosting habitat for bat species. None of the buildings or trees to be removed are considered of significant value for roosting bats, although taking a worst-case scenario approach, the presence of occasional roosting bats cannot be

altogether ruled out. Therefore, the demolition or removal or these habitats will have an imperceptible to not significant impact on local bat populations in the absence of mitigation.

Continuous treeline and hedgerow provide connectivity for bats commuting between foraging sites. Even gaps as small as 10m may prevent bats using hedgerows and treelines (JNCC 2001). In general, the removal of linear features such as treelines has the potential to impact on connectivity between valuable roosting and foraging grounds. The treelines, open channels and scrub habitat within the proposed development site provide some localised connectivity to the habitats outside the site boundary. The proposed development site is of low to moderate foraging/commuting value for local populations of Common and Soprano Pipistrelle and Leisler's Bat. The treelines, open channels and scrub habitat along the boundaries of the proposed development site are used by small numbers of relatively common bat species. The removal of these habitats will have a negative, slight and long-term impact on local populations of local bat species.

Construction lighting within the footprint of the proposed development has the potential to cause increased light pollution of adjacent areas and could potentially impact on bats foraging in adjacent habitats. The proposed construction works will take place largely during daytime hours. Therefore, no significant lighting disturbance to bats is predicted during the construction phase.

10.4.3.6 Potential Effects on Otter

While Otters are known to along the River Lee to the north of the site and at the Atlantic Pond to the west of the site. The terrestrial habitats within the proposed development site itself are of negligible value for Otters and given the poor water quality within existing open channels they are likely to be of low to negligible value for Otter.

It is noted that the surrounding landscape is already subject to high levels of disturbance from traffic and human activity and species currently utilising the site are expected to have habituated to ongoing disturbance factors in these circumstances. Given the nature of the proposed development, construction activities are not expected to generate significant noise at locations with suitable habitat for Otter beyond the proposed development site boundary including the River Lee and Atlantic Pond. Furthermore, works will largely be confined to daylight hours and given the largely nocturnal habits of Otter, the impact on Otter is predicted to be not significant, and short-term.

Construction lighting within the footprint of the proposed development has the potential to cause increased light pollution of adjacent areas and could potentially impact on Otters foraging in adjacent habitats. The proposed construction works will take place largely during daytime hours. Therefore, no significant lighting disturbance to Otters is predicted during the construction phase.

In the absence of mitigation, surface water discharges with excessive silt or hydrocarbons during the construction phase could potentially impact on local water quality within the River Lee, which could potentially impact on prey

availability for Otter. However, any such impacts would be minor and unlikely to significantly impact on prey availability for Otter.

Overall, the impact on the construction phase of the proposed development on Otter is predicted to be negative, slight and short-term.

10.4.3.7 Potential Effects on Other Mammals

The habitats within the footprint of the proposed development are not rare, threatened nor do they require any special protection under existing or pending legislation. No significant loss of habitat for other protected mammal species such as Hedgehog and Pygmy Shrew is predicted to occur. However, small numbers of these species may be displaced during the construction phase due to habitat removal. In the absence of mitigation this could lead to direct injury to these species as well as habitat loss.

The construction phase of the proposed development is predicted to have a slight, negative, short-term effect on Hedgehog and Pygmy Shrew in the absence of mitigation measures.

10.4.3.8 Potential Effects on Birds

The terrestrial bird species recorded within the proposed development area during the bird survey are typical of the types of habitats recorded within the survey area and are generally common. No rare or uncommon species or species of high conservation value i.e., Annex I species, were recorded within the proposed development site. While the Annex I species Peregrine Falcon was recorded immediately adjacent to the site and are known to nest in this general area, there is no suitable nesting habitat for this species in the proposed development site. Treeline/scrub habitats, within the site boundary provide nesting and foraging habitat for common bird species. The open channels at the site provide habitat for the Red List Species Grey Wagtail and Grey Heron.

In general, the habitats within the proposed development area are utilised for feeding by a range of common bird species. The removal of scrub and treeline habitat will lead to the loss of nesting/breeding habitat for common bird species. In the absence of mitigation this could lead to direct injury to these species as well as habitat loss. It is noted that drainage ditches the northern drainage ditch at the site will be maintained and will continue to provide habitat for Grey Wagtail and Grey Heron.

Some displacement of feeding birds will occur during construction due to habitat removal as well as increased noise and disturbance. Disturbance can cause sensitive species to deviate from their normal, preferred behaviour, resulting in stress, increased energy expenditure and, in some cases, species mortality. Birds living in the urban and suburban environment have developed a tolerance to increased levels of human disturbance. However, disturbance is still an important factor that can cause birds to abandon nest sites and breeding attempts and take on less food. Construction works are likely to continue for approximately eight years spread over four construction phases, which will impact on approximately eight breeding bird seasons. Noise levels within the site will be periodically elevated

during the construction phase. Whilst works could potentially disrupt feeding patterns, given the availability of similar habitat in the wider area, the ability of birds to move away from disturbance and the nature of the works, the impact on the feeding behaviour of these species is predicted to be slight.

Overall, the effect on birds during the construction phase of the proposed development is predicted to be negative, slight and short to medium-term in the absence of mitigation.

10.4.3.9 Potential Effects on Other Fauna

The proposed development area is only likely to support common species. Aquatic habitats are limited in value. Given that the habitats which will be affected are relatively common in the surrounding landscape and, given the limited scale and short to medium-term nature of the construction works, any effect on these species will be negative, slight and short to medium-term during construction.

10.4.4 Operation

10.4.4.1 Potential Effect on Habitats

The landscape plan for the proposed development site includes areas of woodland planting, shrubs and grassland meadows. Wetland planting has been specified to enhance the local biodiversity and planting of native trees and understorey species along the open channel at the site will provide replacement habitat and/or mitigate for tree and scrub removal during the construction phase. SUDS features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to the attenuation/tidal holding volume requirements. In addition to those features indicated on the engineering drawings rain gardens, permeable paving and under drained planters/tree pits will be incorporated into the design where feasible. The habitat value of new habitats created by landscaping of the site will improve over time. Further detail on the landscape plan, including plans for an ecology park are including in the *Landscape Design Strategy* as included with the planning application documentation for the proposed development.

Levels of surface water discharging from the site will not significantly increase post construction and in fact the proposed surface water strategy aims to greatly reduce the discharge rates by restricting run-off from site to a QBAR Greenfield Runoff rate of 68 l/s/ha. Further details on SuDS measures are included in **Chapter 14** of this EIAR, *Water*.

In relation to flooding, the recommended minimum finished floor level for highly vulnerable uses is 3.8mOD. In practice, an even higher level of protection is being provided by locating ‘Highly Vulnerable’ development at first floor level which is at 5.4mOD in the proposed development. This provides protection to the circa 1 in 1000-year tidal flood level plus an allowance of greater than 2m for sea level rise. This implies significant safeguarding and longevity against the potential impacts of climate change and is line with guidance provided in the OPW guidelines. It

also ensures that protection of the most vulnerable development is not contingent on the future raising of the polder defences.

To mitigate the residual risk to this development, the development will incorporate appropriate flood resistant and resilient construction, measures and finishes. Utilities are to be installed above a level of 3.8mOD, to be above the 1 in 200-year tidal flood level with allowance for sea level rise. This will be combined with demountable flood defence barriers at strategic openings in the defence perimeter and will include appropriate design of the structure to withstand the relevant hydrostatic load for up to 600mm of flood depth.

Therefore, no significant negative effects as a result of flooding are predicted as part of the proposed development.

A site-specific Flood Risk Assessment has been carried out and is included as **Appendix 14.1** to this EIAR.

The planting scheme for the proposed development will ensure that new habitat with native species will be provided. Most of the habitats to be affected by the proposed development are of limited ecological value. The impacts on habitats during operation will be negative, not significant and long-term

10.4.4.2 Potential Effects from Non-native Invasive Species

Any potential risks from invasive species will be managed during the construction phase and therefore, no risk from the spread of invasive species during the operational phase has been identified.

10.4.4.3 Potential Effects on Water Quality and Aquatic Ecology

Surface Water

It is proposed to collect all surface water from the proposed development within a new dedicated surface water network. A network of primary carrier pipes will be provided, located predominantly within the development roads. This pipe network will ultimately discharge to existing open channels located adjacent to the site. Parts of the proposed buildings will also discharge directly to the open channels.

SUDS features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to the attenuation/tidal holding volume requirements. In addition to those features indicated on the engineering drawings rain gardens, permeable paving and under drained planters/tree pits will be incorporated into the design where feasible. Roof terraces will incorporate planting as described in the landscaping strategy. Runoff from these areas will be reduced as a result of rain percolating through the planted zones as well as providing a water quality benefit. At detailed design the landscaping and drainage designs will be integrated to maximise this benefit. Soft landscaping features located within the streetscape will be designed to enable runoff from adjacent hardstanding to infiltrate through the planted zone. Surface water runoff collected from carparking areas will pass through a Class 1 By-Pass Hydrocarbon Interceptors. It is proposed to discharge all surface water runoff

from the under-croft carparks to the foul network. Furthermore, all surface water channel drains and road gullies will include sump units where silt can be collected and removed.

SUDS features will contribute to improved water quality it is also proposed that the. Overall, no significant negative effects on surface water quality during operation are predicted.

Foul Water

The proposed residential development could potentially result in an increase in nutrients discharging to Cork Harbour via the Cork City Wastewater Treatment Plant (WWTP). Increased nutrients can potentially impact on estuarine habitats by changing baseline ecological conditions and increasing algal growth. Increased nutrients can potentially impact on estuarine habitats by changing baseline ecological conditions and increasing algal growth, which in turn could impact on feeding success for birds listed as qualifying interests for the Cork Harbour SPA.

It is proposed to collect all foul water from the proposed development through a dedicated foul sewer network. There is an existing Irish Water sewer along Centre Park Road, east of the junction with Marquee Road. It is proposed that one connection point to this existing sewer will be made from the new foul water drainage network. It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

A pre-connection enquiry has been submitted to Irish Water and they have issued a Confirmation of Feasibility Letter confirming they have capacity within their network to serve the development without upgrade. Wastewater from the proposed development will be conveyed for treatment to Cork City (Carrigrenan) Wastewater Treatment Plant (WWTP). Treated effluent from the proposed development will ultimately discharge into the waters of the Lough Mahon which sections overlap with that of the Cork Harbour SPA. The Cork City agglomeration is served by a wastewater treatment plant with a Plant Capacity Population Equivalent (P.E.) of 413,200. The agglomeration consists of one primary discharge point which discharges to the Lough Mahon. The WWTP obtained a discharge licence (Reg: D0033-01) from the Environmental Protection Agency and has assigned emission limit values (ELV's) for a range of parameters to ensure a high degree of protection to the Lough Mahon and surrounding waters.

Treated effluent from the proposed development will discharge from the Cork City WWTP via the main treated effluent line. The discharge licence assigns ELV's for biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), Total Nitrogen (Total N), Total Phosphorous (Total P) and pH. The ELVs are set based on the full design capacity (P.E. 413,200) and are aimed at providing a high degree of protection to the receiving water body and to ensure the receiving waterbody is capable of accommodating the proposed discharge without causing or exacerbating a breach in the relevant standards.

The 2020 Annual Environmental Report (AER) for Cork City WWTP (D0033-01) was reviewed (EPA 2021). **Table 10.10** provides a summary of the current operating conditions for the WWTP from the main effluent discharge obtained from the most recent EPA Annual Environment Report 2020 (EPA 2021).

Table 10.10. Effluent Monitoring

Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Total P (mg/l)	Total N (mg/l) *	pH
WWDL ELV (Schedule A)	25.00	125	35.0	2.5	10	9
ELV with Condition 2 Interpretation included	50.00	250	87.5	3	12	9
No. of Sample results	261	261	261	25	25	261
Number of exceedances	N/A	NA	2	2	24	N/A
Number of sample results above ELV with condition 2 interpretation	N/A	N/A	N/A	1	22	N/A
Annual Mean (parameters where a mean ELV applies are shaded)	8.64	64.47	14.71	1.73	16.6	7.63
Overall Compliance (Pass/Fail)	**Pass**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**

The AER notes that the final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2020. The non-compliances with the ELVs were in relation to Total P (mg/l) and Total N (mg/l). This non-compliance was because nutrient removal does not form part of the WWTP process. In relation to ongoing monitoring of water quality, the 2020 AER concluded the following:

- The WWTP discharge was not compliant with the ELVs set in the wastewater discharge licence.
- The ambient monitoring results does not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.
- The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

Overall, the discharge from the Wastewater Treatment Plant does not have an observable negative impact on receiving water quality nor a negative impact on the Water Framework Directive Status.

Based on the planned occupancy, the P.E. for the proposed development has been conservatively calculated at 2,222. This would increase the current WWTP load from 241,480 (based on 2020 EPA data) to 243,704 P.E. which is well within the 413,200 P.E. design capacity. Therefore, with the addition of emissions from the proposed housing development to the WWTP it would increase its operational load to 60.0% of its design capacity with a residual capacity of 40.0%. Thus, given the scale of the proposed development and the ability of the WWTP to cater for the additional loading, no significant impact on water quality will occur.

The addition of the effluent discharge from the proposed development to the Cork City WWTP is well within its design capacity and will not comprise the operational capability of the WWTP to treat effluent to comply with emission limit values. Therefore, the impact from the proposed development will be negligible given the current operating conditions at the WWTP and there will be no impact on water quality during the operational phase.

10.4.4.4 Potential Effects on Bats

The landscape plan for the proposed development site includes areas of woodland planting, shrubs and grassland meadows. Wetland planting has been specified to enhance the local biodiversity and planting of native trees and understorey species along the drainage channel at the site will provide replacement habitat and/or mitigation against tree and scrub removal during the construction phase. Newly planted treelines, meadows and planting along the drainage channels will provide foraging opportunities for bats Bat boxes will be provided as per the landscape plan, which will provide bat roosting habitat. These are likely to be of higher value for bats than that provided by the trees/buildings removed during construction (see above).

Increased activity and human presence, noise and artificial lighting may impact and disturb or displace bats during the operational phase of the proposed development.

Lighting around the proposed buildings and outdoor areas including parking areas, common areas and access roads means that bat foraging in this area is likely to be reduced. Light spillage from the development onto the treeline boundary habitats could prevent bats from foraging along newly planted treelines and meadows. Lighting deters some bat species, in particular Myotis species, from foraging. It is noted that no Myotis species were recorded during site surveys. Pipistrelle species appear to be more tolerant to light and disturbance (Speakman 1991; Stones et al. 2009; Haffner 1986). It is also noted that Leisler's Bats will opportunistically feed on insect gatherings in lit areas (Bat Conservation Ireland 2010).

In the absence of mitigation operational lighting and activity will impact on low to moderate value foraging habitats for bats. Impacts to bats during operation are predicted to be negative, slight and long-term at a local level in the absence of mitigation.

10.4.4.5 Otter

Increased activity and human presence, noise, fencing and additional lighting may disturb or displace other Otter during the operational phases of the proposed development.

It is noted that the surrounding landscape is already subject to high levels of disturbance from traffic and human activity and Otters currently utilizing the site are expected to be habituated to ongoing disturbance factors in these circumstances. Given the relatively low value of the existing habitats at the site for Otter, levels of disturbance within adjacent habitats and the proposed landscaping plan, impacts on Otter during operation are predicted to be negative, not significant and long-term.

10.4.4.6 Other Mammals

Increased activity and human presence, noise and additional lighting have the potential to disturb or displace other mammal species such Hedgehog and Pygmy Shrew from foraging habitats during the operational phases of the proposed development. However, given the location of the proposed development site within an urban/industrial setting, these species are likely to be habituated to comparable levels of noise and disturbance and with limited areas of semi-natural habitat in the vicinity. Wildlife buffer planting and log piles will provide habitat for small mammals such as Hedgehog and Pygmy Shrew. These species are likely to readily colonise newly planted and landscaped habitats within the site.

Impacts on other mammals during operation are predicted to be neutral, imperceptible and long-term.

10.4.4.7 Potential Effects on Birds

The landscape plan for the proposed development site includes areas of woodland planting, shrubs and grassland meadows. Wetland planting has been specified to enhance the local biodiversity and planting of native trees and understorey species along the drainage channel at the site will provide replacement habitat and/or mitigation against tree and scrub removal during the construction phase. The landscape plan includes wildlife buffer zone incorporating species such as Blackthorn *Prunus spinosa* and Bramble *Rubus fruticosus* to provide foraging opportunities for birds as well as pollinator plants to encourage invertebrate (prey). This type of planting will provide nesting and foraging habitat for common bird species in the medium and long term. Common bird species are likely to recolonise the newly landscaped areas within the site. Bird boxes will be included in the landscape plan and will provide alternative nesting sites for birds as trees mature at the site.

The impact on common bird species is likely to be negative, slight and long-term at a local level due disturbance and/or displacement during the operational phase.

The buildings at the proposed development site which will range from 1 to 35 storeys in height could potentially create a collision risk for birds during operation. Buildings are an obstacle to bird flight and collisions with buildings,

especially windows, are thought to be a major anthropogenic global threat to birds (Klem 1990, 2009, Machtans *et al.* 2013). A review on bird-building collision risk for SCI bird species has been included with the AA Screening which accompanies this application. This concluded that given the location of the proposed development (>1.9km from the SPA), the absence of large areas of glass, the proposed lighting design and its location within an existing urban setting, no significant risk of collision for SCI species has been identified. Therefore, the collision risk posed by the proposed development is not significant and it will not impact on the conservation objectives for the Cork Harbour SPA. However, the NIS noted that the species which appear to be most vulnerable to collision are passerine species (Loss *et al*. 2014) and birds of prey (Thaxter *et al.* 2017) i.e., non-SCI species.

Rates of bird building collision in wild populations are difficult to measure. While external factors such as weather, season and bird behaviour can influence collision rates, a number of features of a building have been identified as increasing the risk/rates of collision. While building height appears to be a significant factor in collision risk, even on lower height buildings (i.e. below 11 storeys) bird mortality rates have been found to increase with the percentage of buildings covered by glass (Collins and Horn 2008, Hager *et al.* 2008, 2013, Klem *et al*. 2009, Borden *et al.* 2010), amount of light emitted from windows (Evans Ogden 2002, Zink and Eckles 2010) and vegetation or bird feeders in proximity to glass (Klem *et al*. 2004, Hager *et al.* 2014, Kummer *et al*. 2015, Parkins *et al*. 2016).

The landscape plan for the proposed development includes planting of trees in proximity to the buildings which will attract common woodland edge bird species to the site, for both nesting and foraging. These are likely to included common species such as Blackbird, Robin, Blue Tit etc, which are adaptable and regularly recorded within an urban setting. Bird collision rates are known to increase where vegetation is located in proximity to windows. For passerines, collision will usually be restricted to the lower floors of the buildings and will increase during the breeding season when juvenile birds which are at higher risk of collision, will be present at the site.

Large amounts of uninterrupted glazing on a building can produce a mirroring or transparent effect, causing glass to be completely invisible to birds. The largest risk factor for building collision appears to be the proportion and the absolute amount of glass on the building façade. Klem *et al.* (2009) calculating that every increase of 10% in the expanse of glass correlates to a 19% increase in bird mortality in spring and 32% in fall. A number of other studies have supported these conclusions (Collins and Horn (2008), Dunn (1993) and Kahle *et al*. (2015)).

While there will be vegetation in proximity to the buildings at the former Tedcastles site, there a no large expanses of glazing which could results in larger scale collisions i.e., flocks of birds. Glazed areas on all blocks, including Block A which will be 35 storeys in height but glazing is broken up with vertical and horizontal areas of concrete. Similarly, the lack of large areas of glass will limit the light emitted from windows at night and will reduce the risk of nocturnal

collisions. It is noted that tall buildings in the South Docks area have been a feature of the landscape for decades. In some cases, birds have used these to their advantage, such as Peregrine Falcon using tall buildings here as perch and nesting sites. Existing pylons adjacent to the site also create a risk of collision. In this context, birds which use this area are likely to regularly traverse and avoid collision in this cluttered urban setting.

All buildings pose some level of collision risk and the proposed buildings and landscaping of the site will inevitably increase rates of collision. These will largely be on the lower storeys on the buildings and will generally involve common passerine bird species. Rates of collision are likely to be higher during the breeding season when immature, inexperienced birds are present at the site (Rose and Bailey 1992).

The landscaping and new buildings at the site will increase collision mortality for common bird species and this will have a slight, negative effect on local bird populations. However, overall given that the landscape planting will increase nesting and foraging habitat for birds, this will remain a positive impact on local bird populations. Overall, the impact on birds during operation is predicted to be negative, not significant and long term at a local level.

10.4.4.8 Potential Effects on Other Species

The newly profiled open channels and swales at the site could potentially provide habitat for amphibian species such as Common Frog.

Ivy is particularly important to many insects before they go into hibernation. Some of the main insect species which forage on the nectar and pollen of ivy are bees, hoverflies and common wasps.

The newly planted meadows and native trees, insect hotels and wood piles at the site are likely to provide habitat for invertebrate species. Pollinator friendly species have been incorporated into wildlife buffer zone within the landscape plan to encourage invertebrates, including *Rubus fruticosus, Crataegus monogyna* and *Hyacinthoides non scripta*.

Overall, the impact of the proposed development on other fauna is predicted to be negative, not significant and long-term

10.4.5 Decommissioning

Ecology and invasive species surveys will be carried out prior to decommissioning and appropriate mitigation will be provided based on up-to-date data and in line with the current guidelines. The original habitats will be restored, and levels of noise, lighting and disturbance will return substantially to levels pre-construction. Therefore, no significant effect from decommissioning or the decommissioning process will occur.

10.5 Mitigation Measures and Monitoring

10.5.1 Mitigation

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage and mitigation measures will function effectively in preventing significant ecological impacts. The following mitigation measures will be implemented:

A Construction Environmental Management Plan (CEMP) has been prepared (included as **Appendix 5.1** of this EIAR). The CEMP contains the construction mitigation measures, which are set out in this EIAR, and also the Invasive Species Management Plan for the site.

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority, Dublin (2010).
- *Control of water pollution from construction sites. Guidance for consultants and contractors (*C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the River Lee and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding on-site impacts, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the site manager;
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and
- Co-operate as required, with site inspections.

10.5.1.1 Water Quality

The employment of good construction management practices will minimise the risk of impacts to soil, stormwater run-off, seawater or groundwater. A summary of the measures relevant to hydrology are provided as follows and are in accordance with Construction Industry Research and Information Association (CIRIA) guidance – *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (Masters-Williams *et al*, 2001).

Full details on the mitigation measures which will be implemented to maintain water quality during construction is provided in **Chapter 5** *Construction Strategy*, **Chapter 13** *Land, Soils, Geology and Hydrogeology*, **Chapter 14** *Water*, and in the CEMP included in **Appendix 5.1**.

10.5.1.2 Noise

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

Specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised. These measures are described in **Chapter 9** *Noise and Vibration* and in the CEMP included as **Appendix 5.1**, will minimise the risk of adverse impacts from the noise and vibration during the construction phase.

10.5.1.3 Lighting

Site lighting during construction will be directed away from adjoining areas, to minimise light spill outside the proposed development site boundary. Further detail on construction lighting mitigation measures is included in the CEMP (included as **Appendix 5.1)**.

During operation, lighting design will ensure that light spillage outside the site is minimal and there will be no light spillage onto sensitive habitats outside the site boundary i.e., River Lee.

10.5.1.4 Invasive species

Management programmes will need to be deployed as soon as practically possible in light of the potential for further dispersal of Japanese knotweed vector material, within overall masterplan boundary, which could impact on the success of the selected management programme.

It is recommended that any growth of other invasive species are treated, where required, with chemical herbicide during the optimum treatment period to avoid any future encroachment by these species and to minimise long-term landscape maintenance requirements. Full details on the proposed management plans are

included as an appendix to the **Appendix 5.1** *Construction Environmental Management Plan*.

10.5.1.5 Protection of Habitats

The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1 March to the 31 August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. If works are carried out during the breeding season, a pre-construction survey will be carried out by the project ecologist and if birds are detected appropriate mitigation measures will be implemented.

The Landscape Design Plan for the proposed development site includes the following:

- Tree planting
- Small multi-stem trees
- Tree planting in wetland area
- Native woodland planting
- Shrub planting
- Swale planting
- Wildlife buffer planting
- Meadow and bulb planting
- Riparian woodland planting
- Ecological Park also includes the following:
    - Five log piles using native logs for hedgehogs
    - Five insect hotels
    - Six bat boxes

10.5.1.6 Bats

During the site works, general mitigation measures for bats will follow the National Road Authority's '*Guidelines for the Treatment of Bats during the Construction of National Road Schemes'* NRA (2005c) and *'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 2*5' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats or prevent avoidable effects resulting from significant alterations to the immediate landscape.

A number of buildings within the site will be demolished. No signs of bats were recorded within these buildings and they have a low potential as roosting habitat. However, as a precautionary measure, the following measures will be implemented prior to and/or during demolition.

Mitigation measures will be agreed with the NPWS prior to any demolition works.

- Ideally work on buildings will take place outside the summer season between and October March inclusive when bats will be hibernating as the buildings to be removed have negligible potential as winter hibernation sites.
- In all cases immediately in advance of demolition a bat specialist will undertake an examination of the building. Emergence surveys will be carried out if buildings are affected during the April to September period. If bats are present at the time of examination it is essential to determine the nature of the roost (i.e. number, species, whether it is a breeding population) as well as its exact location.
- If bats are recorded in buildings earmarked for demolition, special mitigation measures to protect bats will be put in place and a license to derogate from the conservation legislation will be sought from the NPWS.
- The contractor will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary.
- If roosting habitat for bats is removed, replacement habitat will be provided.

No significant mature trees will be removed during site clearance. Although mature trees with the potential of be of significant value as bat roosts are absent from the site, the following precautionary measures will be implemented.

- Tree-felling will ideally be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken.
- Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted.
- No ‘tidying up’ of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety.
- Treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage.
- During construction directional lighting will be employed to minimise light spill onto adjacent areas. Where practicable during night-time works, there will be no directional lighting focused towards the River Lee or boundary habitats and focusing lights downwards will be utilised to minimise light spillage.

- It is proposed that six bat boxes will be located within the proposed development site (https://www.wildcare.co.uk/vincent-pro-bat-box-10651.html for box proposed or similar). The boxes will be erected by an ecologist taking into account landscape plans, vehicle movements and lighting.

As noted above, lighting mitigation measures will follow *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010).

All mitigation measures including detailed method statements will be agreed with the NPWS prior to commencement of works, which could affect any bat populations on site.

10.5.1.7 Birds

As noted above where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the study area boundary.

As a biodiversity enhancement measure ten bird nesting boxes (various types including open fronted and entrance hole) will be located within the site boundary, if practicable, at locations specified by an ecologist.

It is intended that ten Swift boxes will be incorporated into buildings, if practicable. These will be located on the northern side of the buildings in areas free from overhanging vegetation, ledges and/or glazing. These will be built into the walls of the structure using Schwegler 17A (or similar see https://www.nhbs.com/no-17a- schwegler-swift-nest-box-triple-cavity). The location of these nest boxes will be specified by an ecologist.

It is noted that provision of woodland planting and the use of more diverse grassland planting will provide additional nesting and feeding sites for birds, particularly as these habitats mature.

10.5.2 Monitoring

Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR and associated ecological reports so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented, and assessed.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The contractor will be required to inform the Employer's Representative of any continuous exceedances of criteria.

Further detail on-site inspections and audits is included in the CEMP (included as **Appendix 5.1)**.

10.6 Cumulative Effects

A number of developments/plans are proposed and permitted in the vicinity of the proposed development and the potential for cumulative impacts with these projects/plans were considered. These projects are assessed below in **Table 10.11**.

Table 10.11 Potential Cumulative Effects

Plans and Key Policies/Issues/Objectives		
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. Ensure full compliance with relevant EU legislation Prevent deterioration Meeting the objectives for designated protected areas Protect high status waters Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation in accordance with key environmental policies, issues and objectives of this management plan will result in positive cumulative effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2016 -2020	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a	The implementation in accordance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to cumulative impacts with the proposed works.

Plans and Key Policies/Issues/Objectives		
	sustainable conservation focused manner. EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	
Irish Water Capital Investment Plan 2014-2016	Proposals to upgrade and secure water services and water treatment services countrywide.	Likely net positive impact due to water conservation and more effective treatment of water.
Water Services Strategic Plan (WSSP, 2015)	Irish Water has prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and biodiversity requirements through reducing: Habitat loss and disturbance from new / upgraded infrastructure; Species disturbance; Changes to water quality or quantity; and Nutrient enrichment /eutrophication.	The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare, and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3). The WSSP sets out the challenges we face as a country in relation to the provision of water services and identifies strategic national priorities. It includes Irish Water's short, medium, and long-term objectives and identifies strategies to achieve these objectives. As such, the plan provides the context for subsequent detailed implementation plans (Tier 2) which will document the approach to be used for key water service areas such as water resource management, wastewater compliance and sludge management. The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current

Plans and Key Policies/Issues/Objectives		
		version of the CAP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned assets. The overarching strategy was subject to AA and highlighted additional plan/project environmental assessments to be carried out at the tier 2 and tier 3 level. Therefore, no likely significant cumulative effects are envisaged.
WWTP discharges	Ringaskiddy Village WWTP, Cobh WWTP, Whitegate-Aghada WWTP, Carrigtwohill and Envrions WWTP, Cork City (Carrigrennan) WWTP, Passage-Monkstown WWTP,	Discharges from municipal WWTPs are to meet water quality standards. Irish Water Capital Investment Plan 2014-2016 and 2017 – 2021 proposes to upgrade water treatment services countrywide. Discharges from municipal WWTPs are to meet water quality standards Given that no significant effect on water quality is predicted from this proposed project no significant cumulative effects on water quality will occur.
Other developments	**The Former Cork Warehouse Company** Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Former Cork Warehouse Company site, Centre Park Road, Cork City which will be located immediately south of the proposed development site. While planning permission for this project has not yet been sought, the project will be subject to various environmental assessments including	If the construction of this project were to run concurrently with proposed developments, there is potential for in-combination disturbance effects, as the sites are located in proximity to each other. Should this situation arise, construction activities will be planned and phased, in consultation with construction management teams. No in-combination impacts were identified during the

Plans and Key Policies/Issues/Objectives		
	an Environmental Impact Assessment (EIA) Screening Report, which will include the potential for cumulative effects with the proposed development, as at that point, it is intended that details of the proposed development will be in the public domain as an application for consent with An Bord Pleanála. **The Former Ford Distribution Site** Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works. Permission was granted on the 20th April 2021. **Marina Park Development Phase 2** This project will provide improved amenities and "nature" zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023. **Monahan Road Extension** This project will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.	operational phase of the proposed development. The proposed development will not result in any significant impacts on water quality or aquatic ecology. Therefore, no cumulative impacts on water quality have been identified. No cumulative impacts are predicted to occur within the Cork Harbour SPA as a result of these proposed and permitted projects.

10.7 Residual Effects

10.7.1 Habitats

The habitats to be directly affected by the proposed development consist primarily of modified habitats with limited ecological value and are classified as Local importance (Lower to Higher value). No impacts on habitats within the Cork Harbour SPA or other designed sites e.g., Douglas River Estuary pNHA or any other NHA/pNHA will occur. No rare or uncommon plant species were recorded within the proposed development site.

The existing habitats onsite include a large component of non-native and/or invasive species. To mitigate the loss of existing site vegetation, the proposed development includes a comprehensive tree and shrub planting strategy aimed at using a range of native and high-value non-native species throughout the development. While the existing habitats have some value for local bird and bat species, the higher proportion of native species including in the landscape plan means that there will be neutral impact on habitats at the site during operation.

10.7.2 Non -native Invasive Species

Any potential risks from these species will be managed during the construction phase and therefore no residual effect from the spread of invasive species will occur.

10.7.3 Water Quality

No significant direct or indirect residual effects on water are predicted as a result of the proposed development.

10.7.4 Fauna

To mitigate the loss of existing site vegetation, the proposed development includes a comprehensive tree and shrub planting strategy aimed enhancing the biodiversity potential of the site in line with the All- Ireland Pollinator Plan using a range native and high-value non-native species. Following the implementation of the landscape plan, impacts on bats, birds and invertebrate species will be slight, negative in the short-term and negative, not significant in the long-term as new planting matures.

Based on the above, removal of trees, which will incorporate specific mitigation measures, will not have a significant impact on local bat populations It is also noted that bat boxes will be provided which will provide bat roosting habitat which is likely to be of higher value for bats than that provided by the trees to be removed. Detailed mitigation will be put in place prior to and during construction to prevent any potential impacts on bats.

Levels of disturbance and lighting will increase during the construction and operation phases, but it is noted that the existing site and the area in proximity to the proposed development are subject to high levels of disturbance and that, to a

degree, any local fauna which utilise this area will be habituated to high levels of disturbance. No light spillage will occur on the River Lee. No significant effect due to habitat fragmentation or significant effects on commuting routes for fauna will occur. Impacts on fauna will be negative in the short-term and negative, not significant in the long-term as new planting matures.

The final height of the buildings at the proposed development will be up to 35 storeys in height. While the buildings are likely to increase rates of collision for common local bird species, the impact on birds due to collision during operation will be localised negative, slight and long-term at a local level.

Other plans and projects relevant to the proposed development and potential cumulative impacts were assessed and no significant cumulative impacts were identified. No significant residual cumulative effects will occur.

The NIS, which is included as part of the planning application documentation, concluded the proposed development will not pose a significant risk to SCI species within the Cork Harbour SPA.

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11 Archaeology, Architectural and Cultural Heritage

11.1 Introduction

This chapter was prepared by John Cronin and Tony Cummins of John Cronin and Associates. Details of John and Tony's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

The chapter assesses the impacts of the proposed development as described in **Chapter 4** on the known and potential cultural heritage resource. The term '*Cultural Heritage'* encompasses heritage assets relevant to both the tangible resource (archaeology, architecture/built heritage); and non-tangible resource (including history, folklore, tradition, language, and place names). The archaeological, architectural and cultural heritage resource within a study area encompassing the proposed development site and an area extending for 500m from its boundary were reviewed as part of the impact assessment.

11.2 Assessment Methodology

11.2.1 Guidelines Relevant to Discipline

The assessment was prepared in accordance with EIA requirements of codified Council Directive 2011/92/EU as amended by EIA Council Directive 2014/52/EU. It was informed by relevant policies and objectives in the local authority development plans and guidelines published by the EPA (2017) *Draft Guidelines for information to be contained in EIAR*, as well as *Architectural Heritage Protection: Guidelines for Planning Authorities* (Department of Arts, Heritage and Gaeltacht 2011) and the *Framework and Principles for the Protection of Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands 1999).

11.2.2 Desktop Study

The assessment commenced with a desktop study which was undertaken to identify all recorded archaeological sites and designated architectural structures within the study area and also endeavoured to identify any hitherto unrecorded or undesignated features of cultural heritage significance within the area. This information has provided an insight into the development of the study area over time and assisted in an evaluation of the potential presence of unrecorded cultural heritage assets within the proposed development site.

The Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) for County Cork were the principal sources consulted for identifying known archaeological sites within the study area. The Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted to assess the designated architectural heritage resource. A

summary of the legal and planning context for these designations is provided in **Section 11.3** of this chapter.

The following presents an overview of the sources consulted as part of the desktop study and all online datasets were subject to final review in March 2022:

Development Plans: These publications are published by local authorities and lists the buildings and structures included in Record of Protected Structures (RPS) and the extent of Architectural Conservation Areas and Zones of Archaeological Potential. They also present the authorities policies and objectives designed for the protection of the archaeological and architectural heritage resources within their administration areas. The study area is located within the Cork City Council administrative area and the *Cork City Development Plan 2015-2021* and the *South Docks Local Area Plan 2008* were consulted as part of the desktop study. The *Draft Cork City Development Plan 2022-2028* was also consulted.

Archaeological Inventory of County Cork Volumes 2 and 5: These publications present summary descriptions of the recorded archaeological sites within this area of County Cork.

National Monument Service Historic Environment Viewer and Wreck Viewer: these online resources (www.archaeology.ie) provide access to the National Monuments Service's databases for the Sites and Monuments Record, the Wreck Inventory of Ireland Database and the National Inventory of Architectural Heritage.

UNESCO World Heritage Sites and Tentative List: There are currently two world heritage sites in Ireland while a number of other significant sites are included in a Tentative List (2010) that has been put forward by Ireland for inclusion. There are no examples located within the region containing the proposed development.

National Inventory of Architectural Heritage (NIAH): The NIAH provides a comprehensive catalogue of significant architectural heritage structures within Ireland. While inclusion in the inventory does not provide statutory protection to a structure it is intended to advise local authorities during the compilation of their Record of Protected Structures.

Database of Irish Excavation Reports: This database contains summary accounts of all licensed archaeological excavations carried out in Ireland (North and South) from 1970 to present. Current data was accessed via www.excavations.ie.

National Museum of Ireland (NMI) Topographical Files: These files contain records of the known findspots for artefacts held within the museum's collection. The files are archived in the NMI premises in Kildare Street, Dublin and were inspected as part of the assessment.

Historical publications, cartographic and photographic sources: Various published and unpublished sources as well as historical maps and photographs were consulted. Relevant extracts from historical maps and photographs are presented within **Section 11.2.2** and a list of consulted publications is provided in **Section 11.8**.

Aerial/Satellite Imagery: Available online aerial and satellite images of the study area were consulted in order to determine if any traces of unrecorded, sub-surface archaeological sites were evident.

Cork City Library and National Library of Ireland: The online catalogues of these libraries were consulted, including historic map and photograph records.

Placenames Database of Ireland: This online database provides a comprehensive management system for data, archival records and place names research conducted by the State.

Ireland's National Inventory of Intangible Cultural Heritage: this inventory was established to protect, promote and celebrate Irish living cultural heritage practices, customs, crafts and traditions.

Irish National Folklore Collection: transcribed material from the National Folklore School's Collection archive which has been digitised and published at www.duchas.ie.

11.2.3 Site Inspections

The proposed development site was inspected by the authors in October and November 2021 and was assessed in terms of historic landscape, existing use, including ground conditions and standing structures, and the potential for the presence of previously undetected archaeological features and structures of potential architectural, cultural or industrial heritage significance. The results of the site inspections are detailed in **Section 11.3.6** and extracts from the photographic record are presented in **Appendix 11.1**.

11.2.4 Difficulties Encountered in Compiling Information

There were no difficulties in compiling information or access constraints encountered during the compilation of this assessment.

11.2.5 Statutory Consultation

The Development Applications Unit's (Department of Housing, Local Government and Heritage) response to a scoping request issued for the proposed development was received on 17 November 2021 and no specific feedback was provided with regard to archaeological or built heritage.

11.2.6 Assessment Methodology

The following presents a summation of the criteria used to assess impacts is provided in order to clearly outline the methodology specifically applied to the cultural heritage resource.

Duration of Effect

The duration of effects is assessed based on the following criteria:

- Momentary (seconds to minutes)

- Brief < 1 day
- Temporary <1 year
- Short-term 1-7 years
- Medium Term 7-15 years
- Long Term 15-60 years
- Permanent > 60 years
- Reversible: Effects that can be undone, for example through remediation or restoration

Quality of Effect

The quality of an effect on the cultural heritage resource can be positive, neutral or negative:

- Positive Effect: a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a site in terms of managed access, signage, presentation etc. or high-quality conservation and re-use of an otherwise vulnerable derelict structure).
- Neutral Effect: no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.
- Negative Effect: a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a site etc.).

Type of Effect

The type of effect on the cultural heritage resource can be direct, indirect or no predicted impact:

- Direct Impact – where a cultural heritage site is physically located within the footprint of the proposed development, which will result in its complete or partial removal.
- Indirect Impact – where a cultural heritage site or its setting is located in close proximity to the footprint of the proposed development.
- No predicted impact – where the proposed development will not adversely or positively affect a cultural heritage site.

Magnitude of Impact

This is based on the degree of change, incorporating any mitigation measures, on a cultural heritage asset and can be negative or positive. The magnitude of impact is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible and has been informed by criteria published in the International Council on Monuments and Sites (ICOMOS 2011) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (Table 12.1).

Table 11.1 Magnitudes of Effect on Cultural Heritage Assets

Magnitude	Description
High	Most or all key archaeological or architectural materials affected such that the resource is totally altered Comprehensive changes to setting Changes to most or all key historic landscape elements, parcels or components; extreme visual effects; fundamental changes to use or access; resulting in total change to historic landscape character Major changes to area that affect Intangible Cultural Heritage activities or associations or visual links and cultural appreciation
Medium	Changes to many key archaeological or historic building materials/elements such that the resource is clearly/significantly modified Considerable changes to setting that affect the character of the archaeological asset Changes to the setting of a historic building, such that it is significantly modified Change to many key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, considerable changes to use or access, resulting in moderate changes to historic landscape character Considerable changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Low	Changes to key archaeological materials/historic building elements, such that the resource is slightly altered/slightly different Slight changes to setting of an archaeological monument Change to setting of a historic building, such that it is noticeably changed. Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; slight changes to use or access; resulting in limited change to historic landscape character Changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation
Negligible	Very minor changes to key archaeological materials or setting Slight changes to historic building elements or setting that hardly affect it Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes to use or access; resulting in very small change to historic landscape character Very minor changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation

Value assessment criteria

While various national and local authority legal designations exist for elements of the Irish cultural heritage resource (see **Section 11.3.2**), there are currently no formal criteria for grading the values of individual elements of this resource.

The non-statutory National Inventory of Architectural Heritage (NIAH) does apply a ranking system (Local, Regional and National) to structures included in that inventory and, while these rankings do not confer graduated levels of protection they have been utilised as a value indicator for NIAH-listed structures for the purpose of this assessment.

Given the absence of formal national criteria the evaluations used in this assessment have been informed by guidelines presented in the ICOMOS 2011

Guidance on Heritage Impact Assessments for Cultural World Heritage Properties which comprise the following value headings: Very High; High; Medium; Low, Negligible and Unknown Potential (summarised in **Table 11.2**).

The evaluation of the values of cultural heritage assets is not intended as definitive but rather as an indicator which contributes to a wider judgment based the individual circumstances of each asset. The application of values included a consideration of their legal designations (e.g., National Monuments), condition/preservation; documentary/historical significance, group value, rarity, visibility in the landscape, fragility/vulnerability and amenity value on a case-by-case basis.

It is noted that archaeological monuments, whether extant or levelled, have the potential to possess sub-surface attributes, such as artefacts, burials or other archaeological remains, that may possess values that cannot be discerned without recourse to archaeological excavation but are unlikely to be affected in the absence of direct negative impacts.

The values assigned to identified cultural heritage assets within the study area were determined following the completion of the desktop research combined with subsequent site inspections and are detailed in **Section 11.4** of this chapter.

Table 11.2 Value of Cultural Heritage Assets Criteria (after ICOMOS 2011)

Value	Example of Asset Types
Very High (International)	World Heritage Sites (including Tentative List properties) Sites, buildings or landscapes of acknowledged international importance Intangible associations with individuals or innovations of global significance
High (National)	Nationally designated sites, buildings and landscapes of significant quality, rarity, preservation and importance Undesignated assets of the quality and importance to be designated Assets that can contribute significantly to acknowledged national research objectives Archaeological Landscapes with significant group value Intangible associations with individuals or innovations of national significance
Medium (Regional)	Designated or undesignated assets that can contribute significantly to regional research objectives, including buildings that can be shown to have exceptional qualities in their fabric or historical associations Conservation Areas and historic townscapes containing buildings that contribute significantly to its historic character Intangible associations with individuals or innovations of regional significance
Low (Local)	Assets compromised by poor preservation and/or poor survival of contextual associations Assets of limited value, but with potential to contribute to local research objectives Historic Townscape or built-up areas of limited historic integrity in their buildings and settings

Value	Example of Asset Types
	Intangible associations with individuals or innovations of local significance
Negligible	Assets with very little or no surviving archaeological interest Landscapes little or no significant historical interest Buildings or urban areas of no architectural or historical note; buildings of an intrusive character
Unknown Potential	Assets whose importance has not been ascertained Buildings with some hidden (i.e. inaccessible) potential for historic significance

Significance of Effects

This is based on a consideration of the Magnitude of the Impact combined with the Value of the cultural heritage asset. The Significance can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (**Table 11.3** and **11.4**).

Table 11.3 Significance of Effects (per EPA Draft EIAR Guidelines 2017)

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

Table 11.4 Significance of Effects Matrix (after EPA Draft EIAR Guidelines 2017)

Magnitude of Impact	*High*	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	Medium	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	Low	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	Negligible	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		Negligible	*Low*	*Medium*	*High*
		Value/Sensitivity of the Asset			

11.3 Baseline Conditions

11.3.1 General Location

The proposed development site is located to the east of the Cork southern docklands in an area that was gradually reclaimed from river slob lands by the extensive introduction of infill deposits during the 18th and 19th centuries and was then developed as an industrial and commercial area during the 20th century. Several former brownfield sites within the general area have been redeveloped as commercial premises in recent decades. The proposed development area comprises a largely brownfield site located on the north side of Centre Park Road which was a vacant plot until developed as a coal depot site during the late 20th century. The current line of the south bank of the River Lee is located approx. 30m to the north of the site boundary while a 1950s ESB property bounds the western side with the Marina Commercial Park located further to the west which contains numerous small commercial units within the former Ford and Dunlop factory sites. There are no recorded archaeological sites or designated architectural heritage structures/areas located within the boundary of the proposed development.

11.3.2 Legal and Planning Policy Framework

The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the European Convention on the Protection of the Archaeological Heritage (Valletta Convention) and the European Convention on the Protection of Architectural Heritage (Grenada Convention).

The national legal statutes, guidelines and planning documents relevant to this assessment include:

- National Monuments Act, 1930 (and amendments in 1954, 1987, 1994 and 2004);

- Heritage Act,1995;
- National Cultural Institutions Act,1997;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act,1999;
- Planning and Development Act 2000;
- Architectural Heritage Protection: Guidelines for Planning Authorities, (Department of Arts, Heritage, and the Gaeltacht 2011);
- Framework and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands 1999);
- Cork City Development Plan 2015-2021 (Cork City Council);
- Draft Cork City Development Plan 2022-2028 (Cork City Council; and
- South Docks Local Area Plan 2008 (Cork City Council).

11.3.2.1 Archaeological Legal and Planning Framework

The administration of national policy in relation to archaeological heritage management is the responsibility of the National Monuments Service (NMS) which is currently based in the Department of Housing, Local Government and Heritage. The National Monuments Act of 1930 and its Amendments are the primary means of ensuring the satisfactory protection of the archaeological resource and include provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites as National Monuments as well as archaeological sites listed in the Register of Historic Monuments (RHM), the Record of Monuments and Places (RMP), the Sites and Monuments Record (SMR), and the assignment of Preservation Orders and Temporary Preservation Orders on endangered sites.

Section 2 of the National Monuments Act, 1930 defines a National Monument as '*a monument or the remains of a monument, the preservation of which is a matter of national importance*'. The State may acquire or assume guardianship of examples through agreement with landowners or under compulsory orders. There are no National Monuments or archaeological sites with Preservation Orders located within the study area.

The National Monuments (Amendment) Act, 1994 made provision for the establishment of the RMP which comprises a record of the known archaeological sites within the State. The RMP, which is based on the earlier RHM and SMR, comprises county-based lists of all recorded archaeological sites with accompanying maps. All listed sites receive statutory protection under the National Monuments Act 1994 which requires that the NMS must be given two months' notice in advance of any work proposed at their locations. There are no recorded archaeological sites within the proposed development site or within 200m of its boundary. There are two examples within the surrounding study area which comprise post-medieval houses located in lands on the opposite side of the River Lee (CO074-101---- and CO074-086----). Further details on the

archaeological and historical context of the study area are provided in **Section 11.2.2**.

The Cork City Development Plan 2015-2021 includes the following policies and objectives in relation to the protection of the archaeological resource within the city:

> *Objective 9.4 Archaeological Heritage: Cork City Council will aim to protect, record and promote the rich archaeological heritage of the city*
>
> *Objective 9.5 Sites of Established Archaeological Interest: Cork City Council will protect and enhance the archaeological value of the sites (and their settings) listed in the Record of Monuments and Places (RMP).*
>
> *Objective 9.6 Newly Discovered Sites: Cork City Council will protect and preserve archaeological sites discovered since the publication of the Record of Monuments and Places (RMP)*
>
> *Objective 9.7 Preservation of archaeological remains in-situ: In accordance with national policy (and in the interests of sustainability) impacts on the buried archaeological environment should be avoided where possible.*
>
> *Objective 9.15 Surveys, Test Trenching and Monitoring: Archaeological surveys, test excavation and /or monitoring will be required for development proposals in areas of archaeological importance, if the application is likely to impact upon in-situ archaeological structures or deposits*
>
> *Objective 9.16 Large-scale Development (outside the boundaries of a RMP): Outside the Zone of Archaeological Potential of a RMP, where in the opinion of the City Council a development involves major ground disturbance; archaeological conditions may be applied particularly in the vicinity of known monuments.*
>
> *Objective 9.18 Industrial Archaeology: All development proposals for industrial buildings and sites of industrial archaeological importance must be accompanied by an archaeological assessment of the building(s) and their surrounding environment. Retention and/or incorporation of industrial buildings will be encouraged. Where in exceptional circumstances demolition is permitted, a detailed building report will be required.*

The South Docks Local Area Plan (2008) includes the following section in relation to the mitigation measures for potential unrecorded elements of the archaeological resource within this area of the city:

> *Section 4.7.2.3 Archaeological Monitoring: The possibility that there was earlier human settlement within the South Docks area cannot be discounted. Archaeological monitoring is therefore required in areas where potential for impacts on archaeological deposits or material exists (particularly where development requires bulk excavation or dredging works at rivers edge). Monitoring activities shall be carried out by a licensed archaeologist and method statements for archaeological evaluation must be agreed with the City Council in advance of development.*

The local area plan also includes a Strategic Environmental Assessment which recognises the industrial archaeological heritage of the area and recommends the following:

> *Pre-development work will require an archaeological appraisal, involving a preliminary survey of the surviving buildings to ascertain their importance; and a survey of the buildings directly affected by the proposed development. This survey would form the basis of any future conservation work required by the development.*

In addition, the Draft Cork City Development Plan 2022-2028 also outlines a range of objectives in relation to the future protection and promotion of the archaeological resource (Objectives 8.1 to 8.10 inclusive) which cover a similar range of objectives as those included in the 2015 City Development Plan.

11.3.2.2 Architectural Heritage Legal and Planning Framework

The Planning and Development Act 2000 requires Planning Authorities to maintain a '*Record of Protected Structures*' of buildings and other structures that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. All structures listed for protection in current Development Plans, are designated Protected Structures and planning permission is required for any works to such structures that would affect their character. A protected structure also includes the lands and other structures within its curtilage. While the notion of curtilage is not defined by legislation, the Architectural Heritage Protection Guidelines for Local Authorities (Department of Arts, Heritage and the Gaeltacht 2011), describes it as the parcel of land immediately associated with a structure and which is (or was) in use for the purposes of the structure. The Planning and Development Act 2000 also provides for the inclusion of objectives for preserving the character of places, areas, groups of structures or townscapes of special interest designated as Architectural Conservation Areas. The National Inventory of Architectural Heritage (NIAH) is a non-statutory inventory established to record architectural heritage structures within the State and to advise local authorities in relation to structures of architectural heritage significance within their administrative areas. There are no Protected Structures or NIAH-listed structures located within the proposed development site while various examples are located within the surrounding study area and these are identified in **Sections 11.3.5** and **11.3.8** (see also **Figure 11.8**). The proposed development site is not located within an Architectural Conservation Area.

The Cork City Development Plan 2015-2021 presents a number of objectives intended to protect the architectural heritage resource within the city and these include the following:

> *Objective 9.23 Record of Protected Structures (RPS): Cork City Council will maintain a Record of Protected Structures within the Cork City Development Plan, which shall include structures or parts of structures which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, and which it is an objective to protect.*
>
> *Objective 9.25 Recording of Protected Structures: Any alteration or demolition of a Protected Structure shall require a full record to Best Conservation Practice.*
>
> *Objective 9.26 Historic Landscapes: Cork City Council will ensure the historic landscapes and gardens throughout the city are protected from inappropriate development.*
>
> *Objective 9.27 Enabling Development: Cork City Council will consider permitting the following, notwithstanding the zoning objectives of the area: - The restoration of a Protected Structure, or other buildings of architectural or other merit, currently in poor condition, to conservation best practice standard for any purpose compatible with the character of the building; - The conservation of a Protected Structure or other building of architectural merit or other merit, independent of its current condition, to a tourist related use, in cases where, in the City Councils opinion, the converted building is capable of*

functioning as an important additional tourist attraction or facility, and the use is compatible with the character of the building.

Objective 9.28 Protection of NIAH and other structures of built heritage interest: The City Council as planning authority aims to protect structures of built heritage interest. The "Ministerial Recommendations", made under Section 53 of the Planning Acts, asking the City Council to protect structures will be taken into account when the City Council as planning authority is considering proposals for development that would affect the historic interest of these structures of significance. The City Council will protect structures by making additions to the Record of Protected Structures, designating Architectural Conservation Areas, or other appropriate means.

Objective 9.29 Architectural Conservation Areas: To seek to preserve and enhance the designated Architectural Conservation Areas in the City.

Objective 9.34 Individual buildings of character in suburban areas/ villages: There will be a presumption against the demolition of buildings of Historic or Vernacular character in suburban areas/villages.

Objective 9.35 Elements of the Built Heritage: To ensure the protection of important elements of the built heritage and their settings as appropriate.

The South Docks Local Area Plan (2008) includes the following objectives (plan ref. SD 35) in relation to the architectural heritage resource within this area of the city:

Cork City Council will seek to conserve and protect buildings of architectural, historical, archaeological, artistic, cultural, scientific, technical and social interest in the South Docks in the following manner:

Preservation of Protected Structures and sites of historical, architectural or artistic interest which contribute to the character of the South Docks;

Preparation of Conservation Strategies/Plans for the Ford Complex and the Georgian Docklands;

Ensure pre-development archaeological recording, survey and monitoring is carried out where appropriate;

Sensitive re-use or adaptation of buildings where appropriate will be encouraged;

Positively encourage and facilitate the careful refurbishment of historic buildings for sustainable and economically viable uses, including the provision of cultural facilities;

Ensure the context and setting of heritage structures and Protected Structures are fully considered in the assessment of new development proposals;

Section 4.7.3 of the local area plan also includes sub-sections in relation to the value of the following cultural heritage assets located within study area: Cork-Blackrock-Passage Railway line, the Navigation Wall and the former Fords Plant.

In addition, the Draft Cork City Development Plan 2022-2028 also outlines a range of objectives in relation to the future protection and promotion of the architectural heritage resource (Objectives 8.17 to 8.30 inclusive) which are broadly similar to those included in the 2015 City Development Plan.

11.3.3 Intangible Cultural Heritage

In December 2015 Ireland ratified the 2003 UNESCO *Convention for the Safeguarding of the Intangible Cultural Heritage* and established a National Inventory for Intangible Cultural Heritage to protect, promote and celebrate Irish

living cultural heritage practices, customs, crafts and traditions. The foundational collection of the Irish National Folklore Collection (the Irish Folklore Commission Collection 1935-1970) was inscribed into the UNESCO Memory of the World Register (2017) in recognition of its 'world significance' and 'outstanding universal value to culture'. Similarly, Irish Hurling (2018) and Irish Harping (2019) has been inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity. In July 2019, the Minister for Culture, Heritage and the Gaeltacht approved the inscription of thirty cultural heritage elements on Ireland's permanent National Inventory of Intangible Cultural Heritage[40]. In addition, Chapter 8 of the Cork City Development Plan 2015-2012 outlines various strategic objectives in order to enhance the Cultural Heritage of the city including intangible aspects of the resource.

11.3.4 Desktop Study

The following section presents summary details of the archaeological and historical context of the study area and its environs with references to the recorded archaeological sites and designated architectural structures/areas located within the study area. Datasets have been interrogated and retrieved largely from State organisations and are considered accurate and current per publicly available information. The dating framework used for each period of the archaeological record is based on the *Guidelines for Authors of Reports on Archaeological Excavations published by the National Monuments Service* (2006).

11.3.4.1 Recorded Archaeological Sites

The proposed development site is located approximately 2.3km to the east of the medieval city of Cork and is not located within, or close proximity to, the zones of archaeological potential identified in the Cork City Development Plan 2015-2021. As noted above, there are no recorded archaeological sites located within the proposed development site while there are two examples within the surrounding 500m study area. These comprise late 18th/early 19th century country houses (CO074-086---- and CO074-101----) located in the Montenotte area on the north side of the River Lee and the nearest of these (CO074-101----) is approximately 200m to the north of the site boundary.

A review of the National Monument Service's online Wreck Viewer revealed that the location of a wreck (NMS ref. W11312) of unknown date or classification is indicated in an area of the Marina outside the north end of the proposed development. The online record does not provide any descriptive information apart from the place of loss being recorded in the River Lee, Cork City and cites the UK Hydrographic Office (UKHO) as providing the co-ordinates for the location.

The Excavations Database does not list any licensed archaeological investigations within the proposed development area but does contain descriptions of a number of investigations undertaken within the surrounding streetscape. These

[40] https://nationalinventoryich.chg.gov.ie/national-inventory/

investigations did not reveal anything of archaeological significance and the following provides a summary of the results.

Archaeological monitoring of trench excavations associated with laying of ESB cables within the Marina area in 1996 uncovered no archaeological remains (Lane 1996).

Archaeological monitoring of the Cork Main Drainage Scheme works on Centre Park Road in 1999 recorded stratigraphy associated with 19th and 20th century layers of reclaimed deposits over natural riverine gravelly silts that did not yield any archaeological material (Ni Loingsigh 1999).

Archaeological monitoring of ground works in 2015 was undertaken during the redevelopment of Páirc Uí Chaiomh to the southeast and did not reveal anything of archaeological significance (Purcell 2015).

Archaeological test trenching in 2008 within the Cleve Hill House property along a section of the Blackrock Road to the south revealed nothing of archaeological significance (Hurley 2008).

Archaeological monitoring of dredging works adjacent to the north bank of the river channel to the northeast of the proposed development revealed nothing of archaeological significance (Bangerter 2008).

11.3.4.2 Archaeological and Historical Context

Prior to the extensive land reclamation works undertaken in recent centuries the location of the proposed development site, and the wider riverside area along the Marina and the South Docklands, was formerly situated within the River Lee slob lands to the north of the Mahon peninsula. While there are no recorded prehistoric sites within the study area, lands within the environs of rivers were a known focus of settlement and fishing activities within the Irish landscape since the earliest known settlement of the island during the Mesolithic period (7000–4000 BC). The potential exists for the presence of sub-surface prehistoric remains, such as artefacts, trackways, fish-traps and jetties, within the environs of river channels. This was highlighted by the discovery of the remains of Mesolithic fish traps and other prehistoric sites during archaeological monitoring of ground works adjacent to the River Liffey along the Dublin quays (e.g., McQuade 2004).

While outside the study area, a previously unrecorded area of prehistoric activity was uncovered during pre-development archaeological investigations in advance of the construction of the Mahon shopping centre near the east end of the peninsula, at a distance of c.3km to the southeast of the proposed development (Purcell 2003). In addition, an artefact known as the Cork Horns was discovered in 1909 near the south jetties in the Victoria Road area which is located approx. 1.4km to the west. The horns are ornamented in the La Tène style typical of the later Iron Age period and it is thought that they were probably once attached to a leather helmet which did not survive (O' Kelly 1961). A review of the National Museum of Ireland Topographical File archives did not reveal any records of the discovery of any other archaeological objects within the environs of the proposed development.

A number of placenames within the modern suburbs to the south of the study area are indicative of early ecclesiastical activity, e.g., Ballintemple (town of the church). This name is likely associated with an 18th-century graveyard, located *c.* 950m to the south of the proposed development and is a recorded archaeological site (CO074-065----) which has a tenuous association with a late 14th-century Knights Templar church (Power 1994). Two early medieval souterrain sites, which comprise underground chamber and passage structures, and have been identified on the Mahon peninsula (CO074-064---- and CO074-133----) and neither are located within the study area. It is likely that the extensive development of the suburbs within the lands to the south of the study area during the 19th and 20th centuries resulted in the widespread removal of other sub-surface archaeological sites that may have existed within this area.

The proposed development site is located c. 2.3km to the east of the medieval core of Cork city and is not depicted on the 16th and 17th century maps of the city at a time when it formed part of slob lands within the River Lee channel that was likely adjacent to agricultural lands to the south. The steep slopes that delimit the back gardens of the existing houses on the north side of Blackrock Road in the area to the south formed the edge of the tidal channel prior to extensive reclamation works carried during the late 18th and 19th centuries. A review of 19th century maps of the area indicates that this former riverbank was located *c.*180m to the south of the proposed development site.

The reclamation and subsequent development of the area commenced with the construction of an 18th-century masonry river wall that was initially known as the New Wall and later as the Navigation Wall. The river approached the city from the Blackrock area at that time and comprised irregular channels between tidal mudlands and sandbanks which meant that only shallow vessels were able to reach the city docks. A southern branch of the river also extended along the area now occupied by Monaghan Road in the south end of the study area. The purpose of the wall was to narrow and regularise the channel in order to improve navigation and to also form a riverside track for horses to pull ships facing contrary winds up to the city quays (Rynne 1999, 197). Work began on its construction within the city area in 1763 and it was then extended across the river slob lands to the east. The wall was constructed on cut stone foundations which were built two feet below the low water level of the normal spring tides. The first main phase of construction continued until the late 18th century when a lack of finances halted steady progress and the wall extended for *c.* 1.5km to the east of the city docks by that time. The Navigation Wall still survives as a retaining feature along the riverbank for a length of 2.3km and comprises a bonded, rubble masonry structure measuring up to 2m in thickness. This includes a section of the wall located along the riverside at a distance of 30m outside the northern boundary of the proposed development site. While it is not a designated architectural heritage structure or a recorded archaeological monument the Navigation Wall is, nonetheless, considered to be of cultural heritage significance.

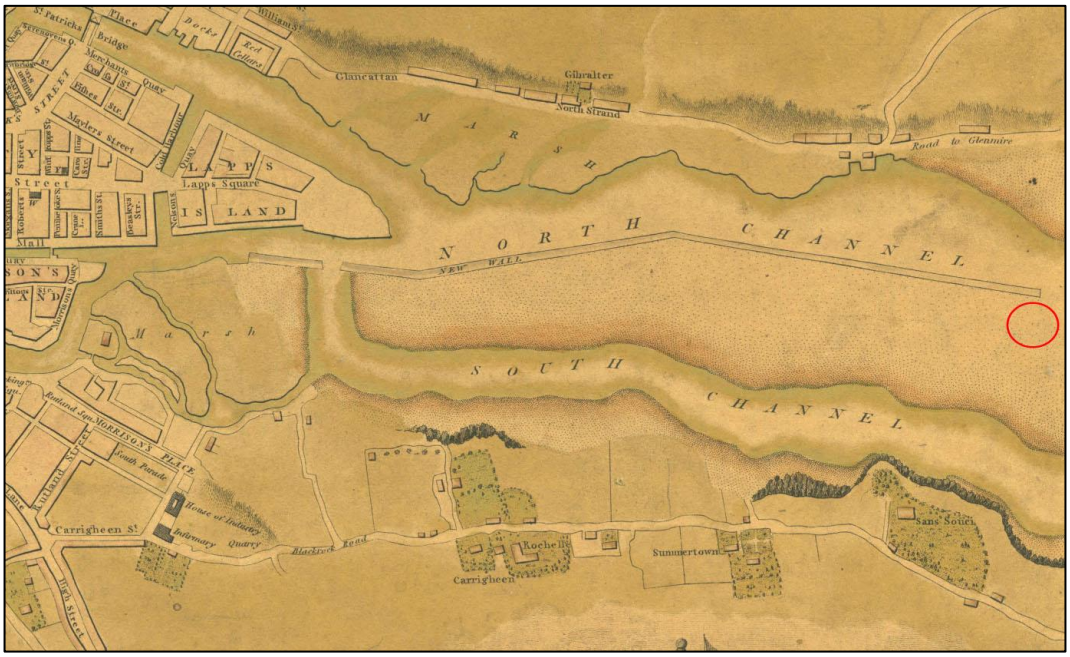

Figure 11.1: Extract from 1801 Beauford map with approximate location of proposed development circled | not to scale

During the late 18th and 19th centuries dredged riverine deposits were systematically dumped onto the slob lands behind the Navigation Wall to initially to create a walkway along the new riverbank which later became known as the Marina and thereafter to reclaim the slob lands to the south. The construction of the river wall and the adjacent embanked walkway resulted in a damming effect which meant that the river slob lands to the south were no longer covered by high tides but still remained as poorly drained land. In 1780 the City Corporation devised an ambitious plan to reclaim 230 acres of land to the south of the wall and to develop a new town centre in the area. This proposal was influenced by Renaissance urban planning design based around a central primary street with secondary streets laid out in a grid system. While drainage and reclamation work continued within the slob lands behind the wall during the following decades the proposed new urban centre did not proceed, and the area remained largely undeveloped and was only partially reclaimed by the start of the 19th century. The Navigation Wall required regular upkeep and in 1794 the Corporation raised funds for its repair by selling plots of the completed reclaimed lands for uses such as brickmaking and cattle-fattening. The state took on responsibility for the greater part of the expenses of the upkeep of the wall in 1816 and in 1838 a local historian named John Fitzgerald described the Navigation Wall and the ongoing reclamation works as follows (Henchion 2005, 155):

> *Walking on the Navigation Wall was ticklish, with one stream of people going down and another coming up and having to pass on less than 5ft of pathway with 20ft of water on either side. It was only small boys, fishermen or the foolhardy who ventured along that wall, while the ladies stayed aloof. While the labourers toiled to fill in the slob behind the wall with the dredgings of the river, young chappies would volunteer their services as navvies only to have the barrows taken from them and told to buzz off.*

The detail on the first edition 6-inch OS map of 1841 (**Figure 11.2**) demonstrates that much of the eastern end of the lands behind the river wall, including the

location of the proposed development site, continued to remain undeveloped within a vacant area annotated as ‘Mud’ while the lands further to the west are named ‘City Park’. There are no buildings, roads or fields, or garden plots depicted within the environs of the proposed development site but an embankment, with a flanking drainage channel, is depicted extending through the east end. This feature was likely associated with the ongoing drainage of the reclaimed lands and appears to delimit the east end of the City Park area. The 6-inch OS map also shows a number of small docking/quay features to the rear of a number of riverside private houses on Blackrock Road further to the south demonstrating that the former riverbank in this area was likely accessible to small boats at high tide prior to the reclamation works.

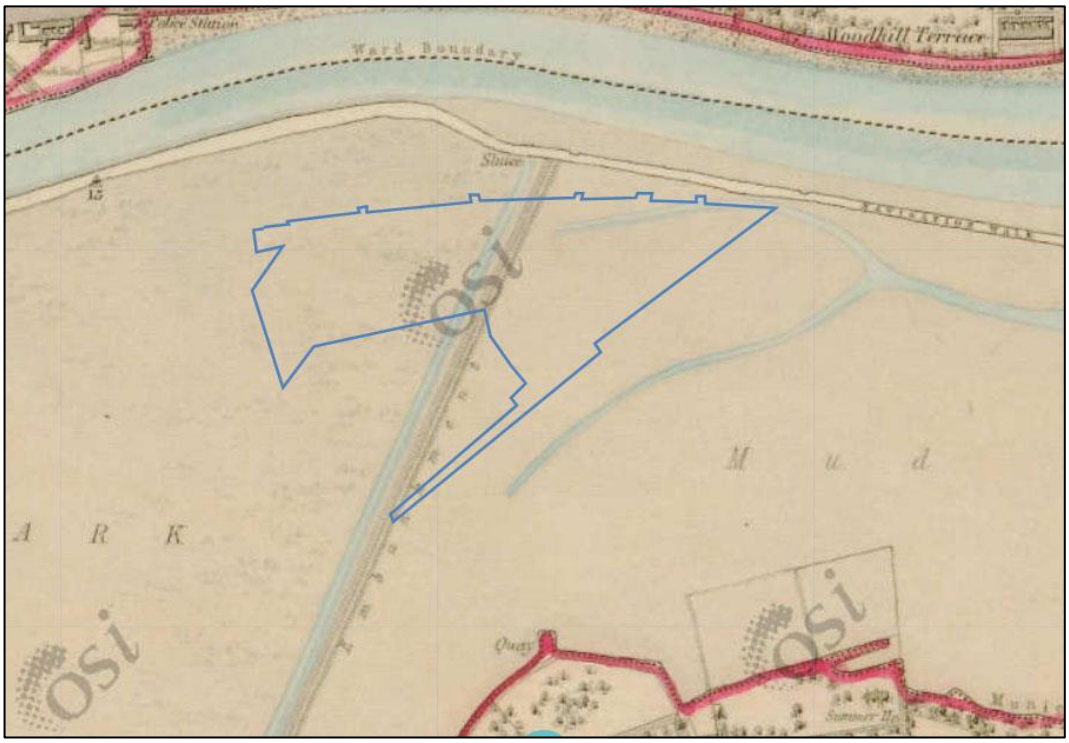

Figure 11.2: Extract from 1st edition 6-inch OS map | not to scale

The reclamation of the area continued slowly during the following years, and it took a number of decades before the slob lands had been infilled sufficiently to support the growth of grass (Ó Drisceoil 2018, 219). An engineer named Edward Russell completed a survey of the eastern end of the slob lands in order to determine the extent of works required to extend the river wall, complete the drainage and reclamation of the area and to develop a public park in the area (*ibid*., 221). These works were underway by the 1840s but quickly ran into financial difficulties and required the Corporation to seek debt relief to cover the project costs. By the 1850s much of the reclaimed area was occupied by vacant grasslands but had begun to be used as farmland rather than the intended public park.

The first major development within the reclaimed area occurred in 1850 when it formed part of the route of the newly opened Cork, Blackrock & Passage railway line. A number of attempts had been made during earlier decades to create a rail link between Cork city and Passage West, in part due to the village’s strategic

importance as an unloading point for cargo and passengers from larger ships unable to reach the city docks. Much of the transport between the two locations prior to the development of the railway was via light paddle steamers. The railway project commenced construction in 1847 when the first sod was dug in the Blackrock section. The section of the line within the study area initially followed the entire line of the Marina into the city until 1873 when a section was diverted inland at the Atlantic Pond. This diverted line is shown on the 25-inch edition OS map (1888-1913 series) which shows its route extending within the lands to the south of the proposed development adjacent to the existing line of Monaghan Road (**Figure 11.3**). While the Cork Blackrock and Passage Railway was amalgamated with the Great Southern Railway Company in 1925, the increasing use of private cars resulted in its closure in 1932.

In 1856, Professor Edmund Murphy of Queens College Cork planted rows of elm trees along the riverside promenade as part of a crop and tree growing experiment and many of these were felled and replaced in the early 1970s due to Dutch elm disease. In 1872, the Council adopted the name Marina for the river promenade which was named after a similar feature near Palermo in Sicily that was also developed within an area of reclaimed slob land. The area within the proposed development site was developed as the Cork Park Racetrack in 1869 while the Cork Agricultural Society established their showgrounds in the area to the south during the 1890s. In the late 1890s the Cork County GAA Board were granted lands within that property by the Cork Agricultural Company, the leaseholders of the land. The county board built its own stadium in 1898 in an area now occupied by the CAB Ford garage on Monahan Road. While the detail on the first edition 6-inch OS map demonstrates that small-scale waterfront activity, such as private docking features, were sited along the original riverside to the rear of a number of Blackrock Road residential houses, the development of the Navigation Wall and associated reclamation works saw this activity begin to relocate along the new waterfront. A number of rowing clubs opened within the area from the mid-19th century onward, including the Lee Rowing Club and Glenbrook Boat Club which were founded in the 1850s and the Cork Boat Club founded in 1899.

The detail on the 25-inch edition OS map (1888-1913 series) indicates that the while the proposed development site formed part of the east end of the City Park racecourse during the late 19th century, no associated stands or other structures were located within this area, the only indicated ground works appears to have been excavations in the reclaimed ground to create land drains (**Figures 11.3** and **11.4**). In 1871 Cork Corporation granted land to Queens College Rowing Club to build a riverside boathouse shown on the Marina in the area to the north of the proposed development site. This was subsequently demolished and replaced in 1896 by the existing Shandon Boat Club building which is listed as a Protected Structure (PS 1242). A number of other features of heritage interest are located within this section of the Marina and comprise the railings, mound and base plaque that formerly contained the Captain Hanson Flag Pole which was erected here in 1864, the remains of a drinking fountain and a cannon used in the Crimea War which was moved to this area from the Grand Parade in 1861[41]. Other elements of the built environment within the environs of the proposed

[41] http://corkheritage.ie/?page_id=5989

development site shown on the 25-inch map includes a road along the existing line of the Centre Park Road to the south, with the diverted railway line shown further to the south, as well as a now removed band stand along the section of the Marina to the north, the Lee Rowing Club to the northeast and Agricultural Society buildings within the showground property to the southeast.

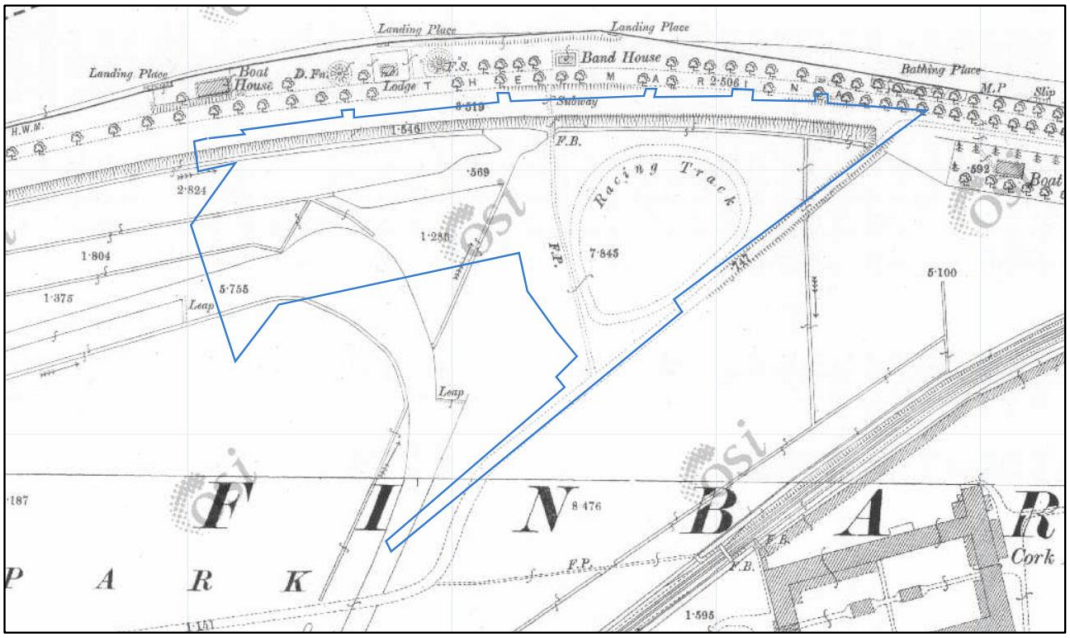

Figure 11.3: Extract from 25-inch OS map | not to scale

Figure 11.4: Undated view of City Park racecourse (source: www.nli.ie)

The racecourse was extensively re-developed during the early 20th century when the western section became the site of the Fords tractor assembly plant which commenced construction in 1917 and continued to expand during the following decades. A map included in a Cork Corporation Engineers report of 1917 indicates that while the proposed development area was not developed as part of the Fords factory it was included in the overall 136-acre landholding acquired by

the firm at a cost of £10,000[42]. The factory was solely used for the manufacturing of tractors until 1923 when it began to also be used for the assembly of motor vehicles such as the Models T and A. The fortunes of the factory, and other industrial centres opened in the City Park area during later decades, fluctuated during the 20th century with periods of decline and growth that included a significant investment in upgrading the assembly line during the 1960s. The factory had gone into further decline by the early 1980s, in part due to inflation, tariffs and competition from other Ford plants in Europe, and it closed as a manufacturing plant in 1984 (Nyhan 2008). The former factory site still exists as a commercial centre in the area to the west of the proposed development which has been extensively sub-divided into small units. The proposed development site remained outside the factory area throughout its period of operation.

The Cassini edition OS map (1930-40s series) depicts the extent of the development of the wider area during the first half of the 20th century with the Fords and later Dunlop factories shown in an area located 180m to the west of the proposed development site (**Figure 11.5**). The internal area of the site is still shown as a vacant plot with additional land drains present, including a flood gate adjacent to the north boundary. A sub-circular ground feature indicated within the southern area of the site is unlabelled but appears to be within the location of the smaller racetrack shown on the 25-inch OS map and may indicate the remains of a boundary associated with that feature. The tree-lined route of Centre Park Road to the south is named and clearly indicated.

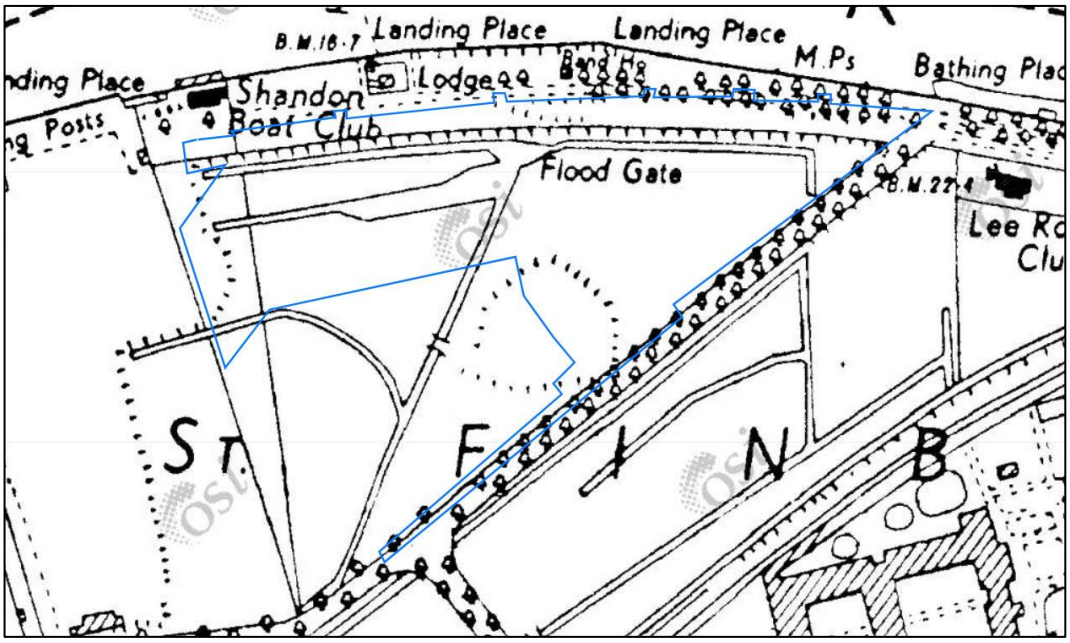

Figure 11.5: Extract from Cassini edition 6-inch OS map | not to scale

The detail on several reviewed aerial and satellite images of the area dating from the 1950s to recent years demonstrates that the proposed development site remained as a vacant plot to the east of the industrialised area into the second half the 20th century (**Figure 11.6**). The adjoining plot immediately to the west of the site was developed as an ESB steam-powered station in the 1950s which is visible

[42] https://www.corkhist.ie/wp-content/uploads/jfiles/1917/b1917-034.pdf

on the image from that time. The station is now decommissioned but the buildings and associated infrastructure remain extant. The first view of the development of the Tedcastles coal site is shown on a 1995 OSI image which indicates that it was largely confined to a small area in the southern end of the site at the location of the existing extant structures. The detail on a 2005 OSI image demonstrates that the extent of the coal depot operational area had expanded into remainder of the site with various structures, open yards and areas of ground works visible.

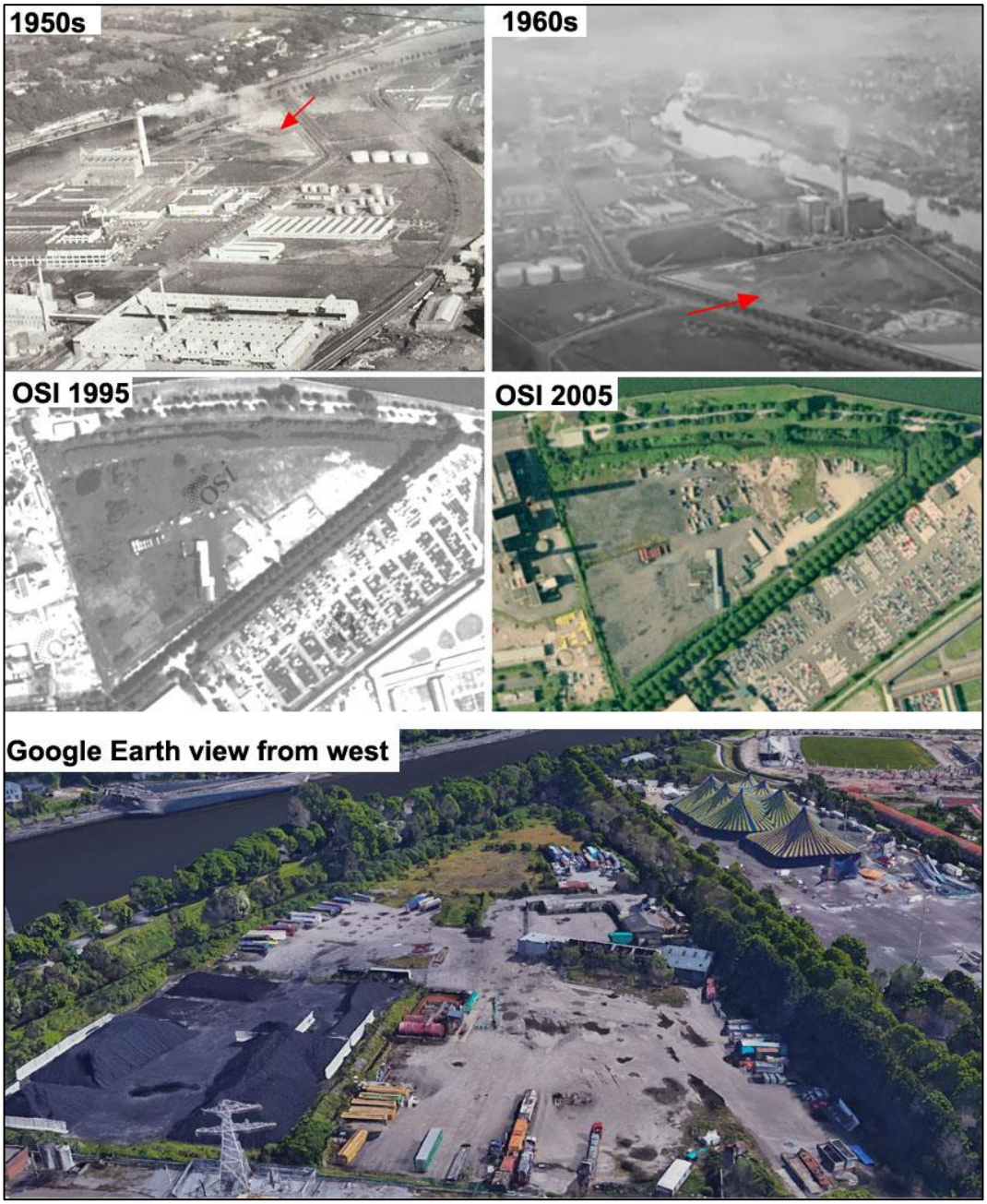

Figure 11.6: Combined aerial/satellite views of the proposed development site (location indicated with arrows on 1950s and 1960s images sourced from www.nli.ie))

11.3.5 Architectural Heritage

The proposed development site is not within a designated or proposed Architectural Conservation Area (ACA) and is located 270m outside the west end of the Former Ford Factory ACA. The RPS and NIAH do not list any designated architectural heritage buildings or structures within the proposed development site. The streetscape within the surrounding 500m study area on the south side of the river contains a number of Protected Structures and the nearest example, Shandon Boat Club (PS 1242) is located 40m to the north. Of the examples on the same side of the river channel, Chiplee House (PS513) is located *c.* 385m to the south while a Ford's tractor factory building (PS1135) is *c.* 325m to the west. The NIAH also lists a number of structures within the section of the study area on the south side of the River Lee, including various buildings in the former Fords factory to the west, none of these are located within 200m of the proposed development boundary. The streets located within 500m of the proposed development on the north side of the River Lee contain approximately 50 protected structures, most of which are also listed in the NIAH, and these are mainly located within the Montenotte suburban area. The presence of the wide river channel, and existing modern streetscapes within their surrounds, separate their settings and curtilages from the location of the proposed development. The designated architectural heritage assets on the north side of the river are listed in **Appendix 11.2**. A list and location map of all the designated architectural heritage structures within the section of the study area on the south side of the river are presented in **Section 11.3.8** (**Table 11.5** and **Figure 11.8**).

11.3.6 Undesignated Cultural Heritage Assets

There were no sensitivities associated with tangible or intangible undesignated cultural heritage assets noted within the boundary of the proposed development site during the desktop study. The Navigation Wall, the Marina and associated features to the north, the former line of the Blackrock-Passage railway to the south and the ESB sub-station to the west comprise undesignated assets of low (local) cultural heritage significance within the study area and details on these are provided above, including cartographic details shown in the provided historical maps. In addition, Páirc Uí Chaoimh stadium and rowing activities within the area are also not designated assets but do have associations with the intangible local cultural heritage resource as part of sporting activities undertaken within the wider area since the 19th century.

11.3.7 Site Inspection

Most of the proposed development site is occupied by late 20th century buildings and yard areas with tarmac and hardcore stone surfaces associated with its recent use as a coal depot. The review of aerial images of the site indicates that much of the yard areas were extensively expanded in the early 2000s (**Figure 11.6**). A small area within the west end of the proposed development site is occupied by an area of low overgrowth and appears to have been located outside the areas impacted by ground works during the development of the coal depot operation. No structures or potential features of cultural heritage interest were noted within this vacant area. The north and south ends of the proposed development site are

flanked by east to west orientated earth-cut land drains with battered even sides that display evidence of modern re-grading by machine. It is noted that the existing drain on the northern side is significantly larger than a small drain shown alongside the Marina on a historic photograph of the former racecourse (**Figure 11.4**) and the potential that it is a 20th machine-recut drain is noted.

A review was undertaken of the results of geotechnical investigations within the proposed development site and these revealed the presence of a 1.1m to 3.5m thick makeup layer of black to grey sandy gravelly silt which contained anthropogenic inclusions such as glass, plastic, ceramics, concrete bricks and timber as well as a reclaimed layer of Soft grey to dark grey or brown, slightly sandy, slightly gravelly silts measuring 0.4m to 2.8m in thickness. These overlay natural silt and sand layers with underlying natural gravels.

The extant coal depot buildings within the former Tedcastles site are of late 20th-century construction and are summarised below (photographs are included in **Appendix 11.1**). One of these structures is located within the boundary of the proposed development site (Building B) and this comprises a former administrative building. This structure is of no architectural heritage significance and its removal will not involve any loss of historic fabric.

Building A-Garage/workshop
This is a detached single-storey concrete-built garage with a pitched roof with a flat-roofed extension to the southwest. The walls are smooth rendered with a vehicular entrance on the north-eastern elevation with a double painted timber sliding door. The pitched roof has a corrugated asbestos roof covering incorporating polycarbonate roof lights.

Building B-Administration building
There is a detached, single-storey prefabricated flat-roofed office building. The building is derelict and in very poor condition. Square-headed window openings with painted timber frames, mostly broken and without glazing. A weighbridge is located to the northeast of the building. Internally, it is sub-divided into offices by stud partition walls which are extensively damaged by vandalism.

Building C-Loading shed
There is a seven-bay, double height structure open to the eastern elevation with a mono-pitched roof. The main frame is constructed from steel H-beams and columns with a corrugated metal roof covering and walls. The building is divided into seven bays with weighing scales by Alden and hoppers for loading to trucks and there are feeder hoppers located on the western elevation.

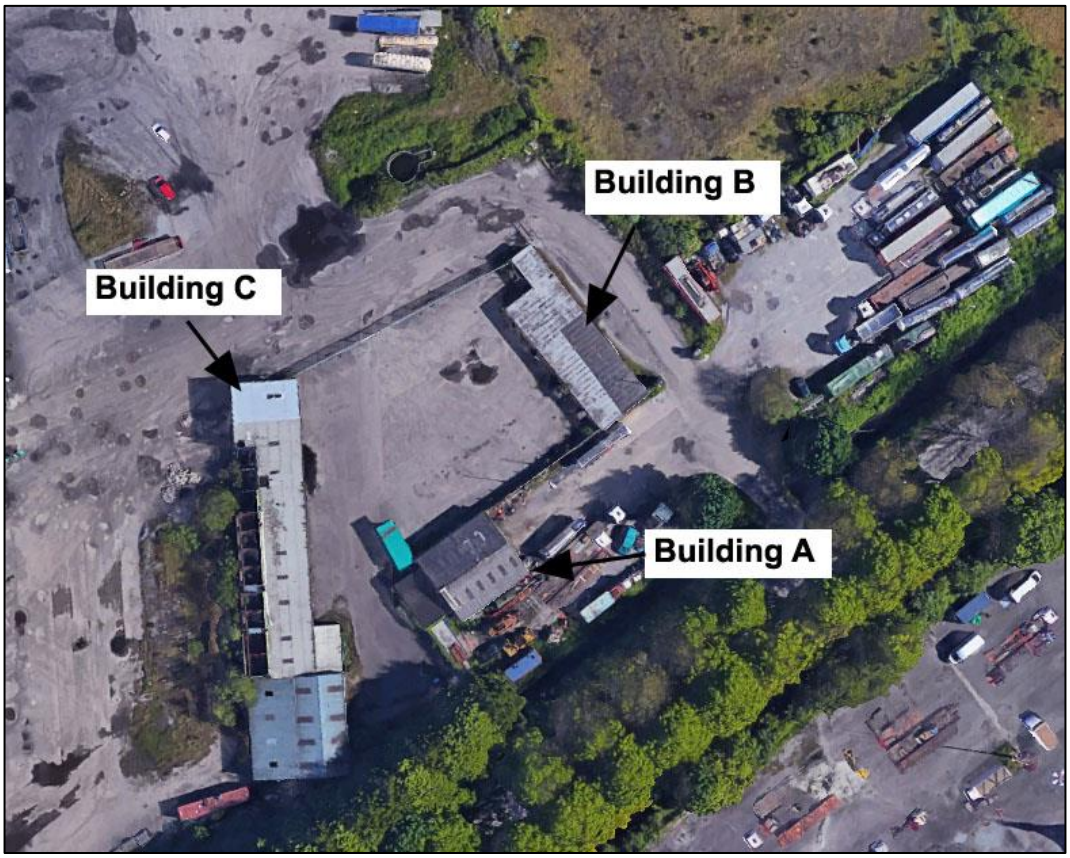

Figure 11.7: Location of extant coal depot buildings in proximity to site | not to scale

11.3.8 Conclusions

There are no recorded archaeological sites or designated architectural heritage structures located within the boundary of the proposed development site. The combined desktop study and site inspections revealed that the proposed development site and its surrounds were reclaimed from river slob lands in recent centuries. The only constructed development within the site boundary is the late 20th century coal depot which contains no elements of archaeological, architectural or cultural heritage significance. A review of the surrounding streetscape on the south side of the river revealed the presence of several designated architectural heritage structures within 500m of the proposed development which are identified in **Table 11.5** below (also see **Figure 11.8**). The proposed development is located 270m outside the east end of the Former Ford Factory ACA (**Figure 11.10).** The only recorded archaeological sites within 500m of the proposed development are two post-medieval houses located on the north side of the River Lee and these are listed in **Table 11.6** below (see also **Figure 11.9**). There are also various protected structures located within streets on the opposite side of the River Lee and these are listed in **Appendix 11.2**.

Table 11.5: Designated architectural heritage structures within study area on south side of river

Structure	Protected Structure	NIAH ref	NIAH Rating	Indicative Value	Approx. distance from development
Ford's office building	-	20507202	National	High	220m to west
Ford's factory building	-	20507201	National	High	225m to west
Ford's factory building	PS1135	20507198	National	High	325m to west
Ford's factory building	-	20507200	National	High	200m to west
Ford's factory building	-	20507206	Regional	Medium	430m to west
Shandon Boat Club	PS1242	20507191	Regional	Medium	40m to north
Chiplee House	PS513	20867017	Regional	Medium	385m to south
Lindville House	PS821	-	n/a	Medium	435m to south

Table 11.6: Recorded archaeological sites within study area (north side of river)

Structure	SMR/RMP	Protected Structure	NIAH ref	NIAH Rating	Indicative Value	Approx. distance from development
Carrig House	CO074-101----	PS627	20863157	Regional	Medium	200m to north
Summerhill House	CO074-086----	PS621	20863145	Regional	Medium	350m to north

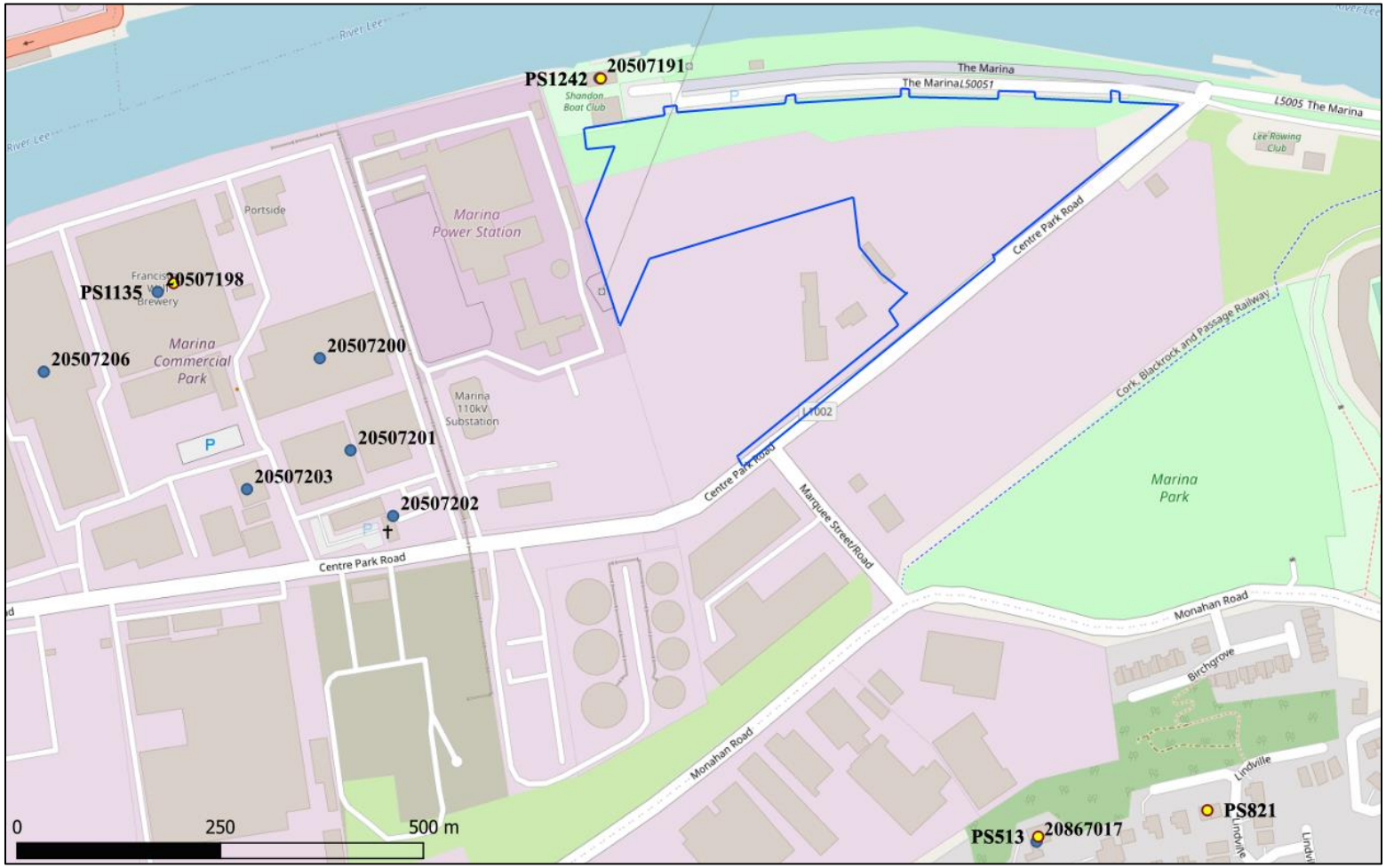

Figure 11.8: Location of designated architectural heritage structures within 500m of proposed development (south side of river) | not to scale

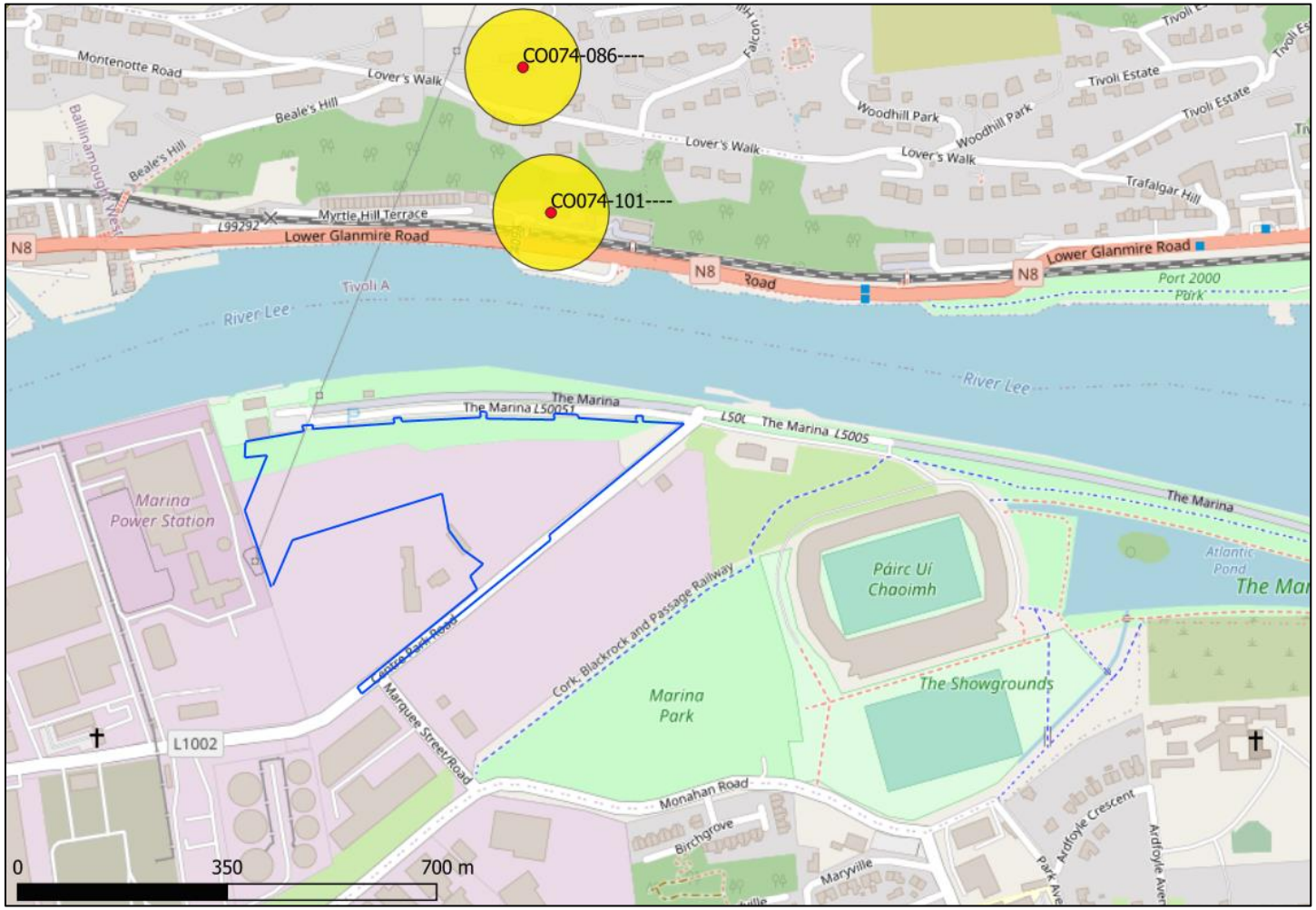

Figure 11.9: Location of recorded archaeological sites within 500m of proposed development | not to scale

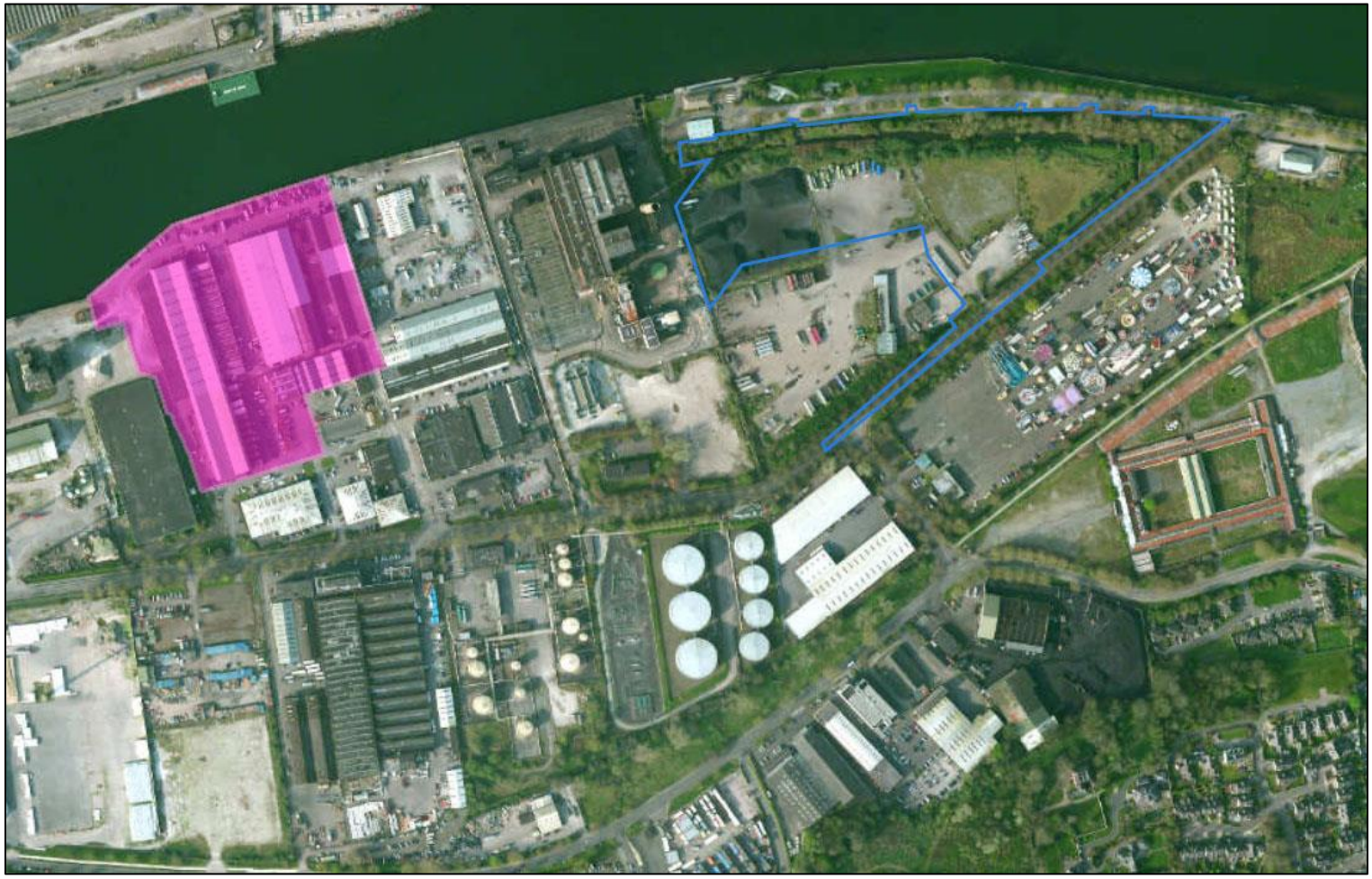

Figure 11.10: Location of Former Ford Factory ACA shaded | not to scale

11.4 Likely Significant Effects

11.4.1 Do Nothing Scenario

A 'Do Nothing Scenario' will see to the continued preservation of the recorded and potential unrecorded cultural heritage assets, such as potential sub-surface archaeological remains, within the study area.

11.4.2 Construction Phase

There are no recorded archaeological sites located on the footprint of the proposed development or within 200m of its boundary. In addition, no potential unrecorded archaeological sites were identified within the site boundary or its environs during the desktop study and field inspection carried out as part of this assessment. The proposed development will, therefore, have no predicted direct or indirect impacts on the known archaeological resource during the construction phase.

The proposed buildings will be founded on Continuous Flight Auger (CFA) piles under pile caps. The piles shall be installed using a method that does not compromise the integrity of the low permeability silt layer between the made ground and the underlying gravel. During the construction of the foundations, site services and attenuation tanks the site level shall be lowered to approximately -1.30mOD. This will require the excavation of approximately 73,022m^3 of soil and hardstanding. Excavations will remove made ground and some of the silts and potentially some of the underlying sand/gravels. As the existence, nature, depth and extent of any unrecorded, sub-surface archaeological material within the proposed development site are unknown; the level of impacts these ground works is indeterminable but the potential for direct negative effects, while low, cannot be discounted and will require mitigation.

There are no designated architectural heritage structures located within the proposed development site and it is not within an Architectural Conservation Area. The proposed development will, therefore, have no predicted direct or indirect impacts on the designated architectural heritage resource during the construction phase.

The late 20th century administration building (Building B) within the proposed development site is deemed to be of negligible architectural heritage significance and its removal during the construction phase will result in no predicted impact on the cultural heritage resource.

The construction phase will not result in any predicted direct or indirect impacts on the undesignated tangible cultural heritage resource within the environs of the proposed development, including the Navigation Wall and the Marina and its associated features to the north, the ESB substation within the property to the west and the former railway line adjacent to Monaghan Road further to the south. The construction phase will also not result in any predicted direct or indirect on intangible cultural heritage assets within the study area, such as Gaelic games or rowing activities.

It is concluded that the construction phase of the proposed development will not result in any likely significant effects on the archaeological, architectural or cultural heritage resources.

11.4.3 Operational Phase

There are no recorded archaeological sites within the proposed development site, and none are located within 200m of its boundary. The two examples within 500m of the proposed development are both post-medieval houses located in streets on the opposite side of the River Lee and no indirect impacts on the settings of these buildings are predicted. The implementation of the mitigation measures outlined in **Section 12.5** will provide for either the avoidance or the proper and adequate recording of any unrecorded archaeological features within its boundary that may be revealed during the construction phase.

There are no designated architectural heritage structures, or associated curtilage features, located within the proposed development site, and it is not within an Architectural Conservation Area. The proposed development will result in no predicted direct operational phase impacts on the protected structures and NIAH-listed buildings located within the surrounding study area on the south side of the river. The proposed development will also have no predicted operational phase impacts on the former railway line located along Monaghan Road to the south. While the Páirc Uí Chaoimh sports complex in the area to the southeast has an association with the undesignated intangible cultural heritage resource as a centre for Gaelic games, it is located within a modern urban area that has been extensively developed as an industrial and residential centre during the past century. In addition, the existing stadium and its surrounds are of recent construction and replaced an earlier stadium at that location as well as the remains of the former showgrounds. Given these factors, it is concluded that the proposed development will have no predicted impact on the new sport complex's association with the Gaelic game's tradition. The operational phase of the proposed development will also have no predicted impacts on associations with other historical sporting practices in the area such as the former racecourse and rowing activities in the river channel to the north. Potential visual impacts on the streetscapes containing the designated architectural and undesignated cultural heritage assets within the surrounding study area, and the wider townscape, are assessed in Chapter 12. This chapter was reviewed and no significant effects on any cultural heritage assets are predicted.

It is, therefore, concluded that the operational phase of the proposed development will not result in any likely significant effects on the archaeological, architectural or cultural heritage resources.

11.5 Mitigation Measures and Monitoring

Archaeological monitoring of ground excavation works during the construction phase will be carried out by a suitably qualified archaeologist, licensed by the National Monument Service, in accordance with Section 4.7.2.3 (Archaeological Monitoring) of the *South Docks Local Area Plan 2008*. In the event that any archaeological remains, or other buried features of cultural heritage interest, are

identified they will be recorded and left to remain securely in situ while the National Monuments Service and the Cork City Council Archaeologist are consulted to determine further appropriate mitigation measures, which may entail preservation *in situ* by avoidance or preservation in record by archaeological excavation.

There are a number of mandatory processes to be completed as part of applications to the National Monuments Service (NMS) for archaeological licences, and these will allow for monitoring of the successful implementation of the archaeological mitigation measures. A method statement detailing the proposed strategy for the archaeological supervision of the construction phase will accompany the licence application and will clearly detail the extent of ground works and outline the consultation process to be enacted to determine further required mitigation measures in the event that any sub-surface archaeological remains are identified. Reports on all archaeological site investigations will be submitted to the NMS and the planning authority and will detail the results in written, drawn and photographic formats.

The proposed development will not result in any predicted construction or operation phase direct impacts, or significant indirect impacts, on the architectural heritage resource which will require mitigation.

11.6 Residual Effects

There are no recorded archaeological sites located within the proposed development site or its environs. All potential impacts on any unrecorded, sub-surface archaeological remains encountered during monitoring of ground excavations during the construction phase will be addressed in consultation with the National Monuments Service and the Cork City Council Archaeologist. There are no designated structures of architectural heritage significance located within the proposed development site. The proposed development will result in not significant to moderate indirect residual impacts on the setting of the elements of the architectural and cultural heritage assets as detailed in **Section 11.4.3.** No significant residual impacts on the archaeological, architectural and cultural heritage resources are predicted.

11.7 Cumulative Effects

As detailed in **Section 11.3.4** of this chapter a number of licensed archaeological monitoring investigations have been undertaken during projects located within the environs of the proposed development, including the Cork Main Drainage Scheme and the redevelopment of Páirc Uí Chaoimh. Nothing of archaeological significance was identified within the study area during any of these site investigations. There are no also recorded archaeological sites or designated architectural heritage structures located within the completed Marina Park development or within the proposed Old Ford Distribution Site (An Bord Pleanála ref. 306166) and Former Cork Warehouse Company Site which are situated within properties to the south of the proposed development. The proposed Monaghan Road Extension project will also extend through the area to the south of the proposed development and there are no designated archaeological or

architectural heritage constraints located within its environs. The Marina Park Phase 2 project will extend from The Atlantic Pond to Church Avenue and will include the development of conservation plans for the archaeological and architectural heritage resource within the project area[43]. Given these factors, in combination with the absence of any predicted negative direct impacts on the known archaeological and architectural heritage resources arising from the proposed development it is concluded that it will not contribute to any significant cumulative impacts on the cultural heritage resource.

11.8 References

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www.excavations.ie (Archaeological investigations)

www.logainm.ie (Placenames)

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http://corkheritage.ie/

12 Townscape and Visual

12.1 Introduction

12.1.1 Statement of Expertise and Authors

This chapter has been prepared by Park Hood Chartered Landscape Architects on behalf of Tiznow Property Company Limited (Comer Group Ireland) (Client).

Park Hood is a Chartered Member of the Irish Landscape Institute and Landscape Institute UK with extensive experience in preparation of Landscape / Townscape and Visual Impact Assessments for a wide range of projects throughout Ireland and the UK. The primary author is Andrew Bunbury. Details of Andrew's qualifications and experience are included in **Chapter 1**, *Introduction*.

All work is undertaken in compliance with the *Landscape Institute's Code of Standards of Conduct and Practice for Landscape Professionals* and checked in accordance with Park Hood's ISO 14001:2015 and ISO 9001:2015.

The study area for this proposal clearly is predominantly part of Cork City and the term townscape is used where appropriate.

12.1.2 Research Methodology and Guidance

The overall approach and methodology is based on the *Guidelines for Landscape and Visual Impact Assessment* (3rd Edition) by The Landscape Institute and the Institute of Environmental Assessment (2013) (GLVIA). Appropriate reference is also made to the following in terms of EIAR requirements:

- EPA guidance 'Guidelines on the Information to be contained in Environmental Impact Statements' - 2002;
- EPA EIS Manual 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statements' - 2003;
- EPA 'Revised Guidelines on the Information to be contained in Environmental Impact Statements' - Draft 2015; and
- EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' – Draft 2017.

For the purpose of this assessment, this chapter adopts the definition of landscape presented in the European Landscape Convention and as such, the term 'landscape' refers equally to areas of rural countryside and urban – built up –areas (typically historically referred to as 'townscape'). The definition of landscape is:

"An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."

There are several published guidance documents including Development Plans, which include planning designations relevant to the Study Area as listed below:

- The National Planning Framework (NPF) - Ireland 2040;

- National Landscape Strategy for Ireland 2015-2025 (Department of Arts, Heritage and the Gaeltacht);
- DRAFT Cork City Development Plan 2022-2028;
- Cork City Development Plan 2015-2021 (CCDP);
- Cork County Development Plan 2014;
- Cork City Centre Strategy – Cork City Council (2014);
- Cork City Docks Local Area Plan Pre-Plan Consultation Report (2017);
- South Docks Local Area Plan by Cork County Council (2008)
- Landscape Character Assessment contained within the Cork City Landscape Study (2008);
- Urban Development and Building Heights Guidelines for Planning Authorities by Department of Housing, Planning and Local Government (DHPLG) (2018);
- Urban Density, Building Height and Tall Building Study for Cork by Allies and Morrison Ltd. on behalf of Cork City Council (2021);
- Urban design manual - a best practice guide by the Department of Environment, Heritage and Local Government (2009);
- Sustainable Urban Housing: Design Standards for New Apartments (2015); and
- Sustainable Residential Development in Urban Areas and the accompanying Urban Design Manual: A Best Practice Guide (2009).

Other sources of information referred-to include:

- Cork City Biodiversity Plan 2009-2014;
- National Inventory of Architectural Heritage *http://www.buildingsofireland.ie*;
- National Parks and Wildlife Service (NPWS) and Environmental Protection Agency - *https://gis.epa.ie/EPAMaps*
- *https://www.heritagecouncil.ie*

The baseline assessment included study of Ordinance Survey Ireland (OSI) historical and recent mapping to assess how this part of Cork has developed since the 19th century as well as assess approximate calculations of relevant distances or areas.

12.2 Scope

12.2.1 Proposed Development Summary

The proposed development relates to the demolition of the existing structures on site and the construction of a strategic housing development of 823 no.

apartments, resident amenity and ancillary commercial areas including childcare facilities on the former Tedcastles lands in Cork City within the designated South Docks development area and extends to a total area of 4.86 hectares.

The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

12.2.2 Definition of Townscape / Landscape and Visual Effects

The assessment process helps identify the effects of the proposed development on views and on the associated townscape and landscapes. The effects can be quite different and are assessed separately; although the process is similar and effects ultimately arise as a result of combined impacts upon the townscape / landscape and visual amenity of a proposed development. Developments can have significant visual effects but no impact on townscape / landscape character and some can be vice versa.

Landscape / townscape effects are those effects on the existing or baseline resource and defined as follows:

"*An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner*." (GLVIA3 paragraphs 5.1 and 5.2)

Visual effects are the effects on views and visual amenity and summarised as follows:

"*...establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points*." (GLVIA3 paragraph 3.13)

12.2.3 Photomontages and Visualisations

To support the visual assessment, photomontages, wirelines and graphics have been prepared from 20 no. representative viewpoints by Urban3D to allow assessment of its potential scale and nature in these views and these are contained in **Appendix 12.1**. The viewpoint selection process and photomontage methodology is based on *Landscape Institute Technical Guidance Note 06/19: 'Visual Representation of Development Proposals (2019).*

12.2.4 Summary of Townscape / Landscape and Visual Assessment Objectives and Key Tasks

The objective of the assessment is to evaluate the likely significance of townscape / landscape character and visual amenity effects to the proposed development site and study area to assist the competent authority in considering the acceptability of this proposal. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology partially drawn from *Principles and Overview of Processes (Chapter 3)* within the GLVIA. Generic terminology is included in **Appendix 12.2**. The impact assessment focuses on key effects and issues as follows:

- The effect of the proposed development upon the townscape / landscape resource;
- The effect of the proposed development on the perception of the townscape; and
- The effects arising from the proposed development on visual amenity.

The methodology comprised undertaking the following key tasks:

- Site visits between April and November 2021;
- Assessing the baseline landscape/ townscape setting and conditions;
- Evaluation of key components of the proposed development based on site layouts, plans and elevations prepared by C+W O'Brien Architects and other members of the design team;
- Consideration of mitigation and enhancement measures;
- Assessment of townscape and landscape effects;
- Assessment of visual effects based on photomontages and visualisations from 20 no. representative viewpoints; and
- Summary of significance of landscape/ townscape and visual amenity effects.

12.2.5 Consultations

Consultations were undertaken with Cork City Council with regards to the impact assessment process and general landscape design arrangements. The following key relevant issues were discussed:

- S247 Meeting (22nd July 2021) – issues discussed were in relation to tall buildings, surface car parking provision, public realm, drainage strategy, Marquee Road design, links and interface with Marine Park, cycle / pedestrian permeability through the site to the River Lee corridor and landscape and visual impacts. Prior to the consultation, a booklet entitled "TVIA Views" identifying 20 no. potential visual reference points was issued as part of the Pre-Application Discussion package. No additional viewpoints were requested;

- Meeting with Cork City Council Parks Department on site (8th November 2021) to review nature of baseline landscape and visual setting and existing vegetation;
- An Bord Pleanála Meeting (20th December 2021) that concluded in review of relationships with adjoining school lands, justification for design, scale, height and layout of the development and consideration of a Neighbourhood Zoning objective. No additional viewpoints were requested; and
- Meeting with Cork City Council Planning Department (1st February 2022) to review the Masterplan, density, heights and zoning issues in this part of Cork City.

12.3 Assessment Methodology

12.3.1 Townscape / Landscape and Visual Assessment Criteria

The objective of the LVIA is to evaluate the likely significance of townscape / landscape character and visual amenity effects to the proposed development site and study area to assist the competent authority in considering the acceptability of this proposal.

12.3.2 Baseline Townscape Character Assessment

The baseline study extend to include the wider context into which the proposed development will be introduced. The baseline description of existing conditions forms an objective evaluation of the townscape / landscape character and visual amenity of the study area. This forms the base against which the townscape / landscape and visual effects deriving from the proposed development can be identified, assessed and measured. It involves a desk-top analysis and review of material including:

- National and Regional Landscape Character or local Landscape Character Assessments;
- Review of historical planning applications on the proposed development site;
- Existing National, Regional or Local Designations and relevant Planning Policy;
- Current and historical OSI Maps evidence;
- Aerial photographs via Bing, Google and client drone footage; and
- Relevant environment / ecology, cultural heritage, historical and archaeology evidence.

As part of the baseline assessment, the combination of desktop analysis and the site survey allows a judgment to be made on the key elements that contribute to the townscape / landscape character and its wider condition (positive, neutral or negative) and wider value and sensitivity. Landscape value, quality and sensitivity are affected by factors including:

- whether the resource is common or rare;

- whether it is considered to be of local, regional, national or global importance;
- whether there are any statutory or regulatory limitations / requirements relating to the resource;
- the quality of the resource;
- the maturity of the resource, and
- the ability of the resource to accommodate changes.

Table 12.1: Determination of Townscape Value and Sensitivity

Terminology	Definition	Summary
Highest Value Townscape	Nationally or regionally important townscape with high quality, highly valued rare or unusual features. Diverse, stimulating and thriving street level uses with high level of human comfort, interactive pedestrian environment and strong hierarchy of public amenity and civic spaces. National area / feature designation and assemblage of important listed historical and rich cultural features including Conservation Areas and Listed Buildings / Scheduled Monuments or valued modern buildings. Well maintained unified townscape with attractive visual detail and no detractors. Negligible pedestrian and traffic conflict.	Very vulnerable to change. High Sensitivity
Very Attractive Townscape	Locally distinctive development form with rich cultural associations using good quality locally characteristic materials. Harmonious relationship between buildings and hierarchy of publicly accessible spaces. Several Listed Buildings or local area / feature designations may apply including features of regional interest. Highly permeable, well maintained and no significant townscape detractors. A townscape that promotes social interaction and pedestrian movement dominates traffic circulation with few conflicts.	Some ability to absorb change in some situations without having significant effects. High to Medium Sensitivity
Good Townscape	Features with historical / cultural local value, possibly designated. Locally distinctive townscape, vernacular or planned layout often with ornamentation in good condition and well maintained. Possibly degraded by unsympathetic modern development but retaining essential characteristics with potential for enhancement. Townscape supports social interaction and pedestrian movement co-exists with traffic movement with few conflicts.	Some ability to absorb change in some situations without having significant effects. Medium Sensitivity
Ordinary Townscape	Development is primarily functional, incoherent development form or minimum design criteria being used in contemporary situations. Little indication of local distinctiveness, design expression or ornamentation. Remnant distinctive townscape features may persist but no longer in context. Few opportunities for social interaction, limited to specific ‘community’ locations. Traffic circulation usually controls pedestrian movement.	Able to accommodate change without significant effects. Low Sensitivity

Terminology	Definition	Summary
Poor Townscape	Poorly designed development form using inappropriate materials and / or materials of limited lifespan. Unsympathetic scale, lacking structure, variety, coherence or clear communication links. Poor boundary definition and arbitrary 'un-owned' space, often vandalised, rarely used by community. Townscape in poor condition or decline, unwelcoming or even threatening, with a lack of opportunity for social interaction. Pedestrian movement may be inhibited / severely constrained by major transport barrier.	Damaged landscapes very capable of accommodating change. Very Low Sensitivity

12.3.3 Criteria for Townscape Character Impacts

This chapter considers how the proposed development would impact on existing townscape / landscape elements and resources which are normally associated with the direct effects on the proposed development site itself. The indirect impacts of the on the wider townscape / landscape are assessed with reference to individual types or character areas.

This is affected by factors including:

- the physical extent and nature of the key elements that make up the proposed development;
- the townscape / landscape context of these effects; and
- the time-scale of impact, such as whether it is temporary (short, medium or long term), permanent with reversible potentials, or irreversibly permanent.

Table 12.2: Magnitude Criteria for Landscape Character Effects

Terminology	Definition
Profound	Total loss or major alteration to key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and /or introduction of elements considered to be totally dominant when set within the attributes of the receiving townscape.
Major	A prominent change that may be large in scale and / or extent and include the loss of key townscape characteristics or the addition of new features or elements that would potentially change the overall townscape quality and character at a wider scale.
Moderate	Partial loss or alteration to one or more key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and / or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving townscape.
Slight	Minor loss or alteration to one or more) key elements / features / characteristics of the baseline (i.e., pre-development townscape or view and /or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving townscape.
Negligible	Very minor loss or alteration to one or more key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and /or introduction of elements that are not uncharacteristic with the surrounding townscape - approximating the 'no change' situation.
In those instances where there would be no change, the magnitude is recorded as 'zero' and the level of effect as 'no change'.	

12.3.4 Visual Amenity Assessment

Visual Effects are concerned wholly with the effect of the proposed development on views, along with the general visual amenity and are defined by the Landscape Institute in GLVIA3, Paragraph 6.1 which states*:*

"*An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements*."

The baseline study establishes the area from which the proposed development may potentially be visible and the different groups of people ("visual receptors") who may experience views or changes to view context.

Viewpoints are usually identified in locations that are publicly accessible, such as roads, parks, public realm / domain areas, footpaths or publicly accessible open spaces. Selection is also based on a determination of the extent of visibility towards the proposed development site or from locations where there may be significant numbers of visual receptors who will see the proposed development e.g., main roads. Viewpoints are chosen to be representative, specific, or illustrative and cover as much of the study area as reasonable or necessary and

address all areas where there may be changes in terms of views or visual amenity. Appropriate reference is also made to the linear, panoramic, river, townscape and approach views and prospects as identified on Map 13 in the CCDP.

Viewer sensitivity is based on the nature of the visual receptor (resident, tourist, commuter etc.) and the visual quality or value attached to a particular view**.**

Table 12.3: Viewer Sensitivity and Types

Terminology	Definition	Summary
High	Notable views of heritage assets, quality, valued or historic townscapes. Views that may be in designated areas, feature in guidebooks, scenic tours, associated with culture, literature and art or an important contributor to experience.	People whose interest is likely to be focused on an appreciation of townscape, culture, built form or particular views. e.g., tourists, cultural events. Residents / Communities living within close proximity of the proposal
Medium	Ordinary views where the reason for visual receptor to be in the area and does not involve or depend upon an appreciation of the views of the townscape or its character.	Commuters, travellers on road and rail. City centre / Public Building users including shopping / retail / commercial uses, recreational activity. Outdoor activity with focus on recreation. Residents / Communities living within close proximity of the proposal.
Low	Areas that may be viewed by the majority as incidental townscape where the focus of the viewer is on their work or activity and the setting is not important to the visual amenity or quality of working life.	Landowners for proposal. Workers with employment related to construction and management / maintenance activity in this part of the city and likely to have a low interest or appreciation of the view.

The visual effects deriving from the proposed development are based on the combined judgement of the anticipated change in nature, visual amenity and duration of the particular view (magnitude) and the nature of the visual receptor (sensitivity). The magnitude and nature of visual effects are based on a number of factors including:

- Scale of change;
- Distance from proposed development site;
- Contrast in terms of mass, colour, form and texture deriving from new feature(s);
- Extent of intervening vegetation (and seasonality if deciduous) or buildings and topography;
- Speed of passing visual receptor (and how long the view is experienced);
- Angle and elevation of view e.g., oblique, direct, perpendicular;
- Nature of backdrop or skyline; and
- Duration of change or effect.

Where mitigation measures are proposed or relevant, these are described as part of any judgement.

Table 12.4: Magnitude Criteria for Visual Effects

Terminology	Definition
Major	A major change or obstruction of a view that may be directly visible, appearing as a prominent and contrasting feature and/or appearing in the foreground / middle ground.
Moderate	A moderate change or partial view of a new element within the view that may be readily noticeable, directly or obliquely visible including glimpsed, partly screened or intermittent views, appearing as a noticeable feature in the middle ground.
Slight	A small level of change, affecting a small part of the view that may be obliquely viewed or partly screened and/or appearing in the background townscape landscape. May include moving views at speed. The proposal forms a minor component in the wider view which might be missed by the casual viewer / observer.
Negligible	The proposal is barely discernible or may be at such a distance that it is very difficult to perceive equating to a no-change situation.

12.3.5 Significance of Townscape and Visual Effects

The assessment process aims to be objective and quantify effects as far as possible. However, townscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment should be based on professional training, experience, observation, evidence and informed opinion.

Table 12.5: Summary Scale of Significance

• Sensitive views or visual receptors; • Effects on recognised scenic, rare or distinctive townscapes; • Effects on mature or diverse landscape elements, features, characteristics, aesthetic or perceptual qualities; and • Large scale changes	More Significant
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• Effects on poorer condition or degraded townscapes / landscapes; • Effects on low sensitivity visual receptors; and • Small scale changes	Less Significant

Significance of visual effects is not absolute and can only be defined in relation to each development and its specific location. Usually an effect is considered

'*significant*' if the level of effect is '*moderate/substantial*' or '*substantial*'. The significance of effects is determined by cross-referencing sensitivity of townscape / landscape or view with the magnitude of change.

Table 12.5: Assessment of Significance Matrix

Townscape and Visual Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible or minor	Minor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

12.3.6 Nature of Landscape and Visual Effects

The assessment process aims to be objective and quantify effects as far as possible. However, landscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment should be based on professional training, experience, observation, evidence and informed opinion.

Impacts may not necessarily be adverse and may be neutral (i.e., changes which make the existing situation neither better nor worse), or beneficial, following the removal of an existing visual detractor.

Table 12.6: Nature of Landscape and Visual Effects

Terminology	Definition
Positive Effect	A change that improves the quality of the landscape character and fits very well with the existing setting.
Neutral	A change which does not affect the scale, landform or pattern of the landscape and maintains existing quality.
Adverse Effect	A change which reduces the quality of the landscape and cannot be fully mitigated.

12.3.7 Duration of Effects

The assessment of likely significant environmental effects as a result of the proposed development takes into account the construction and operational phases. Note that the operation of this proposed development is regarded as being permanent in LVIA terms.

Table 12.7: Duration of Effects

Terminology	Definition
Temporary Effects	Effect lasting one year or less.
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over 60 years

12.4 Baseline Environment

12.4.1 Study Area

The study area includes the proposed development site itself and the wider townscape / landscape where the proposed development may have an influence either directly or indirectly. There is no specific guidance on extents of study areas applicable to this type of development in Ireland.

Given the east Cork city area is part of a built-up townscape, the extent of study area was largely directed by site survey works and reference to the viewpoint locations and areas as indicated *on Map 13 "Views and Prospects – City Centre and Docklands"* within the Cork City Development Plan Vol 2.

Figure 12.1: Site Location Map (red dot) | not to scale [source: Google Maps 2022]

12.4.2 Site Location and Context

The application site is located approximately 2km east of the Cork city centre at the eastern end of the South Docklands. It lies to the south of the River Lee and comprises a vacant landscape with a brownfield post-industrial use character extending to 4.86 hectares.

It is bordered to the north by a formerly tidal ditch on the edge of the Marina Park towards the River Lee towpath to the southeast, in part, by Centre Park Road.

12.4.3 Baseline Landscape Character

12.4.3.1 Landform, Topography and Drainage

The proposed development site comprises a low-lying and predominantly flat landscape to the south of the River Lee set at levels set between +2m and +5m OD. The site's character is inextricably linked to the tidal waterway of the nearby section of the River Lee located less than 50m to the north of the proposed development site. Large open channels were dug to the site periphery and while some have silted up and become stagnant, they indicate a legacy of manufactured drainage requirements on these lands and are annotated as "*tidal waterways*" on recent survey information. A tidal gate located on the eastern end of the ditch to the north of the site has been broken for some time and therefore not able to address its intended function in terms of drainage.

The River Lee which is approximately 120m wide (at the nearest section to the site) and flows east, via Tivoli, to Lough Mahon approximately 2.5km downstream. Between the river edge and the site is both an engineered embankment rising to 6m (part of Marina Park) and a deep open channel.

Photo 12.1: Existing open channel to periphery of the proposed development site

12.4.3.2 Land-use and Vegetation

The "*Plan of the City and Suburbs of Cork*" (Wm Beauford 1801) has the site shown as open ground between the North Channel (that still exists as the River Lee corridor) and the South Channel that existed to the south on and near the alignment of what is now Monahan Road. The south bank of the North Channel is annotated as a "*New Wall*".

Ordnance Survey Ireland (OSI) historical maps show the site annotated as part of City Park in the 1831-1846 1st Editions. The site is presented as a featureless area apart from a formalised embankment and ditch to the east (no longer evident) and a path annotated along the River Lee edge to the north called Navigation Walk.

OSI Maps dating from the end of the 19th century show the site included parts of the City Park Racecourse which hosted national racehorse meetings between the 1860s and 1917. On the nearest section of the River Lee, there are annotations relating to band places, bathing places, lodges, landing places and boat houses suggesting a high level of leisure-related amenity in this area. To the south, the Centre Park Road is depicted in part and the Cork, Blackrock and Passage Railway is aligned in part on Monahan Road. The site's use changed significantly from 1917 when Cork Corporation approved a proposal for the site's redevelopment into a factory and it became a large industrial and manufacturing site. OSI Maps from the 1940's show all evidence of the race course has gone and the Ford Works and Dunlop Works located in large scale buildings at what is now

the Marina Commercial Park, just over 200m to the west of the proposed development site. Centre Park Road is shown as a tree-lined street by this time.

Photo 12.2: View from core of proposed development site looking west towards the ESB Marina Station

During the early to mid-20th Century, the port area became heavily industrialised with chemical, steel and pharmaceutical sectors particularly in the lower harbour away from the city centre lands and the site ultimately became part of the former Tedcastles Oil Depot comprising open compound spaces and ancillary buildings. In the early 1980s, the city was adversely impacted by de-industrialisation with the closure of factories, including the Ford operation (in July 1984) in the vicinity of the proposed development site leading to a decline in use of the South Docks landscapes. The site today has no specific land-use and is a brownfield site. It comprises a largely featureless landscape with the ground made up of crushed rubble and levelled out material following removal of former industrial scale buildings. There are some remnant industrial buildings (4 to 8m high), oil tanks, containers, barrels and weighbridges but none are easy to discern from outside the site due to vegetation. Paved surfaces or hard standing indicating location of former roads make up much of the landscape aside incidental low piles of demolition material though colonising scrub and grass is hiding their full extent.

A high-voltage lattice ESB pylon is situated on The Marina to the northwest corner of the proposed development site towards the ESB Marina Power Station which dates from the 1950s but has since been decommissioned.

The proposed development site has not been subject to any management or use for some time and scrub, low perennial weed, grass and moss has colonised and masked extensive surface areas. Large areas of colonising scrub and encroaching vegetation is commonplace including tracts of Japanese Knotweed (that is currently under a program for eradication). Any more substantial vegetation is set to the periphery of the site or on the edges of former paved or building areas and aside the engineered ditches.

Photo 12.3: View from core of proposed development site looking north towards Montenotte with River Lee in midground obscured by intervening vegetation

A Tree Survey (May 2021) was undertaken by Andy Boe Independent Arboricultural Consultant of the proposed development site and identified a population of approximately no. trees surveyed as individuals and groups.

The following summarises the key findings:

- The tree population has arisen through a combination of deliberate planting and self-seeding;
- The amenity value of the majority of the trees should be considered low to medium due to being mostly self-seeded and unmaintained;
- The remaining contribution of the majority of the trees is very limited;
- The most common trees were Common Hawthorn, Goat Willow and European Lime;
- The tree population has a diversity of ages with the majority being mature;
- 22% are classed as B. Trees assigned to this category include healthy attractive trees with remediable defects that are in a condition as to be able to make a significant contribution for a minimum of 20 years;
- 57% of the trees have been categorised as C. Trees in this category include unremarkable trees of limited merit, small-growing, young species which have a relatively low potential amenity value, and low landscape benefits; and
- 21% of the trees have been categorised as U. Trees assigned to this category are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years and/or are unsuitable for retention in the proximity of new dwellings or areas of public open space.

In proximity to the proposed development site, the most appreciable vegetation are rows of mature European Limes (*Tilia x europaea*) trees aligning Centre Park Road which are an integral part of its character and provide welcome green asset in an otherwise largely brownfield landscape.

Photo 12.4: View south-west from Centre Park Road over northern part of the proposed development site

To the north-east corner of the proposed development site is an area of extended wet ground covering approximately 450m² at the confluence of the two open channels. The mud and water merge into vegetated boundaries where scrub has established on the banks towards the boundary fence of the site.

The lands to the immediate north are part of the Marina, which is a linear public parkland stretching for nearly 2km along the south river edge between the ESB station grounds and Holland Park to the east. As noted above, the associated riverside area has been in part used for public and leisure amenity since the 19th century and is characterised by a linear run of mature trees set over parkland, car parking areas, paths and the (NIAH listed) premises of the Shandon Boat Club (founded 1877). To the east, beyond Centre Park Road is the Lee Rowing Club (with this premises dating from 1886) and associated jetties. The Marina Park paths are also part of a Greenway and provide potential pedestrian connections to Páirc Uí Chaoimh Stadium and Atlantic Pond.

12.4.3.3 Access and Infrastructure

The site is currently closed off to any vehicular or pedestrian access and is secured on all boundaries by post and mesh of steel palisade fencing that are incidentally subsumed under vegetation. The open channels also assist site security. A single vehicular entrance is provided off the Centre Park Road at this time though a historic entrance (currently blocked) is located to the western end of the site.

Photo 12.5: The tree-lined Centre Park Road which adjoins the site of the proposed development

There is no access from the site to the Marina to the north, or into the ESB grounds, or Marina Commercial Park to the west. OSI historic maps show a subway connection to the north but this no longer exists. While the Marina includes vehicular access, parking provision and footpaths, any connectivity to the west towards the City Centre along the River Lee corridor is curtailed by ESB land ownership. The proposed development site abuts part of Centre Park Road which extends to 1.54km and links the Marina to the north east and Victoria Road to the west. The road comprises a single carriageway of 8m in width with grassed verges (including lime trees) which separate the footpaths from the vehicular areas. On both sides, the road is aligned with older security and mesh fencing that is swathed in ivy and scrub vegetation.

12.4.4 Townscape History and Settlement Context

The site of the proposed development is located in eastern Cork City, in the Ballintemple area though this is historically also known as St Finbarrs. Existing land-uses in this area are predominantly related to industrial uses with large scale warehousing, commercial sheds and premises set off extensive parking areas or storage yards and accessed by Monahan Road and Centre Park Road. Set amongst these are large tracts of brownfield post-industrialised landscapes which have a vacant and abandoned characteristic including the proposed development site and the adjacent former Ford distribution plant. The dominant building in the locality is the ESB Marina Station though the grain silos of the Cork Milling Co Ltd and National Flour Mills Ltd are also notable elements in the local skyline and collectively form a concentration of high buildings or features in this area.

Photo 16.6: Aerial view showing site in context with the South Docklands townscape (Google Earth 2016)

Further west, towards the city centre are numerous and expansive commercial and light industry businesses including at the Marina Commercial Park which covers 25 acres and is the base for approximately 150 businesses. The South Docks area is characterised in part by high buildings, owing to its port industries and storage functions though there is no consistency in terms of height or scale. While recent developments are contributing to an evolving and vibrant townscape, the character is very mixed quality with remnant open areas of degraded hard standing detracting from the visual amenity and sense of place. Historical evidence indicates development in this area stretching back to the 16th century including Dundanion Castle (dating from c.1564 and approximately 900m due east of the proposed development site) though the expansion of Cork City across this area really occurred in the 19th and 20th century. Maps from the 19th century show a landscape clearly associated with the nearby city but not engulfed by dense development with more expansive land-uses associated with the Munster Agricultural Society Showgrounds (near the existing Páirc Uí Chaoimh), the City Park Racecourse and it was also a known area for market gardens and nurseries (including 10 acres associated with the bulb farm of WB Hartland). The Cork, Blackrock and Passage Railway opened in 1850 but closed in the 1930s due to limited use. The railway line is partially used as a pedestrian walkway that runs past old railway platforms and bridges. The Ballintemple area was also served by trams at this time.

Linear development began along the corridor of the Blackrock Road but the Ballintemple area "filled" out over the course of the 20th century to form a largely low-density suburban residential townscape; by which time the city extended to the shores of Lough Mahon (3km further east) and Douglas East (approximately 4km to the south). The majority of houses are detached, semi-detached and

terraced two-storey properties. Institutional lands, sports grounds and commercial premises including the Lavanagh Centre and Páirc Uí Rinn are set within intervening areas but the area has a townscape and urbanised character being subsumed into the wider Cork City.

Photo 12.7: River Lee and the Marina to the north of the proposed development site

The River Lee to the north of the site is an integral part of the city character and sense of place. Many of the former channels within the city centre have been culverted or built over but the two remaining channels join at the eastern end of Anderson's Quay, 1km to the west of the proposed development site, and form the tidal section of the river leading east towards the harbour, estuary and Lough Mahon.

To the south of the proposed development site, off Centre Park Road, is the former Ford Distribution Site covering 5.79 hectares that was the site of a planning application for 1,002 residential units over twelve blocks including commercial space, residential amenity and public / communal open space. The site received consent via An Bord Pleánala (Ref: 306166-19) through the SHD process in 2020. This land was formerly the first Ford Company Motor Plant built outside America and operated from 1917 to 1984. The site has been associated with the Live at the Marquee events and music concerts since 2005.

Cork City centre is located approximately 1.5km to the west with the intervening townscape characterised by commercial / industrialised uses associated with the docklands that merge into residential or office areas. The estimated population of the city in 2019 was 210,000. Notable buildings include the Church of St Anne (over 2km from the proposed development site) with the tower being a noted landmark and symbol of the city. The density of built development on and near the city centre ensure that views east towards the proposed development area from key areas and buildings including the City Hall, the Opera House and St Patrick's Street are obscured.

Of relevance in terms of scale and form to this planning application is a recent planning consent at Custom House Quay including a 34-storey building (rising to 140m) located approximately 1.2km to the west of the proposed development. Further consented developments include the 15-storey Prism off Clontarf Street, 1.45km due west of the proposed development and the 16-story building on the Old Sextant Site at Albert Quay, 1.25km due west. The collective demonstrate an evolving cityscape in terms of landmarking (along waterfronts) height, density and form.

12.4.4.1 Public Amenity, Open Spaces and Parklands

As noted above, the main public amenity in this area is the Marina and Marina Park which is located to the north and east of the proposed development along the river corridor between the ESB Marina Station and Blackrock Pier and extending south in wider parts including Holland Park and Atlantic Pond. The park extends to 32 hectares and is considered central to the redevelopment of the South Docks Area. The riverbank provides the base for notable rowing and boat clubs and water based activities while the wider park serves for both passive and active recreation including a section of the Cork Harbour Greenway.

Other parks in the South Docklands include Kennedy Park, 800m to the south-west between Monahan Road and Victoria Road. The park is bound by mature trees that limit views to peripheral townscape areas. Further away, Ballinlough Park and Beaumont Park (partially within a historic quarry) are located off the Boreenmanna Road over 850m to the south in similarly wooded settings.

Across the River Lee, is the Port of Cork 2000 Garden which is a linear parkland aligning a 450m stretch between the bank and the railway line. Open views are afforded up and downstream towards the city centre and Blackrock, respectively. The proposed development site is approximately 280m distant at the closest point.

Páirc Uí Chaoimh Stadium is located 200m to the east of the proposed development site and was built near to the site of the original Cork Athletic Grounds. The stadium originally opened in 1976 but underwent major redevelopment and reopened in 2017. With a capacity for 45,000 it hosts both GAA matches and concerts. Adjoining the stadium to its south is a fully floodlit all weather pitch. Vehicular access is via Centre Park Road and Monahan Road that also provides access to the public car park adjoining the Atlantic Pond. Between Páirc Uí Chaoimh and the proposed development site is a major new area of public parkland which will become part of Marina Park and opened towards the end of 2021.

Photo 12.8: Grounds of Páirc Uí Chaoimh and nearby Marina Park off Monahan Road

12.4.5 Published Landscape Character Assessments

12.4.5.1 Cork City Landscape Study

This study was commissioned by Cork City Council in 2008 to "*establish principles and provide the framework for protecting and enhancing the natural environment and positively managing its change, as well as providing the context within which the design of developments can take place in an appropriate manner*".

The topography of the city was noted as being one of its defining features with the identified ridges, escarpments and slopes. Eight different Landscape Character Areas and associated Key Landscape Assets of Cork City were described in the Cork City Landscape Study 2008 with the proposed development site being located in an area called "*Urban industrial/commercial/institutional*". In relation to the LCA type, it notes the following:

> *"The dominant industrial character areas are located on the north and south docklands to the east of the city centre. The main commercial areas to the south of the Lee are located in and around Mahon to the south east of the city. The dominant institutional character areas are the grounds of UCC and the Cork Institute of Technology to the west of the city."*

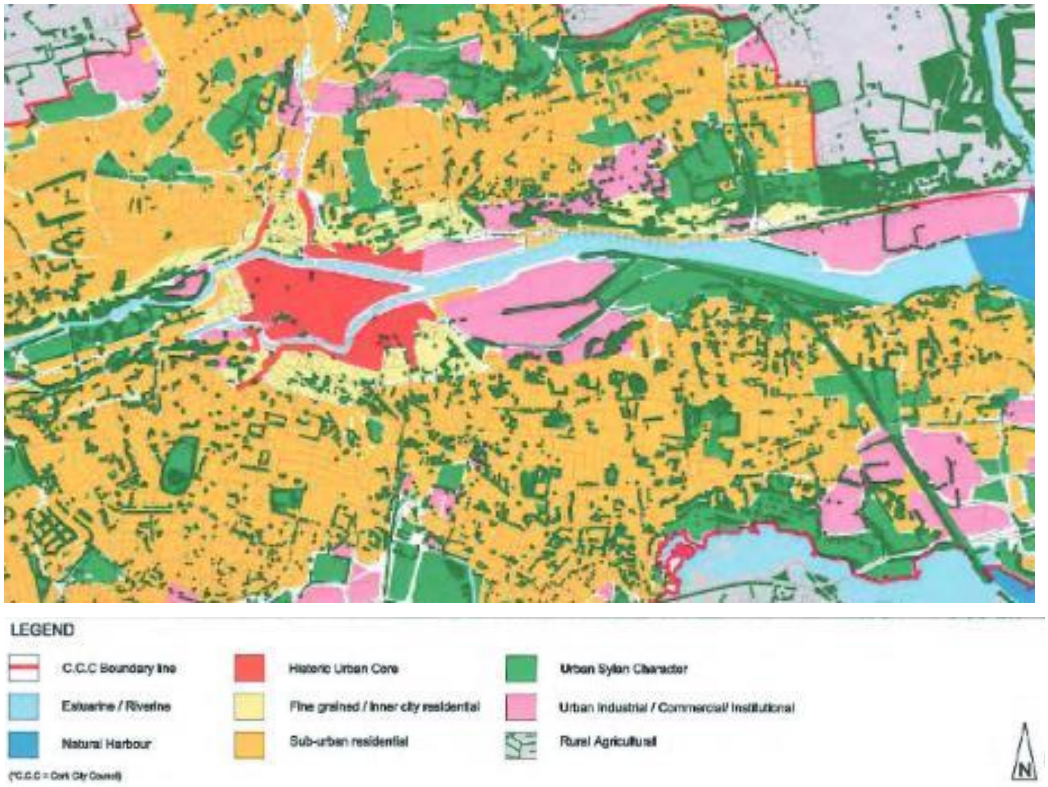


Figure 12.2: Landscape Character Areas as identified in the Cork City Landscape Study 2008 | not to scale

The Landscape Character Assessment (LCA) within the Cork County Development Plan 2014 identifies 16 Landscape Character Types (LCT). The proposed development site is located within Type 1 "*City Harbour and Estuary*" which covers a large, diverse area and includes the topography and landscape components of the River Lee, the open natural harbour with its islands and shore, major industrial developments west of the harbour, a mix of rural and intensely urban development, and the higher ground with its telecommunication masts and water storage towers. Within the section on "*Key Characteristics*" and relevant to the proposed development site, it includes the following summary points:

- This landscape comprises a mix of rural and intensely urban areas, combined with a large expansive harbour.
- The city docks area is characterised by tall cranes, warehousing, grain silos and large ships, while the wider harbour area comprises a mix of industrial, residential and recreational uses including marinas.
- Port facilities and related industries dominate much of the harbour area and to the south of the city, the western side of the harbour supports major industrial development.
- Telecommunication masts and water storage towers punctuate the skyline.
- This area has a strong economic base due to its strong urban character and diversity of economic activities.

- As a large population centre this area is not only important locally as a place to live and work but it also contributes significantly at regional and national scale.
- It is also home to a number of prime industrial/enterprise sites including one of the largest concentrations of pharmaceutical industries in the world.

In relation to the subject of "*Infrastructure*", it states "*The future reorganisation of port facilities will have a huge impact on the development of the docklands. CASP supports the relocation of port activities to the lower harbour to allow the redevelopment of the docklands*."

12.4.5.2 South Docks Local Area Plan (2008)

The SDLAP notes that the proposed development site is part of an area of land reclaimed from the River Lee extending to approximately 131 hectares and including about 4km of waterfront.

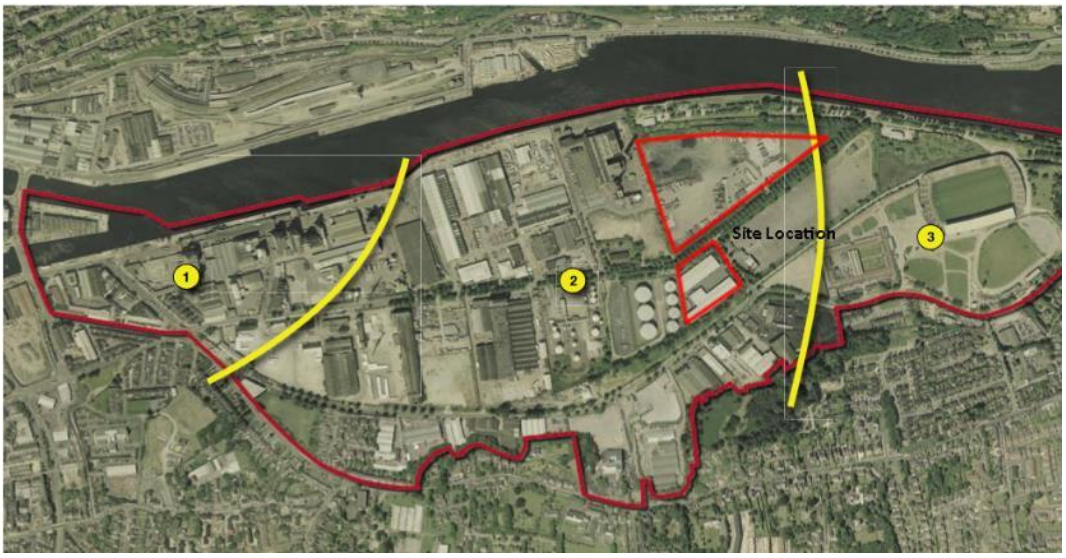


Figure 12.3: General Character Areas as per the South Docks Local Area Plan (2008) | not to scale

In the last 100 years, uses of the area have included port-related and industrial activities, however, the changing requirements of the port, with the consequent relocation of many activities downstream, together with the associated decline of some traditional industries, presents an opportunity to develop large, accessible brownfield sites. The SDLAP divided the area into three with the proposed development predominantly in "*Area 2 - Centre Park & Monahan's Road*" which is described as follows:

"*Along Centre Park and Monahan's Roads activities are predominantly commercial and industrial, with key land uses including the ESB power station and Topaz Energy Ltd. A number of business and commercial parks have been developed including Marina Commercial Park, which provides units for small and medium sized enterprises. Centre Park Road divides the South Docks area*

into two almost equal parts and the trees lining this road are one of the few landscape features of note. There is little sense of urban enclosure or place and street frontages are generally ill defined".

12.4.5.3 Cork City Urban Density, Building Height and Tall Building Study (2021)

This notes that the South Docks is earmarked for transformative change but it is *"... probably the relative lack of high frequency bus services that is excluding this area from the very highest and most suitable density zone*" in their Spatial Density Strategy.

This study calculated that the prevailing building heights in the proposed development area were the highest in Cork City (P67-68) and the most significant height variance (P69-70). Further figures (P71-72) related to *"City centre and docklands prevailing heights (incl consented) by block (median)"* show the proposed development site bound by the highest buildings in the city area which the study calculated at 25m.

12.4.6 Planning and Landscape Designations

12.4.6.1 Cork City Development Plan, 2015-2021

The Cork City Development Plan 2015-2021 (CCDP), is Cork City Council's main strategic planning policy document guiding the future renewal and development of Cork City to 2021 and beyond. The proposed development is located within the jurisdiction of the CCDP.

The proposed development site is located within the North and South Docks area that is described as a *"... major new mixed use quarter is the most significant sustainable development opportunity for the City Region".* (CCDP 2.23). (Note the CCDP largely defers to the associated South Docks Local Area Plan 2008 (SDLAP) in terms of detailed planning strategy for this area).

Within CCDP Volume 2, the relevant maps indicates the zoning objectives for the City Centre and Docklands. The maps annotate the site as follows:

- The proposed development carries zoning for a Neighbourhood Centre (Zone 9), Public Open Space (Zone 14) and Mixed Use Development (Zone 16);
- A proposed Amenity Route to the immediate north of the proposed development site, on the embankment towards the River Lee (correlating with CCDP *Objective 11.13 Amenity Routes* for a connection link from Albert Quay to Marina via Kennedy Quay and South Jetties along River Lee south bank);
- The landscaped embankment towards the River Lee shore is designated as an *Area of High Landscape Value*;

- The proposed development site is not located within any Landscape Preservation Zone, Historic Street Character Areas or Architectural Conservation Areas; and
- Located less than 50m from the north-east corner of the site off Centre Park Road is a "Proposed Tall Building Location".

CCDP *Objective 13.27* notes the following with regards to the South Docks:

> *a) Promote development of the South Docks as a new urban quarter, with initial emphasis on those areas that can be developed without major infrastructural investment;*
> *b) Review the South Docks Local Area Plan and consider whether it needs to be amended to take account of changed circumstances including reviewing the proportional mix and density of uses in different precincts and related infrastructural requirements;*
> *c) Support the upgrade of recreational and amenity facilities at Marina Park, Pairc Uí Caoimh and Monahan Road over this Plan period; and*
> *d) Work with key stakeholders to overcome barriers to development of South Docks.*

The Landscape Strategic Objectives outlined in the CCDP that relate to the protection of the City's landscape character are:

CCDP Objective 10.1 – Landscape Strategic Objectives
- *To preserve and enhance Cork's landscape character and key landscape assets; and*
- *To preserve and enhance Cork's views and prospects of special amenity value*

CCDP Objective 10.2 – Cork City Landscape
- "*To preserve Cork's unique and distinctive landscape character through the appropriate management and enhancement of Key Landscape Assets*."

CCDP Objective 10.3 – Cork City Landscape Structure Plan
- "*To preserve and enhance Cork's landscape and where appropriate, to increase access to and utilise the landscape for recreational purposes through the implementation of the Landscape Structure Plan*."

CCDP Objective 10.4 – Areas of High Landscape Value (AHLV)
- *"To conserve and enhance the character and visual amenity of AHLVs through the appropriate management of development, in order to retain the existing characteristics of the landscape, and its primary landscape assets. Development will be considered only where it safeguards to the value and sensitivity of the particular landscape. There will be a presumption against development where it causes significant harm or injury to the intrinsic character of the AHLV and its primary landscape assets, the visual amenity of the landscape; protected views; breaks the*

existing ridge silhouette; the character and setting of buildings, structures and landmarks; and the ecological and habitat value of the landscape."

CCDP Objective 10.5 – Landscape Preservation Zones

- *"To preserve and enhance the character and visual amenity of Landscape Preservation Zones through the control of development. Development will be considered only where it safeguards to the value and sensitivity of the particular landscape and achieves the respective site specific objectives (Table 10.2 in CCDP)."*

CCDP Objective 10.6 – Views and Prospects
"To protect and enhance views and prospects of special amenity value or special interest and contribute to the character of the City's landscape from inappropriate development, in particular those listed in the development plan. There will be a presumption against development that would harm, obstruct or compromise the quality or setting of linear views of landmark buildings, panoramic views, rivers prospects, townscape and landscape views and approach road views."

In terms of public realm design in this area, CCDP Objective 13.28 states "*Public realm design in Docklands will be guided by the Docklands Public Realm Masterplan and Public Realm Guidelines 2012 and by Marina Park Masterplan 2013*".

12.4.6.2 South Docks Local Area Plan (2008)

The City Council is currently preparing Local Area Plans for the City Docks and the Tivoli Docks strategic regeneration areas, which will replace the South Docks LAP (SDLAP) and the North Docks LAP. At the time of writing this report the CCDP is still referencing the SDLAP for detailed guidance on the zoning objectives as well as area wide strategies and infrastructure and public realm strategies.

Within the SDLAP, it identifies the proposed development site as being part of Development Precinct No. 15 "*Parkside*" and No. 16 "*Marina*". The annotations shown on the relevant objective maps (Map 5.12 and 5.13) indicate the site is zoned for Public Open Space (SD02), Social / Community Infrastructure (SD06), Mixed-use Development (SD01) and District / Neighbourhood Centre (SD04).

For the Parkside, located on the western fringe of the Application Site, the SDLAP Objective SD62 states the following:

Cork City Council will seek to ensure the provision of the following elements to promote the sustainable development of the Parkside Precinct within the South Docks:

- *Flood protection measures as identified in the Infrastructure Strategy;*
- *Retention and improvement of the Shandon boat club and slipway;*

- *Provision of additional moorings in accordance with the Public Realm Strategy;*
- *Retention of landscape elements along the Marina and upgrading of public realm, including Quayside Amenity and Area and Sculpture Trail;*
- *Relocation of Seveso activities and under-grounding of power lines where possible; and*
- *Development of part of the post-primary school.*

For the Marina precinct which covers the majority of the Application Site, the SDLAP Objective SD63 states the following:

Cork City Council will seek to ensure that the following key projects will be implemented to guide the full development of the Marina Precinct:

- *Development of a Neighbourhood Centre incorporating a public transport stop;*
- *Raising of ground levels along Centre Park Road to mitigate against flooding and subsequent replacement of existing trees with semi-mature lime trees;*
- *Promote mixed-use developments and Neighbourhood Centre uses;*
- *Development of two Tall Landmark Buildings, in accordance with Section 4.8.2;*
- *Provision of opening Eastern Skew Bridge as a landmark/gateway structure;*
- *Development of community facilities;*
- *Upgrade and continue the South Docks quayside walkway;*
- *Promotion of artists working spaces and work/living spaces; and*
- *Provision of part of the Post Primary School.*

SDLAP Objective SD38 relates to "Building Heights, Massing and Density" and notes the following:

The provision of high density residential units within the South Docks should provide for:

- *The development of defined new urban/transport nodes, extending from the City;*
- *Vibrant, mixed community areas which can support the local economy, transport and community facilities and foster social inclusion;*
- *High quality architectural proposals which provide a combination of designs to create a distinct identity and 'sense of place' within the South Docks;*

- *High quality public realm environment to define neighbourhoods and provide linkages to the waterfront location of the South Docks.*

The location of five tall landmark buildings were identified for the South Docks within the SDLAP including one within the Marina area with a suggested maximum height of +96m OD which would be seen as an "*… iconic tall landmark building promoting new South Docks area*" (SDLAP Table 4.5).

SDLAP Objective SD44 relates to Public Open Space and notes that the Council *"… will require the development of the South Docks to demonstrate adequate levels of public open space provision. Public open space will comprise 10-14% of the South Docks area net of the lands of Marina Park and will be developed to a high standard."*

SDLAP 5.2.11 notes that there are proposals in relation to Centre Park Road and that *"… ground levels will need to be raised to mitigate against flooding risks, which will require the removal of the trees*".

12.4.6.3 Cork City Centre Strategy (2014)

This document was commissioned by Cork City Council and informed the CCDP policy regarding the future development of the City Centre area. Within this, the proposed development site is located within the "South Docks" with the accompanying stated objective to "*Promote development of the South Docks as a new urban quarter, with initial emphasis on those areas that can be developed without major infrastructural investment."*

12.4.6.4 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) identifies no monuments or historic sites on the proposed development site. The Zone of Archaeological Potential lies over 2km to the west of the site.

12.4.6.5 Environmental Protection Agency

Maps available from the Environmental Protection Agency (EPA) indicate no protected landscapes, environment or ecology areas on or close to the proposed development site.

12.4.7 Relevant Planning Guidance

12.4.7.1 Sustainable Residential Developments in Urban Areas – Guidelines for Planning Authorities (DoEHGL 2009)

This includes information on how public open spaces should be designed, namely:

- Public open space should be provided in a comprehensive and linked way and designed as an integral part of the development;

- Wherever possible, the majority of open space should be multi-functional. Areas providing for informal amenity and children's play can often successfully be combined;
- Public open space should be well designed from a visual perspective as well as functionally accessible to the maximum number of dwellings within the residential area;
- Attractive natural features e.g., trees and hedgerows should be retained, protected and incorporated into public open space areas;
- Public open space areas should be provided with a maximum amount of surveillance from dwellings within the estate;
- Open space should be suitably proportioned and narrow tracts, which are difficult to manage, are not acceptable;
- The use of hard landscaping elements such as paving or cobbled areas should provide an increasingly important role in the design and presentation of open space concepts, while having regard to surface water runoff. Proposals should include landscaping plans;
- The provision of open spaces to serve new residential developments should be on a hierarchical basis varying in size from large town parks to small children's play areas and passive recreation spaces close to people's homes; and
- Generally, houses shall not be permitted to back onto public open spaces;
- The Planning Authorities will require a standard of 80m2 of public open space per dwelling and developers will be required to reserve a minimum of 15% of the total subject site area as recreational public open space.

In terms of calculation of open space, this document advises that "*In calculating the area of public open space, the area of roads, grass margins, roundabouts, footpaths, and land associated with other infrastructure or land which by their nature or topography is not capable of being used for amenity purposes shall not be taken into account when the provision of public open space is being assessed*."

12.4.7.2 Urban Development and Building Height Guidelines for Planning Authorities (2018)

Within these guidelines it states that "*planning authorities shall not provide for blanket numerical limitations on building height*" (Specific Planning Policy Requirement 1). Within Chapter 2 it also notes the following:

- Taller buildings will bring much needed additional housing and economic development to well-located urban areas, they can also assist in reinforcing and contributing to a sense of place within a city or town centre, such as indicating the main centres of activity, important street junctions, public spaces and transport interchanges (Section 2.5); and
- In some cases, statutory development plans have tended to set out overly restrictive maximum height limits in certain locations and crucially without

the proper consideration of the wider planning potential of development sites and wider implications of not maximising those opportunities by displacing development that our wider society and economy needs to other locations that may not be best placed to accommodate it. (Section 2.6).

12.4.7.3 Cork City Urban Density, Building Height and Tall Building Study (2021)

In terms of *Density and Building Height Guidance*, this recent study noted the following:

"The South Docks presents a massive long-term regeneration opportunity. The phased redevelopment of this industrial area will generate a new character in what will be a radical transformation. The area is therefore significantly less sensitive to change and is correspondingly the most appropriate location for taller and tall buildings in the city. The majority of new buildings should range generally in height from 6 to 10 storeys with exceptional opportunities for tall buildings at appropriate locations within the area."

The study later identified areas suitable for potentially tall buildings in the city that included the South Docks north of Centre Park Road, including the Warehouse Quarter, Ford-Dunlop Quarter (including the Former Ford Factory ACA), Wharf Quarter and Marina Quarter (i.e., including the proposed development lands) where it noted there were already existing tall buildings and that the area was "*…generally less sensitive having fewer heritage assets*" than other parts of the city centre area. Having identified the site as such, the study provides guidance on context, design and broader issues including amenity and sustainability.

12.4.8 Townscape / Landscape Quality and Value

The proposed development has a brownfield, derelict and vacant character with no distinctive or notable landscape features, with its locale dominated by silos, cranes and built form of existing and former industrialised landscapes It has been in a similar condition for most of the 21st century and any remnant buildings or structures are in a neglected and degraded condition though, due to peripheral vegetation, these are generally obscured from public vantage points. It would be categorised as a *poor* and damaged townscape of low sensitivity and very capable of accommodating change.

The sense of place of the South Docklands is affected by the extent of functional transport corridors and commercial land-uses reducing it to a *poor* townscape though there are features such as the tree-lined Centre Park Road and Marina Park that contribute to localised betterment.

In citywide and broad terms, the Cork County Landscape Strategy notes that the City Harbour & Estuary character type has a Landscape Value and Landscape Sensitivity rating as "*Very High*" and the Landscape Importance as National. However, the proposed development is not located within any national or regionally designated landscapes and Architectural Conservation Areas. However,

it is partially located within an Area of High Landscape Value to the north of the proposed development. Further, it is notable that the South Docks Local Area Plan (2008) describes "*the quality of the urban environment is poor and the lack of defined street frontage and permeability contribute to a corresponding lack of supervision of public space and low security levels for pedestrians*" and that "*There is little sense of urban enclosure or place and street frontages are generally ill defined.*" (SDLAP P. 11).

Photo 12.9: View across western part of proposed development site from the gate off Centre Park Road

The more recent Cork City Urban Density, Building Height and Tall Building Study (2021) states under the Composite Sensitivity Assessment (P.87-88) that the *"... South Docks area is one of the least sensitive locations in the city for new tall buildings*."

While the proposed development site and some parts of the local area clearly have detracting elements, the River Lee and Marina Park (a designated Area of High Landscape Value and Amenity Route) do provide the South Docks area with a significant aesthetic and visual amenity lift. There are also NIAH listed buildings in this area including the Shandon Boat Club.

Surrounding the proposed development is a mix of ordinary and poor townscape including large scale industrial and business parks, major roads and brownfield lands which give the wider area a functional and utilitarian character. While there are localised areas of improved or higher quality landscapes including towards the River Lee and likely to be associated with Marina Park, the area is a predominantly modern industrialised townscape and the lack of EPA or planning designations suggest this part of the city has a low sensitivity in landscape and visual terms.

Photo 12.10: Marina Park and Greenway to the north of the proposed development beside the River Lee

12.4.9 Views, Prospects and Site Visibility

Site surveys were undertaken to establish locations where there are potential views of the proposed development or where key visual receptor groups might visit, work or stay and any general movement through the area. Built-up townscape, infrastructure and vegetation are features of the local townscape. Views consistently change in context, scale and extent with many views of the proposed development closed off, even from close proximity locations.

The CCDP notes that *"Cork City benefits from the prominent ridges which provide a series of striking viewing point of the city. This important resource helps define the character and identity of the city"* and "*In general, the city is appreciated by most people along viewpoints such as the River Lee and panoramic views from elevated sites*." A review was also undertaken of the Views and Prospects designated or outlines on CCDP Map 13 and Map 16 and additional landscape/townscape views identified within the South Docks Local Area Plan (SDLAP).

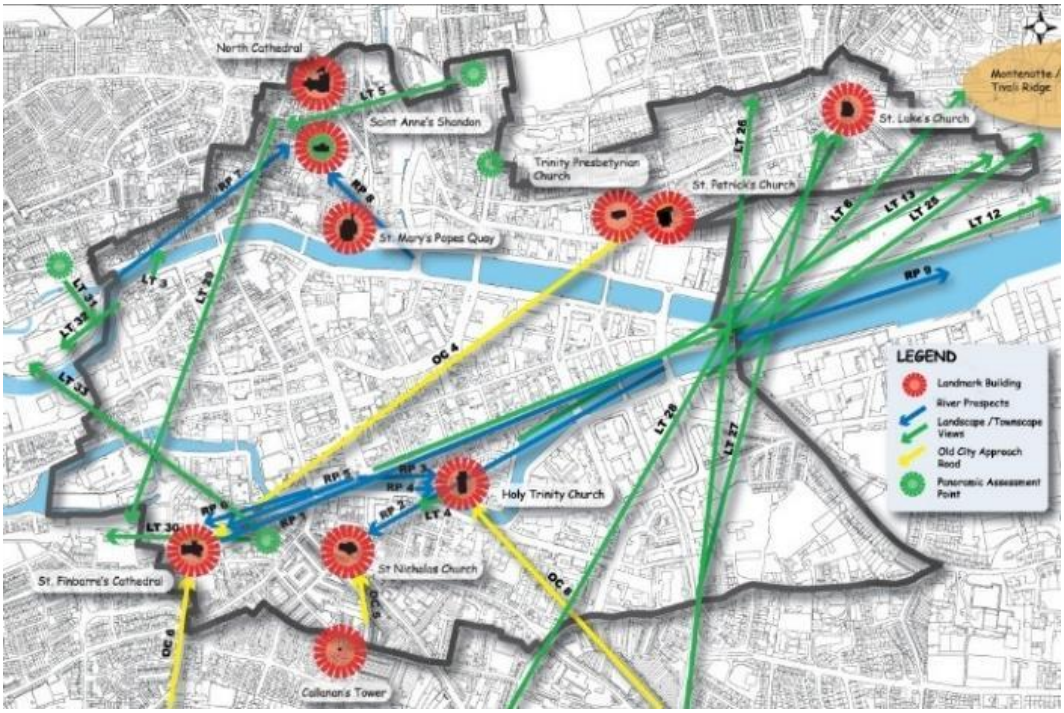
Within the SDLAP, Objective SD 39 notes it is *"... an objective of the City Council to promote new developments which protect and enhance the protected views of Cork City centre. All applications for high buildings must have regard to the Cork City Views and Prospects Variation to the CCDP (Variation No. 3), to Table 4.4 and Figure 4.10 of this LAP and to the Public Realm Strategy*."

With reference to the CCDP views, it identified identifies and describes 5 different view types, namely Linear Views of Landmark Buildings, Panoramic Views, River Prospects, Townscape & Landscape Features and Approach Road Views.

As part of the site surveys, the Views and Prospects as designated on Maps 13 and 16 with the CCDP were assessed to establish if there would be any potential effects on their nature or visual amenity and this established that the majority did not include the proposed development within their potential cone. See **Figure 12.4** and **12.5**. Site visits identified potential ambiguity in terms of locations of designated views LT9.10 and 11 (corresponding to VPs 17-19) but these were evaluated on site and representative viewpoints were selected in these areas to allow subsequent assessment.

Viewpoints were selected within publicly accessible areas based on the following criteria:

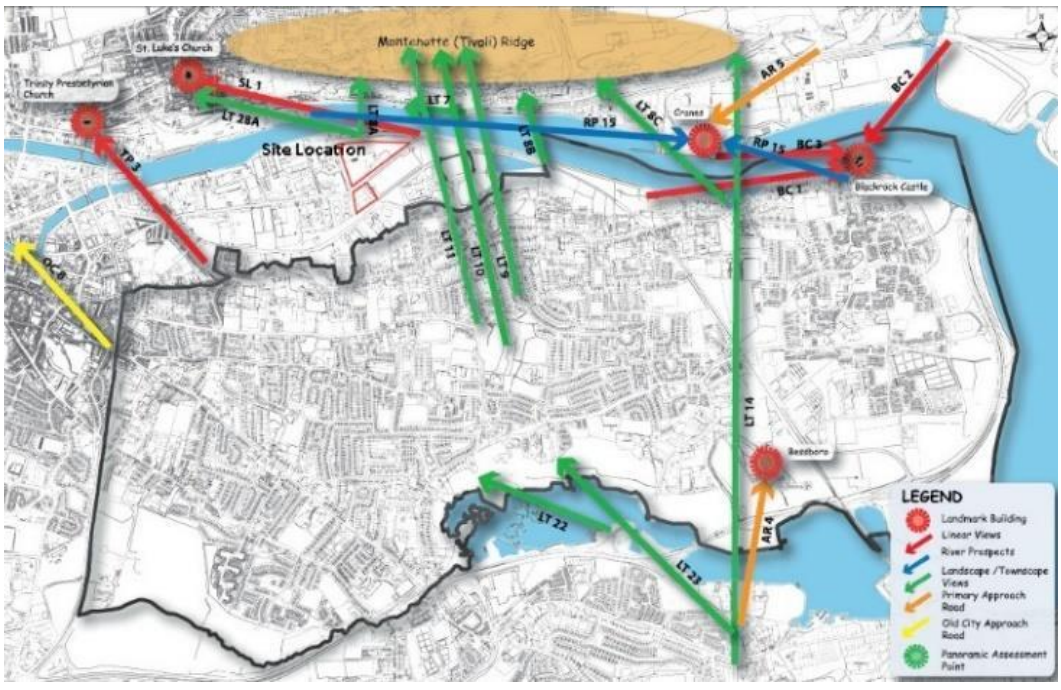
- Site investigation to establish those locations where there was likely to be significant views (e.g., exposed and elevated locations);
- Site investigation to establish those locations where there was likely to be a significant number of visual receptors (e.g., commuter routes or public parks);
- Consultation and review with Cultural Heritage Consultants to identify key viewpoints in relation to listed buildings, conservation areas, landmark buildings and important local prospects, views and panoramas; and
- Ensuring that all townscape character areas potentially affected are covered to give representative likely visual effect.



CCDP Map 13 Views and Prospects City Centre and Dockland

(Note the Application Site is beyond map extract area)

Figure 12.4: Designated Views and Prospects as per Cork City Development Plan | not to scale



CCDP Map 16: Views and Prospects: South East (Application Site outlined in red)

Figure 12.5: Designated Views and Prospects as per Cork City Development Plan | not to scale

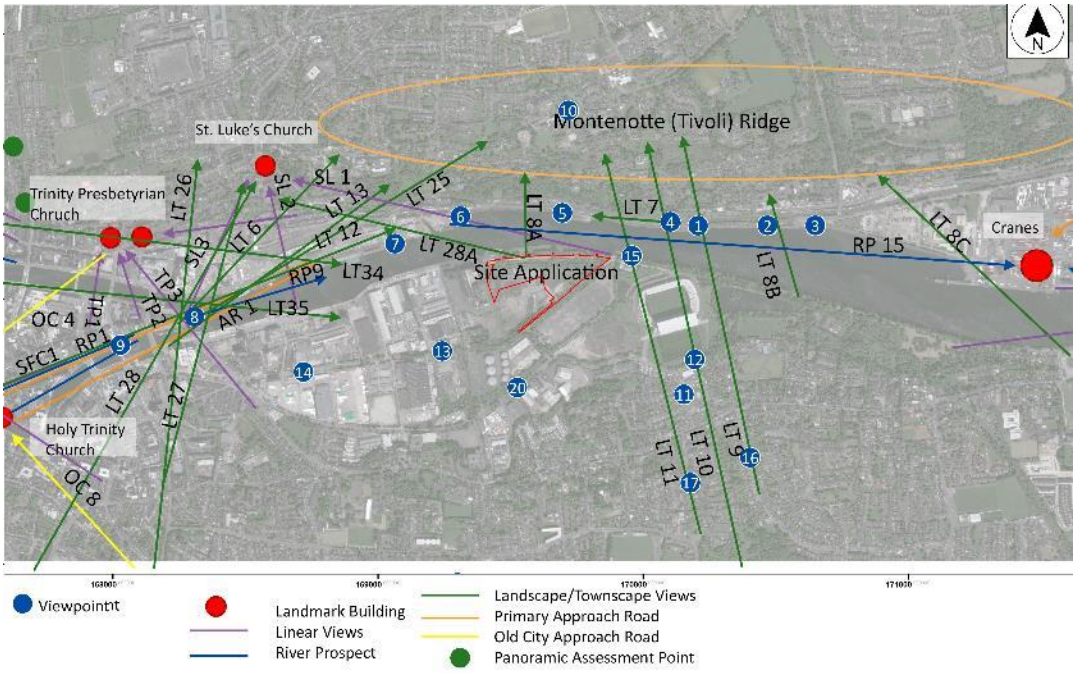


Figure 12 6: Representative Viewpoint Location Map | not to scale

Selected representative viewpoints for the visual assessment are taken from the following locations:

Table 12.8: Visual Reference Points

VRP No.	Location	Relevant Designation or Reference as per CCDP and SDLAP
Viewpoint 1	Lower Glanmire Road	
Viewpoint 2	Port of Cork Garden off Lower Glanmire Road	Near View LT 7A
Viewpoint 3	Entrance/exit road to the Tivoli Industrial Estate	
Viewpoint 4	Woodside, Tivoli – pedestrian railway crossing	View LT 7A
Viewpoint 5	Bellevue Villas, off Lower Glanmire Road	
Viewpoint 6	Ferryboat House, Lower Glanmire Road	
Viewpoint 7	Horgan's Quay	
Viewpoint 8	Custom House Quay	View RP 9, Map 13
Viewpoint 9	Clontarf Bridge, Cork City Centre	
Viewpoint 10	Middle Glanmire Road, Montenotte	
Viewpoint 11	Maryville, Ballintemple	
Viewpoint 12	Monahan Road, Ballintemple	
Viewpoint 13	Centre Park Road	

VRP No.	Location	Relevant Designation or Reference as per CCDP and SDLAP
Viewpoint 14	Centre Park Road	
Viewpoint 15	The Marina Boat Jetty Pontoon	
Viewpoint 16	Beaumont Drive	View LT 9, LT 10 Map 16
Viewpoint 17	Church Yard Lane, Ballintemple	View LT 11, Map 16
Viewpoint 18	Ballinlough Park	
Viewpoint 19	Lotaville, N8 Road Tivoli	View AR 5, Map 16
Viewpoint 20	Monahan Road	

12.5 Characteristics of the Proposed Development

12.5.1 Proposed Development Summary

The development will comprise the demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level.

Figure 12.7 Proposed Landscape Masterplan | not to scale | source: *Park Hood Landscape Masterplan Drawing No. 7248 L 2000*

The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

The following summarises the key landscape design considerations and matters related to the site development and should be cross-referenced to the Landscape Design Statement (Park Hood 2022) and the landscape plans that accompany this planning application.

12.5.2 Existing Landscape Assets

As noted above, within the core of the Application Site, there is little in terms of landscape features or vegetation of note or worthy of retention with the lands being subject of historical disruption and change. The most notable feature on the site is the open channel or waterway to the north towards Marina Park that is to be retained with the tidal gate repaired and become the core of an ecological parkland that coordinates and links the existing park to the proposed development.

In conjunction with a wider drainage strategy for the site, the collective watercourses are to be repurposed and integrated into the landscapes or open spaces. That to the north adjacent to Marina Park is to become part of a wider ecological park.

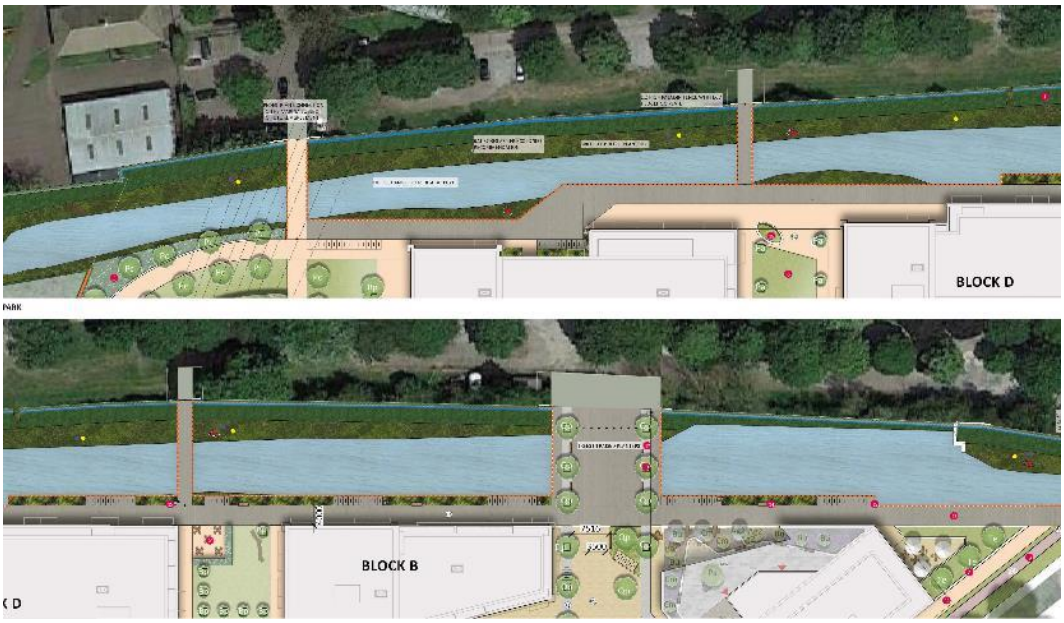


Figure 12.8 Open Channel Landscape Plan | not to scale | source: *Park Hood Ecology Park Drawing No. 7248 L 2001*

It is the design intention to ensure that peripheral vegetation of any natural or ecological worth and associated trees are retained intact and augmented as part of this proposal. The avenue trees aligning Central Park Road are to be retained and while any to the north considered to be in reasonable condition will be retained where feasible based on information from Tree Survey Report (Boe 2021) and Ecology Assessment. These trees will be protected during the course of construction works in accordance with BS5837.

12.5.3 Landscape Design, Amenity Considerations and Mitigation

12.5.3.1 Circulation and Connectivity

The main vehicular entrances are off the Centre Park Road and will provide access to internal streets and to both surface and basement car parking. These accesses include for cyclist and pedestrian provision with 4 no. new linkages are proposed from the road including for non-vehicular use to contribute to general permeability and connectivity. The landscape design aims to provide a functional readability and sense of connectivity between streets and open spaces through the use of high-quality materials and the provision of a planting scheme coordinated with the cyclist / pedestrian footpath network helping to ensure easy navigation around the site. This includes for the clear linkages between Centre Park Road and Marina Park through the site via new bridges or connections over the existing open channel.

Cyclist provision is an integral part of the external design with bicycle paths following the internal road routing but separated by landscape features such as tree planting to assist in safety. Bicycle storage provision is facilitated internally and, externally, at strategic node/meeting points such as the plaza. The potential for future cycle and pedestrian linkages along the River Lee shoreline to the west towards the city via Marina Park are also considered within the proposed layout.

Wide pedestrian footpaths connect the public realm and internal roads with sufficient width along these routes to allow them to be visually and aesthetically enhanced by tree and hedge planting. The selection of materials includes a mix of permeable concrete pavers and compacted gravel set between appropriate edgings. Urban furniture is to be located at key locations or spaces along these connections for resident or visitor use.

12.5.4 Boundary Treatments

The proposed works include improvements to the bank and open channel in the northern part of the site towards the River Lee to enhance its visual appearance, assist in slope stabilisation and biodiversity benefit. Works are currently underway to address scrub and Japanese Knotweed in these areas. The boundary fence in this area will be set within a vegetated setting to minimise its visual influence.

To the south on Centre Park Road, landscape works include culverting the existing watercourse to the rear of the footpath and provide new roadside treatments in the form of railings and hedgerow planting to assist in site definition.

12.5.5 Hard Landscaping Works

The selection of hard landscape materials is based on sustainability, permeability and suitability for an urbanised environment and usage. This will include natural

and manufactured paving with a consistent selection across the site in terms of shape, material, form and colour.

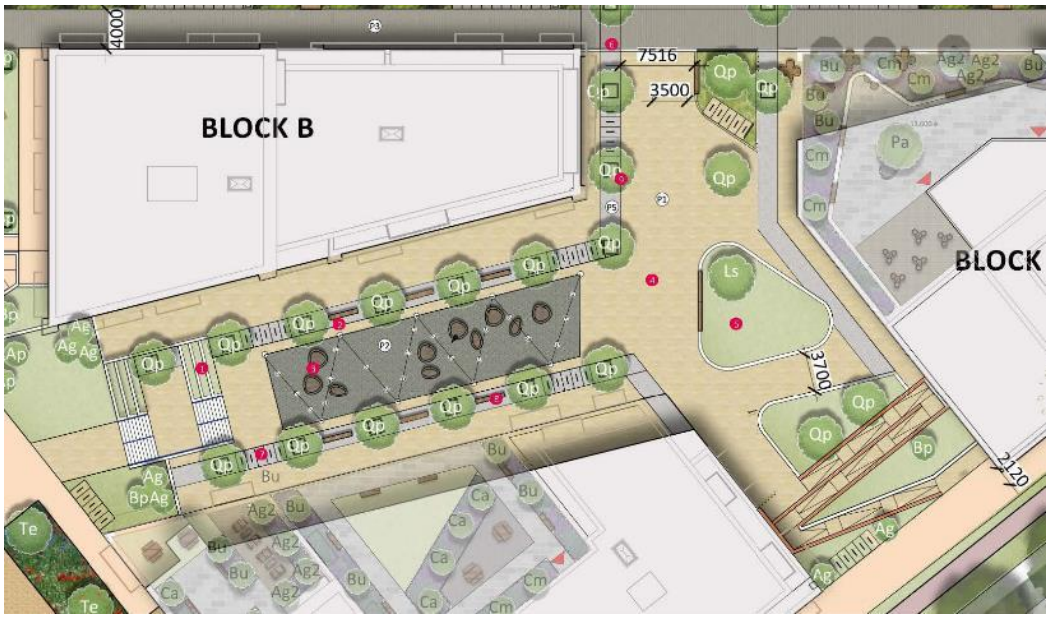


Figure 12.9 Proposed Plaza | not to scale | source: *Extract from Park Hood Plaza Plans Drawing No. 7248 L 2002*

12.5.6 Planting Works

Extensive soft landscape works are proposed to assist with visual integration, open space definition and screening both internally and externally. The collective tree planting will, as it matures give this site a far more wooded character than it has at this time.

Bio-diversity measures including bat and bird boxes, relocation of potentially effected ground flora into the open spaces and designs related to the open channel are part of the proposed development and will be undertaken in coordination with site ecologists. Planting and augmentation of existing vegetation will consist of evergreen and deciduous trees with under-story scrub mix with a range of plant species and heights selected to provide quick establishment and assist in visual integration.

The landscape works include for planting of trees within public open space, communal open space and along new connection routes through the proposed development that will entail over 360 no. ‘semi-mature’ or ‘extra-heavy standard’ size trees to provide an instant impression. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about creation of the areas new landscape character. Other landscape works will include structure planting, amenity planting, garden trees, hedgerows and wooded belts. Such planting will more than compensate for the loss of the low-quality vegetation that currently exists and will enhance the overall “green” cover and nature of the site.

Figure 12.10 Public Park | source: *Extract from Park Hood Drawing No. 7248 L 2003*

Amenity planting will consist of trees, native woodlands, hedgerows, shrub / groundcover planting, meadow / wildflower and grass seeding works. As the planting matures, it will change the nature of the site and its visual amenity and the height of planting for assessment purposes is as follows:

- Planting at Year 1: 3 metres;
- Planting at Year 15: 8 metres; and
- Planting at maturity: 20 metres (i.e., Year 25).

Plants selected will be predominantly indigenous and species selection based on those in the *All-Ireland Pollinator Code* to ensure successful plant establishment that will merge visually and ecologically into this area. Reference is also made to the *Cork City Biodiversity Plan 2009-2014* in terms of general planting advice and setting out.

Landscape works will be undertaken by an ALCI approved landscape contractor and in accordance with *BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces*).

12.5.7 Landscape Management and Maintenance of Public Open Spaces

The management of all areas will initially be undertaken by an ACLI approved landscape contractor with the developer remaining as client for duration of their contract for each section of the development. After 12 months the maintenance will be handed over to the long-term Management Company who will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exists and has established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

12.6 Potential Effects

12.6.1 Introduction

The aim of the LVIA is to objectively and professionally assess how the proposed development will affect the landscape, townscape and visual amenity of this part of Cork City. The terminology and glossary used in this chapter to describe landscape and visual effects is based on a review of the Principles and Overview of Processes (Chapter 3) of the GLVIA.

The magnitude and significance of any effect is determined by the scale and context of the proposed development and any resulting contrast between this and the existing townscape setting, visual quality and amenity. A further consideration is not just its proximity to adjacent townscape or landscape areas but also the number of people who use or pass through this area who may feel that the visual and townscape / landscape quality of the area has been affected by this proposal.

Any assessment must be measured against that of the situation that pertains at present and the existing site possesses little in terms of a positive contribution to the City character or quality. Impacts are not necessarily adverse and may be neutral (i.e., changes which make the existing situation neither better nor worse), or beneficial, following the development, though effects may be categorised as significant.

12.6.2 Do-Nothing Approach

Given that the area is zoned for Mixed-Use Development (ZO 16), Neighbourhood Centres (ZO 09) and Public Open Space (ZO 14) within the current City Development Plan, it is likely that the area site will be subject to on-

going interest for mixed use or residential development in the future. The nature of any future applications is impossible to determine but they could be of a more piecemeal and disjointed nature.

Until any application is granted, it is reasonable to assume there will be limited visual or character alterations to the existing situation and townscape / landscape setting. On balance of these, it is considered that the continued use of the land for such purposes represents a Low magnitude of landscape impact.

The existing site would be subject to minimal landscape management and usage and continue to contribute negatively to the character and sense of place in the South Docklands, Marina Park and Ballintemple area.

12.6.3 Construction Phase

The construction operations will cause affects to local townscape and visual amenity though the following:

- Removal / demolition of existing warehouses, buildings and internal infrastructure;
- Removal of scrub vegetation and internal colonising shrubs and trees;
- Site access and haulage routes using the existing road infrastructure off Centre Park Road;
- Fixed construction plant, including cranes and scaffolding and gantries;
- Mobile construction plant, such as excavators and lorries;
- Storage and compound areas;
- Erection of welfare facilities and retention of existing protective hoardings;
- Security and safety lighting; and
- The presence of evolving buildings.

Such is their condition, the removal of the existing buildings and vegetation would have no significant effects on local townscape character and demolition would have *neutral* effects (i.e., no better or worse) on the character of the site.

The site will be hoarded to clearly delineate working areas. Where feasible existing walls, ditches and fences will be retained in situ for the construction period. Publicity material may be displayed on the hoardings along Centre Park Road and towards the Marina to the north to inform the public and passers-by about the proposal and programme for delivery. These will also obscure views from pedestrian level views.

The construction works will represent an intensive change to the site character and result in direct effects to adjacent areas which will constitute a *slight adverse* effect comparative to the existing situation. These will be temporary and are not considered significant in context of the wider townscape or landscape given its current site use and degraded quality.

As the construction of higher floors commences, there will be more visual exposure and this will continue to have *slight adverse* effects on local townscape areas including areas on the adjacent section of Centre Park Road and immediately adjacent areas to the north within this section of Marina Park. Being a commercial / industrial location with brownfield characteristics and several sites having a degraded condition, effects deriving from construction and traffic would not constitute a significant change from the existing situation. Construction traffic and materials can access from Centre Park Road, and any increased usage will not be significant in landscape and visual terms.

To areas across the wider east city including Ballintemple, the construction phase will have *negligible* effects until the taller elements are being constructed and come into view. As these higher stories are constructed, the construction works will inevitably become more evident from incidental gaps or elevated areas in the townscape and along the River Lee corridor to the north but given the context of built environment and distance, the effects would be of a *low magnitude* and not of a significant nature. Any significant effects are therefore limited to the Application Site itself and the immediately adjacent lands.

12.6.4 Operational Phase

On the basis the current site contributes very limited positive townscape or landscape influence, the main consideration is the scale, height and mass of the proposed development in terms of the operational / completed phase. Note that tall buildings are commonly defined as those which are significantly taller than the generally prevailing height of buildings in the surrounding area.[44]

The townscape / landscape and visual effects deriving from this proposal are deemed to be permanent changes (i.e., effects lasting over twenty five years and irreversible). On completion, it will be a significant addition to the Cork South Docks townscape forming a prominent set of buildings and public realm that will transform the sense of place and character of this area. In broad terms, a proposal of this nature and scale will become part of the integrity, legibility and identity of South Docks area including a distinctive or landmark building at its eastern end representing a major change as to how the townscape is perceived in this part of the city. The following reviews the likely impacts on key townscape areas as identified in the baseline assessment section above.

12.6.4.1 Application Site

In terms of the actual Application Site, there are no distinctive / notable built or natural features including vegetation and buildings that will be lost; the key part of the assessment therefore relate to the scale and nature of the proposed development.

While the removal of the existing buildings would have no significant effects on local townscape character, the subsequent development will result in significant changes to the site character due to introduction of a series of taller buildings in the form of Blocks A, B, C, D and F that will have *profound* effects on the

[44] Tall Buildings Assessment - Royal Borough of Greenwich 2011

baseline setting on completion. The effects on the Application Site are categorised as *high* magnitude but this is not something that should be seen as adverse in townscape / landscape character terms. The new buildings and associated public realm and plinth landscape will reinvigorate and revitalise this part of South Docks giving it a more appropriate and city-related land use contributing to the immediate townscape character and sense of place.

Visual 12.1 Photomontage of core Public Open Space and Plaza within the Proposed Development Site| source: Urban 3D (2022)

The public road and path pattern to the periphery will be unaffected though the proposal offers the opportunity to enhance linkages between Centre Park Road and Marina Park and introduce major public realm and landscape works that would have positive effects on its visual appearance, usability, amenity and function.

The layout allows for extensive areas to be retained as landscaped parks or open spaces including a dedicated Ecological zone set out aside the watercourse to the north of the site and an amenity Public Park to the west. To the core of the site is a central shared boulevard leading towards a plaza with all elements designed to be integrated and linked for the amenity of residents, visitors and other users that would constitute a positive effect in terms of site amenity. Further, the roofs of many of the proposed buildings include communal roof gardens or are to be seeded out with sedum thereby enhancing the wider green character of the site.

The open space works include significant planting that will substantially increase tree and vegetation cover with significant improvements to the species diversification across the site. The collective landscape works will enhance the amenity, ecological worth and landscape character though introduction of amenity

gardens, landscape treatments, courtyards and planting (selected from lists provided in the *All Ireland Pollinator Code* [45]) that will give the site a much "greener" character than it currently has or has likely to ever have had.

Visual 12.2 Photomontage of Proposed Development and improved landscape and watercourse setting| source: Urban 3D (2022)

The trees on Centre Park Road are to be retained and protected as part of this development apart from a single tree at the widened entrance that will be removed to facilitate access. The character and sense of the avenue will not be affected by this small loss and it will still read in a very similar manner to that currently exists. Note that these trees may be affected by subsequent transport improvements in this area but this is not part of this proposal.

The proposal will have positive effects on its character and increase the street life and potential usage of Marina Park during both day and night while enhancing linkages through improved public accessibility via new public realm and linked open space.

The proposal will also allow for a more sustainable drainage system including SuDs ponds, retention areas across the site via green roofs and rainwater ponds that are integrated into the landscape works.

12.6.4.2 Ballintemple and wider South Docks

There will be *substantial* and significant effects to areas immediately beside the proposed development site on Centre Park Road and within the western edge of Marina Park leading towards the River Lee due to the change in use from former industrialised land to a taller mixed-use scheme and residential complex. The key change will derive from the scale and mass of the new buildings rising above that of the existing built form and riverside corridor that would be set out in areas including 5 no. blocks, parklands, roads and public realm that would have a very

[45] https://pollinators.ie/

different character and context to what exists at present. While assessed as significant and of *high magnitude*, the proposal will include positive effects in terms of local landscape character in terms of improved streetscape, enhanced and improved tree and vegetation cover and a set of landmark buildings giving enhanced townscape variation and identity in line with the Development Plan objectives and guidance.

Visual 12.3 Photomontage of new pedestrian / cycle link from Application Site to the north (Marina Park)| source: Urban 3D (2022)

This site is framed to the west by the commercial lands including the Marina Industrial Park and further large-scale townscape elements such as the ESB Marina Station that collectively ensure it is contained in character and visual terms towards the south and west and Cork city centre. The site is also buffered by established trees on Marina Park to the north and Centre Park Road that also assist in integration. The consented Ford site development will ensure that that all blocks apart from the upper floors of Block A, the landmark tower, will be visually obscured from much of the Ballintemple area to the south. As such, this development can be successfully absorbed into this area without causing adverse townscape / landscape effects and the site lends itself to such a proposal. See Views 13, 14 and 20 in **Appendix 12.1**.

Beyond Centre Park Road, the existing built environment comprises a density of building and vegetation that ensures the majority of townscape and landscapes to the south, west and east will experience *slight* / *negligible effects* (i.e., insignificant) due to the proposal being visually obscured or not forming a significant part of the setting. The majority of these areas will experience *negligible* or *no* townscape or visual effects due to the proposal being visually obscured. There will be no effects to any designated historic sites / environments or CCDP identified views in this locality.

To the north and along the River Lee corridor, the set of distinctive buildings and landmark tower will represent a notable addition to the local skyline with *moderate* to *substantial* effects. It will be a major component in the visual

backdrop to open riverscape and in views across the river from the north bank along the Lower Glanmire Road and rising lands towards the Montenotte ridge with the upper parts of the development rising above the tree belt within the Marina Park. The open nature of these panoramic views and the set-back of the development behind the linear Marina Park will give the city an enhanced sense of place for those arriving from the east and the development, while sizeable, can be accommodated and absorbed without detriment or adverse effects to any of these areas. Large scale buildings are components of the existing views in this area and this proposal will correlate with their scale and not appear out of place or context in townscape character terms.

Visual 12.4 Aerial Photomontage of Proposed Development and Setting in the Cork South Docks Townscape | source: Urban 3D (2022)

The proposed development will be taller than the existing buildings in this area but it not likely to be unique the city on account of the major regeneration ambitions which will inevitably be developed out with a contemporary architecture of a larger scale than currently exists. This includes the consented Ford site development and the proposed tower at Custom House Quay that would often be part of the same views from the riverside area. See Views 11, 12, 15 and 16 in **Appendix 12.1**.

12.6.4.3 Public Amenity, Open Space and Parklands

Marina Park

The park extends over 32 hectares to the north and east of the proposed development. The effects to those areas of the park to the east of Centre Park Road will be *slight* to *negligible* due to extent of intervening trees and woodlands. The most appreciable effects will be to the linear section of the park, partially in use for car parking, between Centre Park Road and the ESB Marina Station to the

north of the site (which is effectively a dead-end), where, due to proximity, there will be *substantial* effects. The large buildings will overlook part of this area and change its character and context though this will have appreciable positive aspects on account of the current unsightly landscape that offers very little in terms of usability, permeability and visual quality. This part of Marina Park is likely to be subject to more use following construction and be an important green space, linking with the ecology zone at the open channel within the site with the collective having a more meaningful contribution to the amenity provision and environmental considerations than it currently has.

A new part of Marina Park opened up in late 2021 to the west of Páirc Uí Chaoimh and north of Monahan Road. Between this and the proposed development is the consented Ford Site development and the tree-lined Centre Park Road. Should the Ford Site be built out, it would effectively screen all proposed buildings on this Application Site apart from some of the upper floors of Block A though this too would be set well back behind the Ford Site buildings. Effects on this part of the park are therefore judged as *slight* and *neutral*.

Kennedy Park

No effects on the use or setting of the park are predicted due to distance and extent of peripheral woodland.

Ballinlough Park

No effects on the use or setting of the park are predicted due to distance and extent of peripheral woodland. See Viewpoint 18 below.

Beaumont Park

No effects on the use or setting of the park are predicted due to distance and extent of peripheral woodland.

Port of Cork 2000 Garden

Due to the relatively close proximity (280m at the closest point), and open nature of the intervening riverscape, there will be *moderate* effects to the visual backdrop to the park in views to the south-west. There will be no effects on the usability or function of the park and the change will be one in the distance that relates to changes in the wider townscape setting that, while visible and introducing large-scale built form into the view, would also visually demonstrate revitalisation of redundant lands. It would also be in keeping and balance with similarly large buildings in the view such as the ESB Marina Station and Páirc Uí Chaoimh (and the consented Ford Site development). It would not have any unacceptable or detrimental effects to the riverside areas and serve as a positive image of a city moving forward. Refer to View 2 in **Appendix 12.1**.

Páirc Uí Chaoimh

The grounds of Páirc Uí Chaoimh are located just over 200m away though the intervening lands include the tree lined Centre Park Road and the consented Ford Site (which would screen the majority of the development from this area should it be built out). The backdrop of the view to the north-west will have *slight* but

neutral effects on this area due to intervening screening and it would have no direct effect on the character, use or enjoyment of the grounds. Refer to Views 12 and 15 in **Appendix 12.1**.

12.6.4.4 Cork City

The current site and setting contributes little to the character or quality of this part of the city. This development will signify a fresh phase or stage for this part of the South Docks which will have *substantial* effects on areas closer to the proposed development but the baseline setting ensures this can be successfully absorbed without causing any adverse townscape / landscape effects. There are no CCDP designated views, landmarks, landscapes / townscapes, prospects or vistas affected by this proposal in an adverse, unacceptable or significant manner.

In townscape character terms, the completed development will improve the quality and character of this area symbolising progress, revitalisation and positivity with the development including significant new public (and communal) open spaces that will be a positive effect in terms of "greening" this part of the city in an area that has been devoid of such a characteristic or any appreciable land-use for some time. For those arriving into the city on the Lower Glanmire Road and trainline to the north of the River Lee, it will be seen in context with the existing townscape (including the landmark ESB Marina Station and an Páirc Uí Chaoimh and contribute positively to this area's identity and sense of place signifying commencement of a new architectural phase and landscape character. See Views 1, 2, 3, 4, 5, 6, 7 and 19 in **Appendix 12.1**.

In general, views experienced by pedestrians are focused at ground level and from the vast majority of Cork city, the proposed development will be obscured by existing buildings, topography or boundary treatments ensuring *negligible / no* effects. Where visible in glimpse views, it will invariably be a part of a built townscape and its existing condition, proximity of buildings, infrastructure and adjacent land-uses ensure it can be accommodated without causing any detriment to townscape character. There will be new open spaces, enhanced linkages and amenity set off and around the new development that correlates with the objectives in the Development Plan that, on completion and as the landscape works mature, will clearly have positive effects on this part of the city. See Views 8 and 9 in **Appendix 12.1**.

In summary, the effects, while significant will be a positive statement in terms of the townscape development, legibility and future while tying effectively in with many of the ambitions and objectives of the Development Plan in terms of residential-led regeneration, mixed-use development and services as addressed in the accompanying planning statement.

Table 12.9 Summary of Predicted Townscape/ Landscape Effects

Townscape Character Area	Landscape Sensitivity	Magnitude of Change	Significance Summary		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
Application Site	Low	High	Moderate Neutral	Major Positive	Major Positive
Ballintemple	Medium	Medium	Slight Adverse	Moderate Neutral	Moderate Neutral
Cork South Docks	Medium to Low	Medium to Low	Slight Neutral	Moderate Positive	Moderate Positive
River Lee aside site	High to Medium	Medium	Slight Adverse	Moderate Neutral	Moderate Neutral
Marina Park	High to Medium	High to Low	Slight Adverse	Moderate Neutral	Moderate Neutral
Kennedy Park	High to Medium	Low	Negligible	Negligible	Negligible
Ballinlough Park	High to Medium	Low	Negligible	Negligible	Negligible
Beaumont Park	High to Medium	Low	Negligible	Negligible	Negligible
Port of Cork 2000 Garden	High to Medium	Medium	Slight Adverse	Moderate Neutral	Moderate Neutral
Páirc Uí Chaoimh	Medium	Medium	Slight Neutral	Moderate Neutral	Moderate Neutral
Cork City	Variable	High to Low	Slight Neutral	Moderate Positive	Moderate Positive

12.6.5 Visual Assessment

The following tables summarise the existing views and context of the 20 no. representative viewpoints and the likely impact on these views and visual quality deriving from the proposed development and the consequent significance of impact.

Table 12.10 Viewpoint 1 - Lower Glanmire Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Lower Glanmire Road (N8) is the main approach road to the city from the east. The road follows an alignment with the River Lee north bank for approximately 1.4km beyond the Tivoli Estate from where open views area afforded over a low stone wall and planted banks across the River Lee towards the Application Site area and Marina Park. The ESB Marina Station and Páirc Uí Chaoimh Stadium are notable built elements in the southern skyline. The city centre is just discernible to the east. The majority of visual receptors will be passing traffic either for commuting purposes or on way to Cork city for retail / social activity and will include pedestrians and cyclists. There are adjacent residential properties at Woodside and Woodhill Villas to the right (north).
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Most notably Block A but also the upper parts of Blocks B, D and F of the proposal will rise above intervening trees and riverside landscape being discernible additions to the backdrop and skyline in views to south-west. It will represent a *major* change in scale and nature of building on the Application Site though comparable scales are evident on the adjacent (consented) Ford Site, Páirc Uí Chaoimh, the ESB Marina Station and (consented) Custom House Quay. While having a significant visual effect, these are rated *moderate neutral* due to baseline context, nature of view and distance. The proposal would have no detrimental effects on its overall quality and the landmark Block A would add architectural visual interest appropriate for a city arrival point.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.11 Viewpoint 2 – Port of Cork Garden

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Port of Cork 2000 Garden is a linear parkland aligning 450m of the north bank of the River Lee in the Tivoli area. Open views are afforded up and downstream towards the city centre and Blackrock, respectively with the Application Site approximately 280m distant, across the river, at the closest point. The ESB Marina Station and Páirc Uí Chaoimh are the most notable buildings to the south and rise above the tree-lined Marina Park. The majority of visual receptors will be pedestrians or cyclists and those who come to the park for informal recreational activity or walking.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Most notably Block A but also the upper parts of Blocks B, D and F of the proposal will rise above intervening trees and riverside landscape being discernible additions to the backdrop and skyline in views to south-west. It will represent a *major* change in scale and nature of building on the Application Site though comparable scales are evident on the adjacent (consented) Ford Site, Páirc Uí Chaoimh, the ESB Marina Station and (consented) Custom House Quay. While having a significant visual effect, these are rated *moderate neutral* and would have no direct impact on the amenity, use or enjoyment of the park. The proposal would have no detrimental effects on the overall quality of the views and the landmark Block A would add architectural visual interest in the former docks area.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on the quality or enjoyment of the park.

Table 12.13 Viewpoint 3 – Towards the Tivoli Estate

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Tivoli area to the east of the Application Site is characterised, in part, by industrial land-uses and major transport infrastructure. This view is taken from the end of a public footpath beside a link road from the Lower Glanmire Road to the Tivoli Industrial Estate. The footpath terminates at this point with no further access provision to the east. Looking west, the Application Site (750m+ distant) is set behind a tree belt on the riverbank at Marina Park and the most notable buildings in the South Docks area are the ESB Marina Station and Páirc Uí Chaoimh. The visual receptors will primarily be those accessing and exiting the Tivoli Industrial Estate.
Viewpoint Sensitivity	Medium to Low
Predicted Visual Effects	Block A to the east of the Application Site will be a notable addition to the skyline to the west rising above the riverscape and trees having *moderate neutral* effects on the view. The consented Custom House Docks proposal would also rise into this view in a comparable banding. Due to distance, panoramic nature of view and context of the receiving environment, the effects will be of a *medium* magnitude and would have no detrimental influence on the character or quality of views for this part of Tivoli.
Significance Summary	Moderate: The proposed development will form new components in the view but would not have any significant or adverse effect on its quality.

Table 12.14 Viewpoint 4 – Woodside, Tivoli

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Located on a pedestrian bridge (dating from 1850-60) that crosses the railway line between the Lower Glanmire Road and the Bellevue Villas, this elevated viewpoint allows open views over the transport corridors and River Lee towards the South Docks area including the Application Site (obscured by trees within Marina Park), the ESB Marina Station and Páirc Uí Chaoimh. The site is just over 250m distant, The majority of visual receptors will be those residents on their way to and from Bellevue Villas on this footbridge. The view is close to the location of Designated View LT 7A as identified in the CCDP. It is reasonable to suggest the number of receptors at this location will not be high.
Viewpoint Sensitivity	High
Predicted Visual Effects	Block A, and the upper parts of Blocks B, D and F of the proposed development will rise above intervening trees and be a *major* change to the South Docks townscape. Set between the Páirc Uí Chaoimh and ESB Marina Station, they will represent further large scale building in this area having *moderate neutral* effects on account of existing context (including transport corridors) and broad panoramic nature of the view. The consented Ford Site development and Custom House Quay development would also be visible in this view. While having significant visual effects, no detrimental effects are predicted on account of the nature of the landmark building (Block A), new architecture and the visual interest that will present a positive townscape image at this arrival point to the city on completion.
Significance Summary	Major: Block A will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.5 Viewpoint 5 - Belleview Villas off Lower Glanmire Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Directly across the River Lee on the northern bank is a road bridge that crosses the Lower Glanmire Road to provide access to Bellevue at the base of the Montenotte ridge. The existing site is set behind a belt of trees within Marina Park and is largely obscured. There are open views up and downstream from this locally elevated location towards the city centre and Blackrock, respectively with the Application Site approximately 160m+ distant to the south. Notable buildings in the view across the river include the ESB Marina Station and Páirc Uí Chaoimh Stadium. The majority of visual receptors will be those residents on their way to and from Bellevue Villas. It is reasonable to suggest the number of receptors at this location will not be high.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	The proposed development, and most notably Block A, will rise above intervening trees and be a *major* change in the view to the south. Set between the Páirc Uí Chaoimh and ESB Marina Station, they will represent a significant change to the land-use and character of this area. Given the limited benefit the site currently contributes to the view, the effects are rated as *moderate neutral* in terms of visual amenity and impact. While having significant visual effects, no detrimental effects are predicted on account of the new built form and architecture and the visual interest / positive townscape image that the proposal will present on completion.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.16 Viewpoint 6 - Ferryboat House, Lower Glanmire Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	This viewpoint is located at Castleview Terrace Lower just to the south of the Lower Glanmire Road where open views are afforded across the River Lee towards the South Docks area. The views south are currently dominated by the ESB Marina Station and associated pylons. The Shandon Boat Club (1920-30) is also visible on the river's south bank. The site, 225m+ distant, is set behind a belt of trees at Marina Park. The majority of visual receptors will be those residents in the adjacent 5 properties and those who use this area of car parking. It is reasonable to suggest the number of receptors at this location will not be high.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	The proposed development, and most notably Block A, will rise above intervening trees and be a *major* change in the view to the south and south-east. Set between the Páirc Uí Chaoimh and ESB Marina Station, they will represent a significant change to the land-use and character of this area. The Ford Site would also be visible in part if it were constructed adding to the collective change predicted in this area. Given the limited benefit the site currently contributes to the view, the effects are rated as *moderate neutral* in terms of visual amenity and impact. While having significant visual effects, no detrimental effects are predicted on account of the new built form and architecture and the visual interest / positive townscape image that the proposal will present on completion.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.17 Viewpoint 7 - Horgan's Quay

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Horgan's Quay is set along a wharf dating from 1860 on the north bank of the River Lee with the closest part being approximately 360m due west of the Application Site. The N8 Road runs on the inside of the Quay and the area has an open characteristic with land-use being primarily functional dedicated to traffic, parking and commercial uses. While there are appreciable views downstream towards the site, it is partially obscured by the ESB Marina Station. The majority of visual receptors will be those in passing traffic (transient). There are pedestrians who use the quay though such use is not extensive and discouraged by the port authority. It is also relevant that traffic using the N8 in this area is one-way driving towards the city to the west and therefore the vast majority of visual receptors will not experience this view to the east when in transit.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Block A will be the most notable addition to the skyline to the east rising above the riverscape and trees having *moderate neutral* effects on the view. Blocks B, D and F will be partially visible on the river edge set between Block A and the mass of the ESB Marina Station with which they will have a comparable scale. While relatively close proximity, the effects are rated as being of a *medium* magnitude due viewpoint baseline and dominating influence of the ESB Marina Station and there would be no detrimental influence on the character or quality of views for this area.
Significance Summary	Moderate: The proposed development will form new components in the view but would not have any significant or adverse effect on its quality.

Table 12.18 Viewpoint 8 - Custom House Quay

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Custom House Quay is at a notable nodal point on the River Lee located just over 1km to the west of the Application Site towards the city centre. This view is from the eastern end of the Quay that includes several listed buildings and infrastructure dating largely from the early 19th century. Views downstream include existing quays and wharfs and associated buildings that have an industrial characteristic leading downstream towards the Application Site with the Montenotte ridge located to the north (left). The Application Site is visually obscured. While public access is currently restricted and thus, very few visual receptors at this time, planning consent has been given for a major redevelopment of this site. The view is Designated View RP9 as identified in the CCDP.
Viewpoint Sensitivity	High
Predicted Visual Effects	The only part of the proposal that will be visible will be the upper parts of Block A that will rise above and behind the intervening mass of the ESB Marina Station and be nearly 1.5km distant. While visible, this distance and nature of intervening riverscape, associated townscape land-uses and large-scale buildings ensure that effects are limited and assessed as being *minor neutral* significance and of a low *magnitude*. There would be no detrimental influence on the character or quality of views for this part of Cork city.
Significance Summary	Minor: The proposed development will form a minor component in the view and would have no notable effect on its overall character or visual quality.

Table 12.19 Viewpoint 9 - Clontarf Bridge, Cork City Centre

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Clontarf Bridge dates from 1910-1915 and is located towards Cork city centre. From the bridge there are views to the east towards the Application Site (1.4km distant) including large-scale cityscape off Albert Quay and Custom House Quay and lead on towards the more industrial lands at Kennedy Quay and Marina Commercial Park. The majority of visual receptors will be pedestrians and vehicles crossing the bridge who would have open but oblique views to the east. Views would also be afforded from adjacent Lapps Quay where there is outdoor seating on decking associated with restaurants / bars along the river edge. The Application Site is obscured by intervening buildings.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	The only part of the proposal that will be visible will be the upper parts of Block A that will rise above and behind the intervening mass of the ESB Marina Station and be nearly 1.75km distant. While visible, this distance and nature of intervening cityscape and industrial land-uses, including large-scale buildings ensure that effects are limited and assessed as being *minor neutral* significance and of a *low* magnitude. There would be no detrimental influence on the character or quality of views for this part of Cork city.
Significance Summary	Minor: The proposed development will form a minor component in the view and would have no notable effect on its overall character or visual quality.

Table 12.20 Viewpoint 10 - Middle Glanmire Road, Montenotte

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Montenotte ridge to the north of the Application Site and River Lee includes notable views over the east cityscape though the vast majority of this area is in private ownership and not accessible to the public. Views from public roads are restricted by buildings and mature vegetation. This viewpoint is representative of potential views from the Middle Glanmire Road area and is from an unused 19th century gateway adjacent to an area of open ground to the west of the Montenotte House (Cope Foundation). The majority of visual receptors would be passing traffic and pedestrians who would have oblique views from the road to the south. The site is obscured by topography and vegetation.
Viewpoint Sensitivity	Medium to High
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A, just over 550m distant, will rise into the view to the south and be a notable addition representing a *major* change. The Ford Site, set further south, would also be visible if constructed adding to the collective new building in the South Docks area which would be a significant change to the views from the ridge. No detrimental effects are predicted to any publicly accessible locations on the ridge with effects are assessed as being *moderate neutral* in terms of visual amenity and impact. The proposal will symbolise an evolving city character being a landmark element in the broader view to the south.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.21 Viewpoint 11 - Maryville, Ballintemple

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	This viewpoint is located on Maryville (Road) set between a residential housing estate to the west and commercial lands (CAB Motor Company) and the School of the Divine Child to the east within the Ballintemple area of Cork. South of this viewpoint, views are limited by townscape but this section of road has a slightly elevated vantage offering views to the north including the Montenotte Ridge and Páirc Uí Chaoimh. The site is obscured by built form and vegetation. The majority of visual receptors would be local residents, those going to the adjacent commercial lands and school and those going towards Páirc Uí Chaoimh on match or events days.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A, just over 575m distant, will rise above existing trees and building to the north being a notable addition representing a *major* change. The Ford Site, set between it and this viewpoint, would also be visible if constructed adding to the collective new building in the South Docks area which would be a significant change to the views from this part of Ballintemple. No detrimental effects are predicted with effects assessed as being *moderate neutral* in terms of visual amenity and impact. The proposal will symbolise a positive and evolving character in the South Docks area with the landmark Block A being the most evident component in this redeveloped and revitalised part of the city.
Significance Summary	Moderate: The proposed development will form an additional built component in the view but would not have any significant or adverse effect on its quality.

Table 12.22 Viewpoint 12 - Monahan Road, Ballintemple

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Monahan Road is long (1.8km) road to the south of the Application Site set off Victoria Road to the west and provides a link to the industrial, commercial and residential lands in the Ballintemple area and Páirc Uí Chaoimh. From its eastern end, open views are afforded over sports pitches and a recently opened part of Marina Park to the west though the Application Site is obscured by intervening trees on the former Ford Site and on Centre Park Road. The majority of visual receptors would be local residents, those going to the adjacent commercial lands and sport facilities and those going towards Páirc Uí Chaoimh on match or events days.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A, just over 535m distant, will rise above part of the Páirc Uí Chaoimh stadium to the north-west being a notable addition representing a *medium* magnitude of change to this view. The Ford Site would also be a significant addition to this view if constructed adding to the collective new building in the South Docks area which would be a significant change to the views from this part of Ballintemple and bounding the new Marina Park. No detrimental effects are predicted with effects assessed as being *moderate neutral* in terms of visual amenity and impact. The proposal will symbolise a positive and evolving character in the South Docks area with the landmark Block A being the most evident component in this redeveloped and revitalised part of the city.
Significance Summary	Moderate: The proposed development will form an additional built component in the view but would not have any significant or adverse effect on its quality.

Table 12.23 Viewpoint 13 - Centre Park Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Application Site abuts part of Centre Park Road which extends to 1.54km linking Marina Park to the north east and Victoria Road to the west. The road comprises a single carriageway of 8m in width with grassed verges (including trees) and footpaths. At gaps between trees and adjacent commercial buildings, such as at this point opposite the Marina Commercial Park, there are glimpse views in the direction of the Applcaiton Site with the view characterised by functional and utilitarian architecture and land-uses. The majority of viusal receptors will be those in this area of work purposes related to adjacent commercial / industrial lands though there would be transient traffic of those en-route to Marina Park and Páirc Uí Chaoimh.
Viewpoint Sensitivity	Medium to Low
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A, just over 540m distant, will rise above the intervening commercial lands and be a notable addition to the view to the east representing a *medium* magnitude of change to this view. No detrimental effects are predicted to this part of Centre Park Road with effects assessed as being *moderate neutral* in terms of visual amenity and impact. The proposal will symbolise a positive and evolving character in the South Docks area with the landmark Block A being the most evident component in this redeveloped and revitalised part of the city.
Significance Summary	Moderate: The proposed development will form an additional built component in the view but would have no notable effect on its overall character or visual quality.

Table 12.24 Viewpoint 14 - Centre Park Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Application Site abuts part of Centre Park Road which extends to 1.54km linking Marina Park to the north east and Victoria Road to the west. This section of the road comprises a single carriageway of 8m in width with grassed verges and footpaths bound by security fencing. The visual amenity and character of the area is defined in part by its commercial and industrial history. The Application Site, 750km distant, is visually obscured by intervening buildings and boundary treatments. The majority of viusal receptors will be those in this area of work purposes related to adjacent commercial / industrial lands though there would be transient traffic of those en-route to Marina Park and Páirc Uí Chaoimh.
Viewpoint Sensitivity	Medium to Low
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A, just over 1km distant, will rise above the intervening commercial lands in views to the east representing a *low* magnitude of change to this view. No detrimental effects are predicted to this part of Centre Park Road with effects assessed as being *minor neutral* in terms of visual amenity and impact. The proposal will symbolise a positive and evolving character in the South Docks area with the landmark Block A being the most evident component in this redeveloped and revitalised part of the city.
Significance Summary	Minor: The proposed development will form a minor component in the view and would have no notable effect on its overall character or visual quality.

Table 12.25 Viewpoint 15 - Marina Park - Jetty

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Located approximately 100m from the eastern edge of the Application Site, this jetty was installed around a decade ago and is part of the Lee Rowing Clubs facilities. This is a representative view from close proximity areas to the immediate west of the Application Site in the general Marina Park area. Between the site and this viewpoint is the riverside embankment that includes mature trees and vegetation that serve to visually obscure the majority of the Application Site. Open views are afforded to the west along the River Lee and Marina Park in both directions. The majority of visual receptors will be those associated with the rowing club though it is reasonable to assume park users would also visit the jetty to appreciate the riverside views.
Viewpoint Sensitivity	Medium to High
Predicted Visual Effects	While the trees will serve to obscure (summer) and filter (winter) views of the proposal, the close proximity and scale of Block A means that it will invariably have a *major* effect on this view and the local sense of place. The scale of introduction at this landmark site is outweighed by the revitalisation of the land in this part of the city and the fact that it is not within the banding of the key views from this locale which are up and down the River Lee and to the north towards the Montenotte ridge. Effects are therefore judged as *moderate neutral* as no detrimental effects are predicted to Marina Park or the riverside in this area.
Significance Summary	Major: The proposed development will form a new component in the view but would not have any significant or adverse effect on its quality.

Table 12.26 Viewpoint 16 - Beaumont Drive

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Located within Ballintemple, Beaumont Drive is identified as a designated viewpoint (View LT 9, LT 10) on Map 16 within the CCDP. This is largely on account of views to the north towards the Montenotte ridge. Views in the direction of the Applicaiton Site, 920m distant, are obscured by intervening townscape and vegetation. Beaumont Drive is a residential area dating from the mid-20th century that is dominated by low rise semi-detached houses. The majority of visual receptors are therefore the local residents.
Viewpoint Sensitivity	Medium to High
Predicted Visual Effects	A very small portion of the proposed development will be visible above the ridges and trees on the west side of Beaumont Drive but. in reality, the majority of the proposal will be visually obscured and combination of distance and very limited views ensure that the proposal never forms something that is discernible enough to be a factor. Any awareness of the proposal will not have a marked effect on the overall quality of the existing view or visual amenity of this area and effects are assessed as *minor neutral*.
Significance Summary	Negligible: The proposed development will form a very minor component in the view but would have no notable effect on its overall character or visual quality.

Table 12.27 Viewpoint 17 - Church Yard Lane, Ballintemple

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Located within Ballintemple, Church Yard Lane is identified as a designated viewpoint (View LT 11) on Map 16 within the CCDP. This is largely on account of views to the north towards the Montenotte ridge. Views in the direction of the Applicaiton Site, 840m distant, are obscured by intervening townscape and vegetation. Páirc Uí Chaoimh is evident at the end of the street. Church Yard Lane is bound by residential areas made up of predominantly low-rise housing built out over the 20th century. The bult townscape and vegetation serve to obscure views of the Application Site. The majority of visual receptors are local residents.
Viewpoint Sensitivity	Medium to High
Predicted Visual Effects	Blocks D, C, D and F will be visually obscured but Block A will rise above the intervening residential townscape in the views to the north representing a *medium* magnitude of change. It would not impinge on the view of the Montenotte ridge to a significant degree. No detrimental effects are predicted to this part of Ballintemple with effects assessed as being *moderate neutral* in terms of visual amenity and impact. The proposal will symbolise a positive change and the evolving character in the South Docks area with the landmark Block A being the most evident component in this redeveloped and revitalised part of the city.
Significance Summary	Moderate: The proposed development will form an additional built component in the view but would have no notable effect on its overall character or visual quality.

Table 12.28 Viewpoint 18 - Ballinlough Park

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Ballinlough Park is located over 1.1km to the south-west of the Application Site and is a wooded park off the Boreenmanna Road. This is set within a built-up townscape and representative of potential views in this part of the city.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	Views towards the proposed development will be obscured by intervening trees.
Significance Summary	None

Table 12.29 Viewpoint 19 - Lotaville (N8) Road near Tivoli

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	The Lotaville Road is part of the N8 Road that is the main road into and out of Cork city from the east. This section of road is aside the Tivoli Industrial Estate and comprises a dual carriageway with a hedge in the median. It is identified as a designated viewpoint (View AR5) on Map 16 within the CCDP. The existing view is dominated by road infrastructure and industrial scale buildings to the south. The Application Site located over 2.3km distant, and associated Marina Park and section of the River Lee, are visually obscured. The majority of visual receptors will be in passing vehicles.
Viewpoint Sensitivity	Medium to High
Predicted Visual Effects	A very small portion of the proposed development on the western skyline but its influence or effect on the view will be very limited. The majority of the proposal will be visually obscured and combination of distance and partial views ensure that the proposal never forms a significant portion of the view. Any awareness of the proposal will not have a marked effect on the overall quality of the existing view or visual amenity of this area or designagted view and effects are assessed as *minor neutral.*
Significance Summary	Negligible: The proposed development will form a very minor component in the view but would have no notable effect on its overall character or visual quality.

Table 12.30 Viewpoint 20 - Monahan Road

Image courtesy of Urban 3D (2022)

Viewpoint Baseline	Monahan Road is long (1.8km) road to the south of the Application Site set off Victoria Road to the west and provides a link to the industrial, commercial and residential lands in the Ballintemple area and Páirc Uí Chaoimh. This viewpoint is located near the junction with Marquee Road where an opening in the roadside vegetation allows views towards the Application Site, 325m distant, over a vacant brownfield site. The majority of viusal receptors will be those in this area of work purposes related to adjacent commercial / industrial lands though there would be transient traffic of those en-route to Páirc Uí Chaoimh and residential areas in Ballintemple.
Viewpoint Sensitivity	Medium
Predicted Visual Effects	The proposed development will be a discernible change to the views to the north with new residential blocks evident on lands beyond Centre Park Road. While the consented Ford Site would be a factor in reducing visual impacts deriving from this proposal, the collective will signify a major regeneration and land-use change in this area that would have a *major* effect on local views and the sense of place. Given the limited benefit the site currently contributes to the area and wider quality of this view, the effects are rated as *moderate neutral* in terms of visual amenity and impact. While having significant visual effects, no detrimental effects are predicted on account of the new built form and architecture and the visual interest / positive townscape image that the proposal will present on completion.
Significance Summary	Major: The proposal will form a significant new component in the view but would not have any adverse effect on its quality.

Table 12.31 Summary of Potential Visual Effects

Viewpoint No. and Location	Viewpoint Sensitivity	Magnitude of Change	Significance Summary		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
VP1: Lower Glanmire Road	Medium	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP2: Port of Cork Garden off Lower Glanmire Road	Medium	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP3: Near Tivoli Industrial Estate	Medium to Low	Moderate	Minor Adverse	Moderate Neutral	Moderate Neutral
VP4: Woodside, Tivoli – pedestrian railway crossing	High	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP5: Bellevue Villas, off Lower Glanmire Road	Medium	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP6: Ferryboat House, Lower Glanmire Road	Medium	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP7: Horgan's Quay	Medium	Moderate	Minor Adverse	Moderate Neutral	Moderate Neutral
VP8: Custom House Quay	High	Low	Minor Adverse	Minor Neutral	Minor Neutral
VP9:Clontarf Bridge, Cork City Centre	Medium	Low	Negligible	Minor Neutral	Minor Neutral
VP10: Middle Glanmire Road, Montenotte	Medium to High	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP11: Maryville, Ballintemple	Medium	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP12: Monahan Road, Ballintemple	Medium	Medium	Minor Neutral	Moderate Neutral	Moderate Neutral
VP13: Centre Park Road	Medium to Low	Moderate	Minor Neutral	Moderate Neutral	Moderate Neutral
VP14: Centre Park Road	Medium to Low	Low	Minor Neutral	Minor Neutral	Minor Neutral
VP15: The Marina Boat Jetty Pontoon	Medium to High	Major	Minor Adverse	Moderate Neutral	Moderate Neutral
VP16: Beaumont Drive	Medium to High	Low	Negligible	Minor Neutral	Minor Neutral
VP17: Church Yard Lane, Ballintemple	Medium to High	Moderate	Minor Adverse	Moderate Neutral	Moderate Neutral

Viewpoint No. and Location	Viewpoint Sensitivity	Magnitude of Change	Significance Summary		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
VP18: Ballinlough Park	Medium	Low	Negligible	Negligible	Negligible
VP19: Lotaville, N8 Road Tivoli	Medium to High	Low	Minor Neutral	Minor Neutral	Minor Neutral
VP20: Monahan Road	Medium to Low	Major	Minor Adverse	Moderate Neutral	Moderate Neutral

12.6.6 Potential Cumulative Impacts

Cumulative landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect.

A significant cumulative effect will occur where the addition of the proposed development to other existing and developments results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive. The cumulative assessment includes developments that are consented but not as-yet constructed.

The most appreciable cumulative effect will be with the consented Ford Distribution Site located to the southeast of the Application Site on the opposite side of Centre Park Road. This covers 5.79 hectares with planning consent for 1,010 residential units over twelve blocks including commercial space, residential amenity and public/ communal open space. The collective projects will extend across 10.5 hectares of the South Docks and there will be inevitable significant townscape and visual effects deriving from the two projects on this area with it changing from brownfield to a predominantly residential area. Given the existing site conditions and baseline landscape setting, these offer a collective opportunity to significantly enhance the use, purpose, townscape character and sense of place of this part of Cork city.

The landscape designs for this proposal have been carefully assessed to coordinate with those linkages and designs associated with the Ford Site and offers the opportunity to allow for the connections and linkages across the South Docks to be improved as a consequence. The combined projects will also include areas of managed parkland, plazas and ecology areas that would provide an improvement to the baseline ecology and environment of this area over that which exists at present.

In conclusion, there are cumulative effects with the consented Ford Site but these are rated as positive and in line with the objectives for the South Docks as set out in the Cork City Development Plan.

12.7 Mitigation Measures

The following measures are proposed to reduce potential adverse effects to townscape / landscape and visual receptors, where they occur.

12.7.1 Construction Stage Mitigation

Due to the nature of construction, it is inevitable that adverse effects will occur to the townscape and visual amenity in the immediate area. The significance of these temporary effects will be limited by implementing the following measures:

- All activities will be subject to planned method statements in accordance with appropriate legislation;
- Temporary hoarding will be erected around construction areas to clearly delineate working areas and protect the public from the works. This will also reduce visual effects to areas on Centre Park Road and Marina Park for the initial stages of the demolition and construction period. Hoardings will be maintained in good condition throughout this stage;
- Publicity material may be displayed on the hoardings to inform the public and passer-bys about the proposed development;
- Lighting will be maintained in good order and provided where necessary to ensure sufficient illumination. Precautions will be taken to ensure no shadows are cast by hoardings or building works onto pavement or road areas. Internal construction lighting will be angled so that it does not cause nuisance to adjacent properties or carriageways;
- Centre Park Road, Marquee Road and other roads providing access to the work will be maintained free of dust and mud as far as possible and damaged surfaces will be made good; and
- An effective site and litter management systems will be established from the outset to ensure a clean, tidy and presentable image.

12.7.2 Design Mitigation

The proposed development comprises a contemporary set of buildings with facade materials and treatments selected to ensure durability, ease of maintenance and a very high quality of finish for this landmark development. The following mitigation measures and considerations were made in relation to the design and materials selection:

- The buildings are designed to provide an architectural statement and focal point in this part of Cork rising to a landmark that correlates with the objectives as set out in the Development Plan for tall buildings in this area. The other buildings provide a balance to the broad scale of the river, Centre Park Road, Páirc Uí Chaoimh and adjacent consented Ford/ Glenveagh development.

- The proposal will be part of a series of new and contemporary tall or large buildings in this part of the city where scale and character is evolving based on planning consent for major mixed-use and large scale developments;
- The buildings are designed to be viewed from all directions and have no blank facades;
- Plant Rooms on the roof level will be completely enclosed ensuring no plant is visible; and
- High quality landscape and public realm treatments to the core of the site and connecting through to Marina Park and Centre Park Road including footpaths, plazas, feature lighting, street furniture, raised planters and tree planting will enhance the usability and activity at ground floor level.

12.7.3 External Landscape and Open Spaces Mitigation

The planning application is accompanied by a *Landscape Design and Access Statement (Park Hood 2022).* Green infrastructure and external open spaces include broad streetscapes with green infrastructure (including bioswales), pocket parks, urban furniture, shared spaces and designated play areas for resident and local visitor use. The site layout will ensure properties face areas of open space (and streets) to provide passive supervision / ownership ensuring no hidden corners. The different spaces are unified through materiality and provide places for people to sit, gather, socialise and reflect.

As part of the design process, existing environmental and technical constraints and assets were reviewed with the design team and the landscape design considerations focused on provision of public realm areas, open spaces, playgrounds, and major pedestrian routes across the site that would be accessible to all members of the community. The objectives include creation of different landscape treatments including avenue tree types and building types to create identifiable character zones. In essence, the external landscape comprises distinct areas that will have different character and treatments namely:

- Communal Open Spaces;
- Public realm, plaza & streetscapes;
- Public Park; and
- the Open Channel to the north.

12.7.4 Communal Landscapes

Communal open space is provided at podium level and roof gardens including areas of hard landscape, tree planting, lawns, ornamental planting including seating / passive amenity areas, and areas for communal garden and outdoor working. The space also includes designated play area. The objective of the collective podium parks and communal spaces is to allow residents at all levels ready access to exterior garden spaces.

12.7.5 Public Realm

Block A will be located aside the Neighbourhood Centre and these will collectively act as a nodal point to the site set off a major public plaza that is envisaged to be a landmark location and meeting point. This area will include a major public realm area including a paved plaza which will be designed to create a strong identity and distinctiveness to this area.

The main link street through the site, is designed to provide a strong "green" boulevard character that is aligned with avenue trees, landscape areas and broad walking routes and cycleways. Off this, there is the creation of a network of dedicated movement corridors free of motor vehicles through interconnected open spaces and parklands that provide a safe environment for walkers, runners and cyclists. These will provide green links between Centre Park Road, the internal open spaces leading towards the key nodal point and public realm plaza / park and on to Marina Park. Allowance is also made for a future connection from the park to the west of the site into an anticipated riverside connection from this area to the city centre.

12.7.6 Public Park

The proposed layout includes significant open space and multi-functional parkland development to the west of the site that will have both a functional and aesthetic purpose. The design is for a mix of informal and formal landscape character with recreational and amenity spaces including fitness circuits with equipment. This will include provision of playgrounds to cater for the recreational and educational requirements of children of residents. These will be designed to be both secure and overlooked in line with RoSPA safety advice and European Standard (EN 1176). All age groups will be catered for with the layout based on best practice in terms of safe and aesthetic design proposals that will complement interaction between varied groups.

The site layout has been designed in a manner that allows for natural surveillance of all open spaces with the space being overlooked by adjacent properties giving a feeling of security and encourage positive social behaviour.

Open spaces are designed with consideration given to their long-term management ensuring this is not onerous with heavy resource requirements. On-going management plans will identify areas that can be managed to encourage habitats creation as the designed landscape measures mature and evolve.

12.7.7 Open Channel

Landscape areas will be retained and enhanced aside the waterway towards the site boundary to allow for connected habitat creation and wildlife corridors. This will include areas managed for biodiversity and ecosystems that will see a net gain of biodiversity on the site.

Bio-diversity measures including bat and bird boxes, relocation of potentially effected ground flora into the open space and laying out of a lowland meadow are

also part of the proposed development and will be undertaken under direction from site ecologists.

12.7.8 Green Roofs

The flat roof areas include sedum green roofs designed, in part to assist in drainage patterns by intercepting rainfall, building insulation and but also to enhance biodiversity. These areas are not accessible to residents but will contribute to the general character and environmental integrity of the development.

12.7.9 Monitoring and Reinstatement

The management of landscape areas will initially be undertaken by an ACLI approved landscape contractor. After 12 months the maintenance will be handed over to the long-term Management Company who will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exists and has been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

12.8 Summary

The proposed development is regarded as being permanent or long term in landscape and visual terms. The most appreciable effects relate to the scale and nature of the proposed built development footprint although much of the land is to be set out as public open space and part of a wider landscape development proposal. While substantial, the new facades, architecture, building form, usage and enhanced public realm, ecology zones and parklands will be *positive* and significant contributions to the townscape character of this area. Further the active frontages at ground level will equate to a significantly improved architectural relationship with both Centre Park Road and Marina Park, reinvigorating use and activity on giving it a more productive and appropriate land-use for this nodal and gateway point.

The proposed development will be significantly taller than the existing buildings on the site and have landmark status in this area and in views from the north along the River Lee. The broad width of river corridor in conjunction with the generally large scale of adjacent landscape and built environment including the ESB Marina Station and Páirc Uí Chaoimh ensure that this development, while higher, can be accommodated and absorbed without detriment or adverse character effects. This proposal will add to the emerging architectural trends in the South Docks area

having a high level of design and façade detail which will mark it out in architectural terms as locally distinct. Such an introduction will enhance the existing non-descript townscape character and have positive effects on this part of the city.

The proposal will be a prominent and a significant addition to the local skyline and townscape that is likely to influence and instigate further (cumulative) changes that will have substantial and positive contribution to character of this part of Cork. While effects are categorised as significant to areas on and close to the proposed development site, the baseline setting ensures it can be successfully absorbed into this area without causing any adverse townscape / landscape effects and it will serve this part of the city in a positive way as a building with landmark and notable architectural status.

The site currently comprises a former industrial (and now brownfield) site that contributes adversely to the character and visual quality of this part of Cork. The proposed development, while substantial, would result in a positive contribution to the townscape character and urban fabric of this part of the South Docklands. While recognising there are some significant local impacts, this proposal, on balance, has no unacceptable townscape / landscape or visual effects and can be successfully absorbed into the character and views of this part of the city.

12.9 References

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition) by The Landscape Institute and the Institute of Environmental Assessment -2013;
- Technical Information Note on Townscape Character Assessment published by the Landscape Institute - 2016;
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals - 2019;
- EPA guidance ‘Guidelines on the Information to be contained in Environmental Impact Statements’ - 2002;
- EPA EIS Manual ‘Advice Notes on Current Practice (in the preparation of Environmental Impact Statements’ - 2003;
- EPA ‘Revised Guidelines on the Information to be contained in Environmental Impact Statements’ - Draft 2015; and
- EPA ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ – Draft 2017.
- The National Planning Framework (NPF) - Ireland 2040;
- National Landscape Strategy for Ireland 2015-2025 (Department of Arts, Heritage and the Gaeltacht);
- DRAFT Cork City Development Plan 2022-2028;
- Cork City Development Plan 2015-2021 (CCDP);
- Cork County Development Plan 2014;

- Cork City Centre Strategy – Cork City Council (2014);
- Cork City Docks Local Area Plan Pre-Plan Consultation Report (2017);
- South Docks Local Area Plan by Cork County Council (2008)
- Landscape Character Assessment contained within the Cork City Landscape Study (2008);
- Urban Development and Building Heights Guidelines for Planning Authorities by Department of Housing, Planning and Local Government (DHPLG) (2018);
- Urban Density, Building Height and Tall Building Study for Cork by Allies and Morrison Ltd. on behalf of Cork City Council (2021);
- Urban design manual - a best practice guide by the Department of Environment, Heritage and Local Government (2009);
- Sustainable Urban Housing: Design Standards for New Apartments (2015); and
- Sustainable Residential Development in Urban Areas and the accompanying Urban Design Manual: A Best Practice Guide (2009).
- Cork City Biodiversity Plan 2009-2014;
- All Ireland Pollinator Plan 2021-2025
- National Inventory of Architectural Heritage http://www.buildingsofireland.ie;
- National Parks and Wildlife Service (NPWS) and Environmental Protection Agency - https://gis.epa.ie/EPAMaps
- https://www.heritagecouncil.ie

13 Land, Soils Geology and Hydrogeology

13.1 Introduction

This chapter describes the likely significant effects of the proposed development on land and soils by assessing their impacts on soils, geology and hydrogeology. **Chapters 4** and **5** provides a full description of the proposed development and describes the construction strategy.

13.1.1 Author information

The chapter was prepared by Christopher Newton of Arup. Details of Christopher's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

13.1.2 Reference to Guidelines Relevant to Disciplines

This assessment has been undertaken with due regard to the overarching EIA guidance (described in Chapter 1) and Institute of Geologists Ireland (IGI) guidance[46].
In addition, the following legislation and guidance is particularly relevant to land and soils:

- Department of Housing, Planning and Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- Environmental Protection Agency (2017) Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft August 2017); and
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;
- The EU Water Framework Directive (WFD), 2000/60/EC;
- The Groundwater Directive, 2006/118/EC;
- European Communities (Water Policy) Regulations 2014 (S.I. No. 350 of 2014);
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010), as amended by the European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2011 (S.I. No. 389 of 2011) and the European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2012 (S.I. No. 149 of 2012) and the European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. NO. 366 of 2016);

[46] Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements.

- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009) as amended by the European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2012 (S.I. No. 327 of 2012), European Communities Environmental Objectives (Surface Water) (Amendment) Regulations 2015 (SI No. 386 of 2015) and European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019);
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) as amended by the European Communities (Water Policy) (Amendment) Regulations, 2005 (S.I. No. 413 of 2005);
- European Communities (Water Policy) (Amendment) Regulations, 2008 (S.I. No. 219 of 2008);
- European Communities (Water Policy) (Amendment) Regulations, 2010 (S.I. No. 93 of 2010);
- European Communities (Drinking Water) Regulations 2014 (S.I. No 350 of 2014) as amended by European Union (Drinking Water) (Amendment) Regulations 2017 (S.I. No. 464 of 2017); and
- Water Services Acts (2007 – 2017).

13.1.3 Methodology

The following section outlines the legislation and guidelines considered, and the adopted methodology for preparing this chapter and undertaking the land and soils assessment.
This impact assessment has been undertaken in accordance with the EU Commission Guidance on the preparation of an EIAR, DHPLG EIA guidelines and the Draft EPA guidelines on the preparation of an EIAR, along with the IGI guidance. The IGI guidelines outline a 13-step methodology that is divided across four distinct elements:

- Initial Assessment;
- Direct and Indirect Ground Investigation;
- Predicted Impacts/Mitigation Measures, Residual Impacts and Final Impact Assessment; and
- Completion of the Soils, Geological and Hydrogeological Sections of the EIAR.

Throughout this process likely significant effects are assessed by classifying the importance of the relevant attributes and quantifying the magnitude of any likely effects on these attributes. These are used together, as outlined in Table C6 of the IGI guidelines to determine the significance of the effect. Where likely significant effects are highlighted mitigation is proposed and any residual effects assessed.

13.1.3.1 Initial Assessment

The ‘Initial Assessment’ (Sections 13.2.1 to 13.2.11) presents a description of the past and present uses of the land across the study area which may have a bearing

on the proposed development. This includes a detailed description of the nature of the ground conditions within the planning boundary based on existing literature as well as site specific and neighbouring ground investigation data.

13.1.3.2 Direct and Indirect Ground Investigation

Sections 13.2.12 to 13.2.13 provide discussion on the data available from the site-specific ground investigations (GI) carried out in relation to the proposed development. This, along with other sections from within 13.2.1 to 13.2.11 look at the regional setting and is used to derive a Conceptual Site Model (CSM) (Section 13.2.18). The CSM is a summary of geological conditions beneath the proposed development which highlights the features which could be affected.

A 'Feature Importance Ranking' is then assigned to each feature likely to be affected by the proposed development based on guidance from the National Roads Authority (NRA) and IGI. This facilitates the assessment of likely significant effects which has been undertaken in accordance with the guidance.

The information gathered on the baseline environment during ground investigations corresponds to the second element of the methodology, 'Direct and Indirect Ground Investigation and Studies'.

13.1.3.3 Predicted Impacts/Mitigation Measures, Residual Impacts and Final Impact Assessment

Section 13.4 identifies the likely significant impacts during the construction and operation of the proposed development. The effect of these impacts is assessed and where necessary mitigation measures are presented, and residual impacts are highlighted.

13.1.3.4 Completion of the Soils, Geological and Hydrogeological Sections of the EIAR

This element has been carried out iteratively whilst undertaking the first three elements. Upon finalisation of the preceding steps, this information has been documented accordingly (i.e. as part of this chapter) which corresponds to the final element of the methodology 'Land and Soils section of the EIAR'.

13.1.3.5 Contaminated Land Assessment

Consistent with the EC Commission Guidance on the preparation of an EIAR, DHPLG EIA guidelines, the Draft EPA guidelines on the preparation of an EIAR, along with the IGI guidance, the potential for pollution in the soil, subsoil and groundwater has been assessed. This assessment has been carried out to support the assessment of the potential impacts of the development on Human Health.

With reference to the 2015 - 2021 Cork City Development Plan, 'Ground Contamination" is listed among other items as a critical issue "which require resolution to promote and facilitate the redevelopment process" in the Docklands Area under Objective 13.25. The assessments referred to in this chapter consider

the options to facilitate the redevelopment and where necessary remedial measures are proposed.

Contaminated Land Assessment Methodology

The site has been assessed following the methodology presented in the Environmental Protection Agency's "Guidance on the management of Contaminated Land and Groundwater at EPA licensed sites".

This document outlines the approach which should be adopted to assess contamination present on a licensed site. However, it is widely accepted as a best practice guidance for the assessment of contaminated sites to take place in advance of development. This Chapter relies on results of work carried out following the EPA's preliminary and detailed site assessment methodologies which are summarised in this Chapter.

In relation to the EPA's methodology a review has been carried out of the site history (**Section 13.2.4**), which has been combined with the results of a site walkover (**Section 13.2.5**) and a review of the publicly available information on the ground conditions (**Sections 13.2.6** to **13.2.11**) and local nearby sensitive receptors (**Section 13.2.14** to **13.4.17**) to design and carry out an extensive ground investigation (GI) at the site.

The results of the GI were used to describe the local geology (**Section 13.2.12**) and hydrogeology (**Section 13.2.13**) and the conceptual site model (**Section 13.2.18**). The soil and water samples collected were compared to human health and environmental assessment criteria in a generic quantitative risk assessment and the results are summarised under local geology (**Section 13.2.12.4**) and local hydrogeology sections (**Section 13.2.13.3**). The nature of the contamination has been used to inform the design of the proposed development and the Construction Environmental Management Plan (**Appendix 5.1**).

13.1.3.6 Study Area

Consistent with the IGI guidance, the study area for the land and soils assessment extends to areas within 2km of the proposed development outline as defined by the site boundary illustrated in **Figure 13.1**. The area of the site the subject of the assessment is defined in this chapter as the area with the site boundary, as presented on **Figure 13.1**.

13.1.3.7 Categorisation of the Baseline Environment

As part of the desk study that was undertaken to establish the baseline conditions (i.e. soils, geological and hydrogeological environment), the following sources of information were reviewed within the study area:

- Bing Maps (2019).
- Aerial photography (Bing, 2019);
- Environment Protection Agency (EPA) (2019). EPA Maps, Corine Land Cover 2012 (EPA, 2019);

- Environmental Protection Agency (EPA) maps (2019). Interactive web-based map tool from which the following layers were viewed:
    - Waste Facilities;
    - Waste Boundary;
    - Dump Site Boundaries;
    - Urban Wastewater Treatment sites; and
    - Water Framework Directive.
- Google Maps (2019). Aerial photography (Google, 2019);
- Geological Survey of Ireland (GSI) (2019). Geological maps of the site area produced by the Geological Survey of Ireland (GSI, 2019) including;
    - Quaternary Maps;
    - Teagasc Soils;
    - Bedrock Mapping;
    - Aquifer map;
    - Drinking water protection areas;
    - Groundwater vulnerability;
    - National Federation of Group Water Schemes;
    - GSI database of wells and springs;
    - Groundwater recharge;
    - Karst Database; and
    - Historic Mine Sites - Inventory and Risk Classification.
- National Parks and Wildlife Service (NPWS) (2019). Proposed / Designated NHA, SPA, SAC Sites (NPWS, 2019); and
- Ordnance Survey of Ireland (OSI) (2017). Current and historical Ordnance Survey (OS) maps available for the study area and aerial photography.

13.1.3.8 Site Visits

Arup carried out one site walkover on 30th June 2021.

The aim of the site visit was to:

- Survey the site and the surrounding area;
- Determine the hydrological regime in the vicinity of the site;

- Determine the current uses of the site;
- Identify potential sources of contamination; and
- Inform the design of a geo-environmental ground investigation.

A photographic record of these site visits is included as **Appendix 13.1** to this EIAR.

In addition, the site was visited during the ground investigation in August and September 2021 to further develop an understanding of the ground conditions. Three rounds of groundwater monitoring were carried out during September to December 2021 by the GI contractor.

13.1.3.9 Ground Investigations

One geo-environmental investigation had been carried out, one between August to September 2021. Copies of the borehole logs are presented in **Appendix 13.3** and are reviewed in **Section 13.2.12**.

13.1.3.10 Consultation

As part of a pre-application scoping process, a number of national and local government agencies were contacted. Several consultees provided responses that were directly relevant to this chapter these are summarised below in **Table 13.1**.

Table 13.1: Summary of the Consultee Responses Relevant to this Chapter

Consultee	Summary of the comments
Shandon Boat Club	The Shandon Boat Club have concerns of the proposed residential blocks overshadowing the boat club.
Geological Survey Ireland (GSI)	Geological Survey Ireland would encourage use of and reference to their datasets. It is recommended that a review the data available online and refer to any datasets that are considered relevant to the assessment.

13.1.4 Difficulties encountered in compiling information

No difficulties were encountered in compiling the information required to prepare this Chapter.

13.2 Description of existing environment

13.2.1 Introduction

The existing soils, geology and hydrogeology in the study area have been interpreted from both desk study information and from project-specific ground investigations.

The current baseline represents the “Do Nothing Scenario” as required under the EU Guidance. The subsequent section within this chapter considers the effects

that construction and operational practices on the site will have on the surrounding environment (**Section 13.4**).

13.2.2 Regional overview

The site is located within Cork City in the suburb of Ballintemple, situated on the south side of the Lee Estuary Lower, approximately 1.5km east of Cork City Centre. The site boundaries are Centre Park Road to the southeast, The Marina Greenway to the north and north east and commercial and industrial land to the west.

The site is located 0.05km (50m) south of the Lee Estuary Lower . This runs generally east to west and the drains to the east, although it is tidal in vicinity of the site. The Lee Estuary Lower joins Lough Mahon 3.5km west of the site. The sites surface level is between +5.3mOD at the northern boundary to +0.2mO at the southern end.

The Marina Greenway, formerly known as the Navigation walk, is located along the northern boundary of the site. The Cork Marquee, a live entertainment venue, is on the east of Centre Park Road approximately 30m from the site's boundaries. Páirc Uí Chaoimh, the Marina Park and the Atlantic Pond are located approximately 0.3km east to southeast of the site.

The Marina Park has a man-made pond and the Atlantic Pond is a man-made pond built to facilitate drainage of the area (History Trail, The Marina, Cork Heritage). The area west of the site, together with the site itself are referred to as the Cork City Docklands, which comprises of the Marina Commercial Park, the Marina Power Station located in between the site and the park, the Marina Market, the Franciscan Well Brewery and commercial buildings.

The east and south of the site are predominantly housing estates, associated with Blackrock Village to the east and Douglas Village to the south.

To the north of the site, across the Lee Estuary Lower , is area is predominantly housing estates, with Kent Train Station located 0.8km northwest of the site.

The location of the site is shown on **Figure 13.1**.

Figure 13.1 Site Location | not to scale

13.2.3 Existing site

The site is located at Irish Transverse Mercator (ITM) 569541 and 572119. The location of the site is shown on **Figure 13.2**.

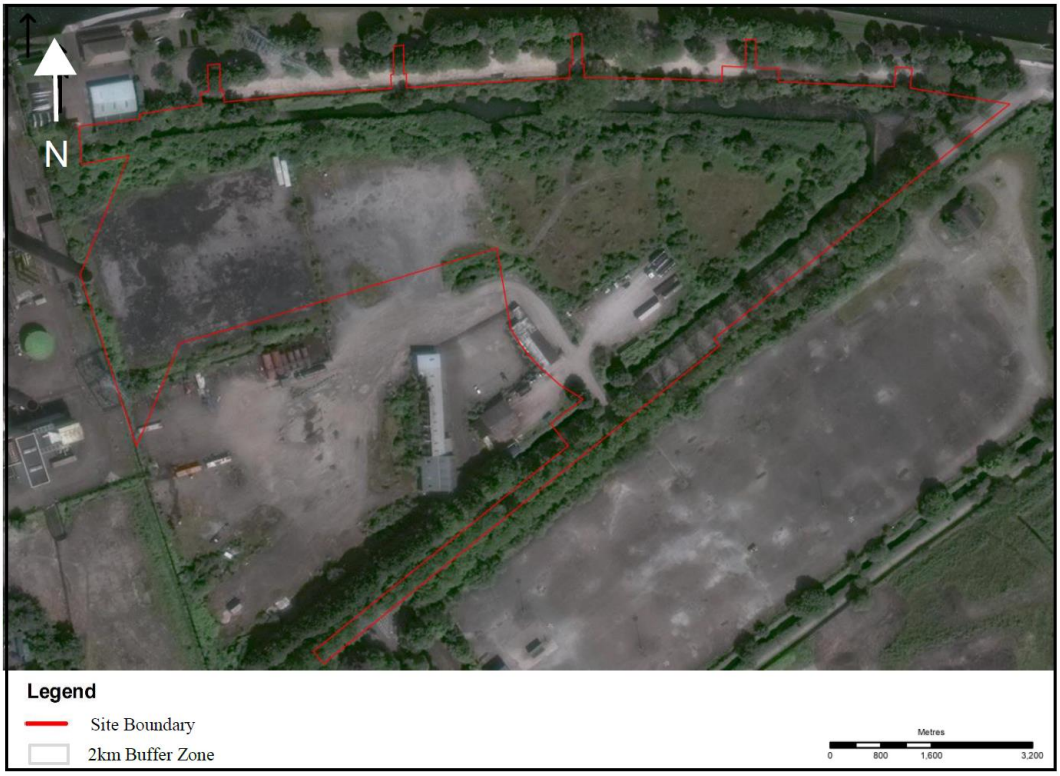


Figure 13.2 Site Location | not to scale

The site is relatively flat and is currently not in use, there is one building present which have been vandalised and rubbish, such as barrels, tires, cans, plastic and wood, is scattered across the site. There is a large area without structures but covered in hardcore is located to the north, northwest and a small area to the east near the entrance gate. A grassy area without any structures but with dense vegetation with possible Japanese Knotweed is located to the far east of the site.

13.2.4 Site history

The site history is presented in **Chapter 11** *Archaeology, Architectural and Cultural Heritage* and along with historical maps, the key features in relation to geo-environmental risks are summarised below:

The site was a marshland and part of the Lee Estuary Lower Estuary until the late 1700s.

- The 1837 to 1842 map shows that site was once a city park outside of Cork City. Before the construction of the Navigation Wall (The Marina) in 1763 the 'Park' was a marsh land overrun regularly by the tides and floods with the east of the site shown to be a mud flat and gravel bank.
- The 1897 to 1913 map shows the city park has been developed into a racecourse. The site is shown to be drained by open channels. The Cork Blackrock and Passage railway track is located approximately 0.3km south to south east from the site.

- The 1830s to 1930s Map shows that the races course is gone, and the site appears to be fields separated by channels. The Centre Park Road now runs along the south easterly boundary of the site.
- In the 1920s, the nearby Ford Factory was under construction. By the 1950s the industrial area had developed further with Ford, Dunlop, the Electricity Supply Board (ESB) and Irish Shell Ltd. having industrial facilities in the area.
- Historical site map from 1968 showed that the site was a part of the adjacent Electricity Supply Board (ESB).
- Aerial photography from 1996 shows development of sheds in the area and storage of lorries, occupied by Tedcastle McCormick & Co (Now TopOil) during which time, the site had been utilised as a coal and/or oil storage and distribution centre. The coal storage area was on site until 2017 according to Google Earth aerial photographs. A member of the Comer Group informed Arup that TopOil had been decommissioned from site earlier in 2021. TopOil has been on the site since at least 1995, and used it as storage for Kerosene tanks, a fueling station for the lorries and storage of the lorries.

A copy of the aerial photographs and historical maps referred to are presented in **Appendix 13.2**.

13.2.5 Site walkover – 2021

A site visit was carried out by Arup in 2019 and on the 30th of June 2021. During the site walkover Arup visually inspected the site, collected notes and made a detailed photographic record of the site. Copies of the photographs are presented in **Appendix 13.1**.

Access to the site was from a locked gate located along Centre Park Road. The surface of the site falls gently towards to southeast.

There was a concrete road from the entrance gate that curves northwest towards the old coal storage area (**Appendix Figure 13.1**). The concrete road surface changes to hardcore in the northwestern section of the site. Majority of the south easterly section was cover by grass except a small area of hardcore right of the entrance to the site. The perimeter of the whole site was covered by dense vegetation.

There was a derelict office building located by the entrance of the site (**Appendix Figure 13.2**) and a stell cabin and large tires located on the hardcore to the right of the entrance (**Appendix Figure 13.3** and **Appendix Figure 13.4**). The tanks that were on site in during the 2019 walkover had been removed by the 2021 walkover (**Appendix 13.1 Figure 13.5** and **Appendix Figure 13.6).** There is broken fencing located around the old coal storage area and to the south separating the hardcore and grass areas.

The site comprises of an area that was used as a coal storage area until 2017. There was no coal on site during the walkover (**Appendix Figure 13.7**).

There are two open channels along the perimeter of the site, one in the north and one along the southeastern boundary (**Appendix Figure 13.8).** Both channels meet in the far eastern corner of the site. The channel to the north is located in a narrow deep channel approximately 1.3m below ground level. Both channels drain to a pond northeast of the site which has a one-way valve which outfalls into the Lee Estuary Lower . The channel on the southeastern boundary had a noticeable white film, like a firefighting foam on the surface and the base of the channel.

There is one small channel located between the old coal storage area and the bunded area. This stream is located outside the red line boundary and it is unclear where the channel drains to.

Approximately 50m southeast from the old coal store, outside of the site boundary, is the old Tedcastles coal sorting shed and a mechanic shed (**Appendix Figure 13.9 and Appendix Figure 13.10).** There is a bunded area where fuel was stored adjacent to and outside of the site boundary (**Appendix Figure 13.11**).

13.2.6 Regional geomorphology and topography

During the Variscan mountain-building event, rocks in the Cork region were compressed into a series of folds orientated east-west. Weathering of these folds exposed the sandstones underneath. These two rock types dominate the Cork landscape:

- Limestone under the long valley east-west valley of the Lee Estuary Lower
- Sandstone under the higher ridges to the north and south of the valley.

The site is located in a low relief area within the valley of the Lee Estuary Lower. The area surrounding the site has a surface elevation of around 0mOD to 5mOD. The South Docklands are located to the south of the Lee Estuary Lower and within the valley of the Lee Estuary Lower.

Immediately to the north of the Lee Estuary Lower the valley is defined by the presence of sandstone which is observed as an abrupt change in ground level from 0mOD to over 100mOD within 500m of the River.

Within the 2km study area from the site the GSI records Glaciofluvial Terraces south west and north west of the site. The meltwater channels flow south towards the Lee Estuary Lower (**Figure 13.3**). None of these features are within 1km of the proposed development.

Figure 13.3 GSI Geomorphology | Not to Scale

13.2.7 Regional soils

In accordance with EPA National Soils dataset (SIS National Soils 2015) the most dominant soil within the study area is made ground (**Figure 13.4**).

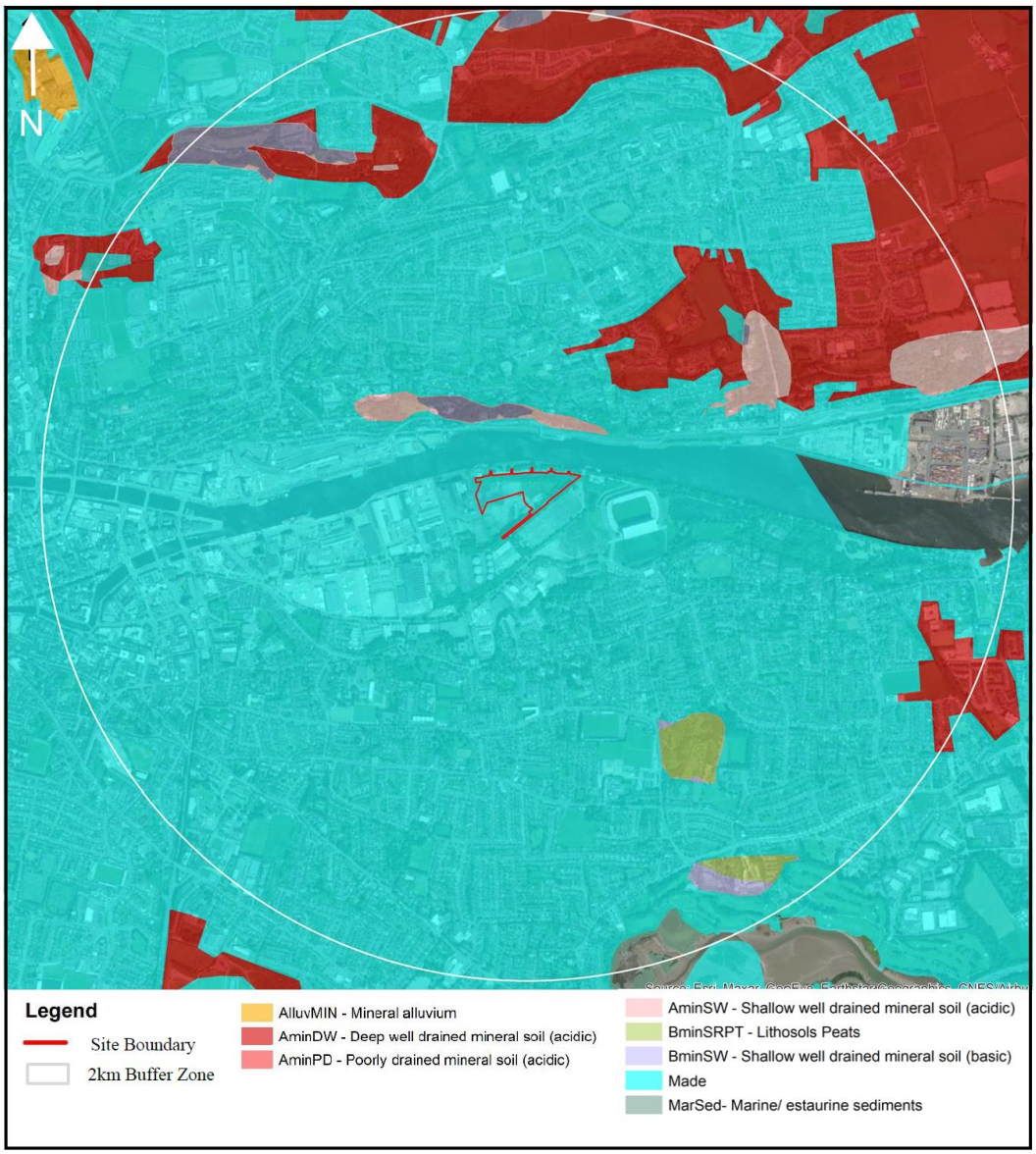


Figure 13.4 Regional Teagasc Soils | GSI | Not to scale

13.2.8 Regional Quaternary sediments

As with the regional soils' information (**Section 13.2.7**), the Quaternary Sediment information from the GSI Quaternary Sediment database show the area around the site to be predominately underlain by made ground. The Quaternary deposits map is shown on **Figure 13.5**.

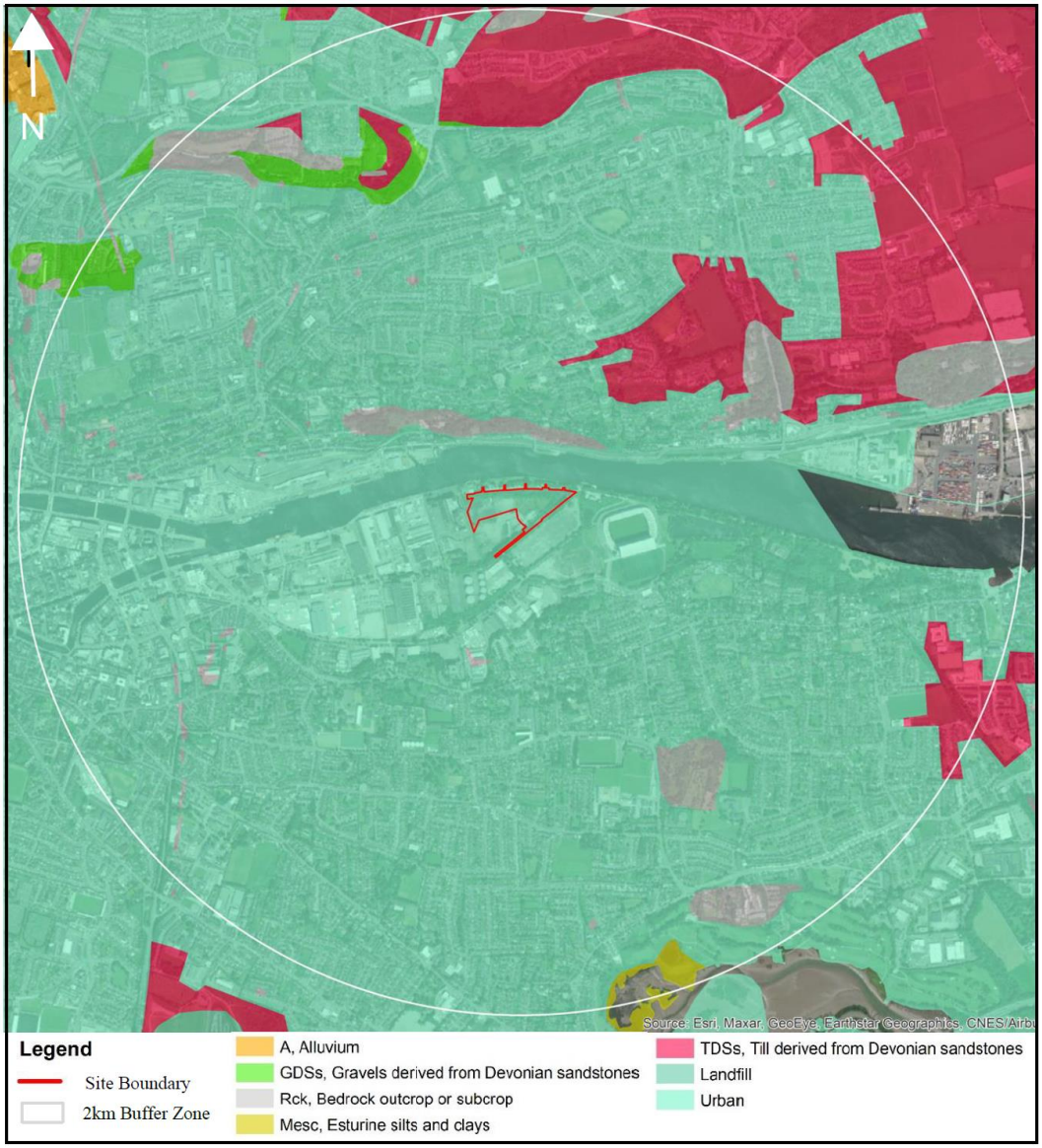


Figure 13.5 Regional Quaternary Sediments | GSI | Not to scale

Estuarine silts and clays

Approximately 2km to the south-south-east of the site, estuarine silts and clays are shown along the Douglas River. These deposits are probably similar to the deposits that existed prior to the reclamation and could be present under the made ground.

Lee Valley Gravels

Based on the GSI Groundwater Data Viewer, it is understood that the Lee Valley Gravels (LVG) underlie much of the Lee Estuary Lower in Cork. The LVG infill a buried glacial valley. The buried valley of gravels starts to the west of Cork City at Crookstown and run to Páirc Uí Chaoimh in in the east. The LVG are greater than 60km in length and 0.5km to 0.75km wide. The thickness ranges from

several metres to greater than 60m locally. As the site is located immediately to the west of Páirc Uí Chaoimh, it is situated over the LVG.

Based on a published map[47] showing, the thickness of the Quaternary deposits (which principally comprise the LVG) is shown to be between 20m and 60m.

The GSI does not show any soft or unstable ground within the site. There are no recorded landslide events within the proposed site or within 2km of the site. The landslide susceptibility in the southern end of the site is low. There is no recorded landslide susceptibility across the rest of the site.

13.2.9 Regional bedrock

The GSI bedrock geology map indicates that the site is underlain by the Cuskinny Member, a flaser-bedded sandstone and mudstone. The site is located in the valley of the River Lee, which underlain by is a geological syncline. To the north is the Gyleen Formation, a sandstone with mudstone and siltstones, which is striking west to east and dipping toward the south. To the south is the Ballysteen Formation, a dark muddy limestone, with a strike approximately west to east and dips south.

The Regional Bedrock is shown on **Figure 13.6**.

[47] Late Pleistocene-Holocene Buried Valleys in the Cork Syncline, Ireland; Davis, MacCarthy, Allen & Higgs; Journal of Maps, 2006

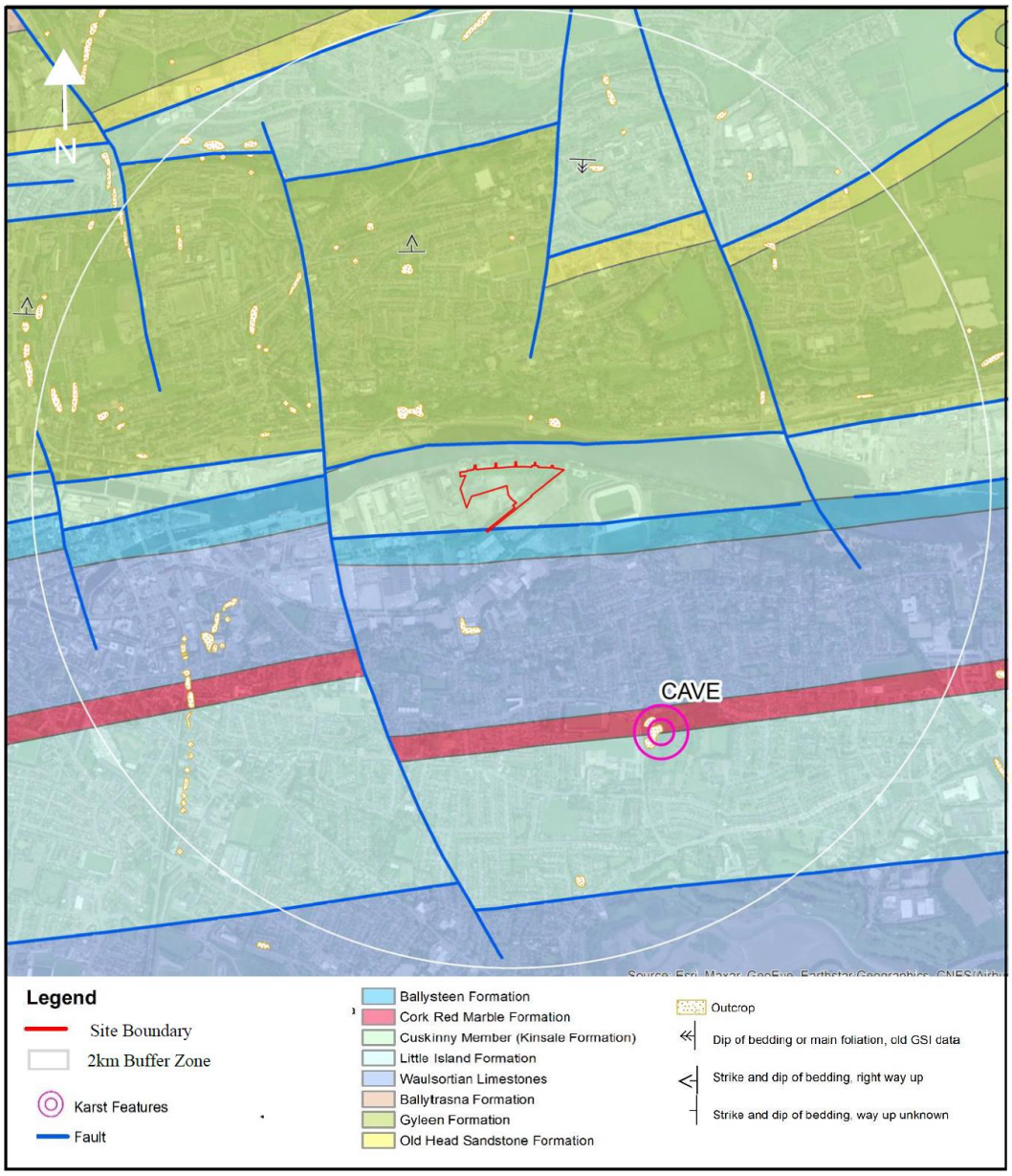


Figure 13.6 Regional bedrock Geology | GSI | Not to scale

The closest mapped fault lies approximately 0.07km south of the site, running in an east to west direction. There is another fault, 0.1km north of the site, running in an east to west direction. A fault, approximately 0.6km west of the site, runs in a north to south direction. There is another north south fault approximately 1km east of the site

According to the GSI Data Viewer, there are no mapped karst features present beneath the site. The closest karst feature, a cave located in Beaumont Quarry, is approximately 1.3km southeast of the site.

13.2.10 Regional hydrogeology

The site is located within the Lee Valley Gravels Groundwater Body (GWB) and is within the Lee, Cork Harbor and Youghal Bay Water Framework Directive (WFD) Catchment.

Based on the Geological Survey of Ireland Groundwater Resources Aquifer Map there are two aquifers under the site:

- The Lee Valley Gravels which is described as a 'Regionally Important Gravel Aquifer[48]'; and
- Cuskinny Member forms part of the Ballincollig groundwater body (GWB) and is categorised as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones'.

Lee Valley Gravel Aquifer

The Lee Valley Gravel (LVG) is likely to have a high to moderate hydraulic conductivity. Values reported for a site in Cork City range from approximately 5 x 10^{-3}m/s to 5 x 10^{-4}m/s[3].

The groundwater in the aquifer is likely to be in continuity with the Lee Estuary Lower. Hence the water level and flow direction in the aquifer is likely to be strongly influenced by the Lee Estuary Lower, with a general groundwater flow direction towards the Lee Estuary Lower (although this is likely to be locally reversed during high tide). Groundwater levels within the study area are likely to be within several metres of the surface and vary with the tide.

[48] M. Long, M. Murphy, T. Roberts, J. O'Brien. & N. Clancy 2015. Deep excavations in water-bearing gravels in Cork, Quarterly Journal of Engineering Geology and Hydrogeology. Vol 48 Issue 2.

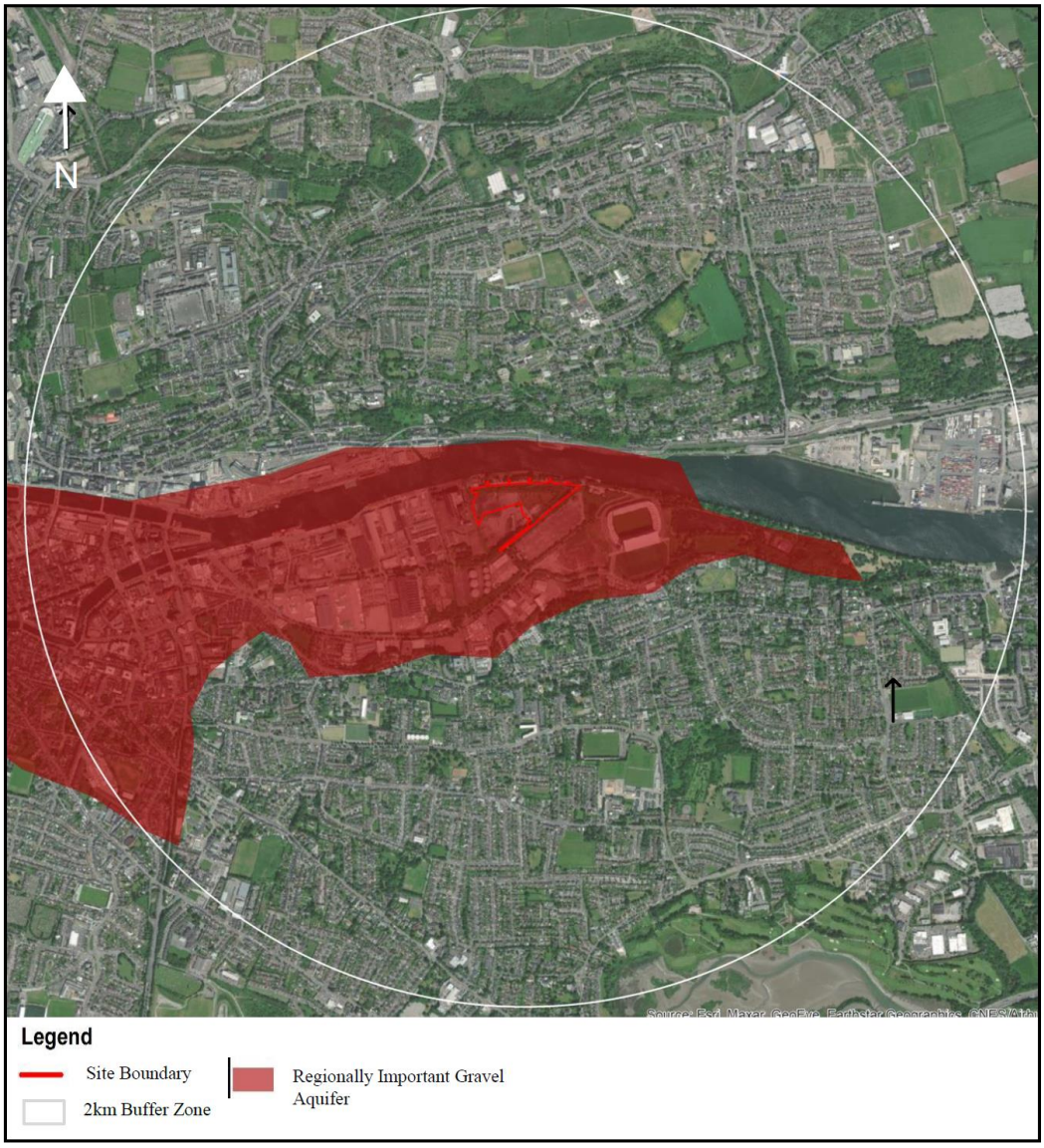


Figure 13.7 Gravel Aquifer | GSI | Not to scale

Bedrock Aquifer

The bedrock aquifer is the Cuskinny Formation, a sand dominant flaser-bedded sandstone and mudstone formation. It is likely to have a low primary permeability but a moderate secondary permeability imparted by fractures. It is likely that due to the mudstone layers in the Cuskinny Formation that the fractures are localised and not as well connected.

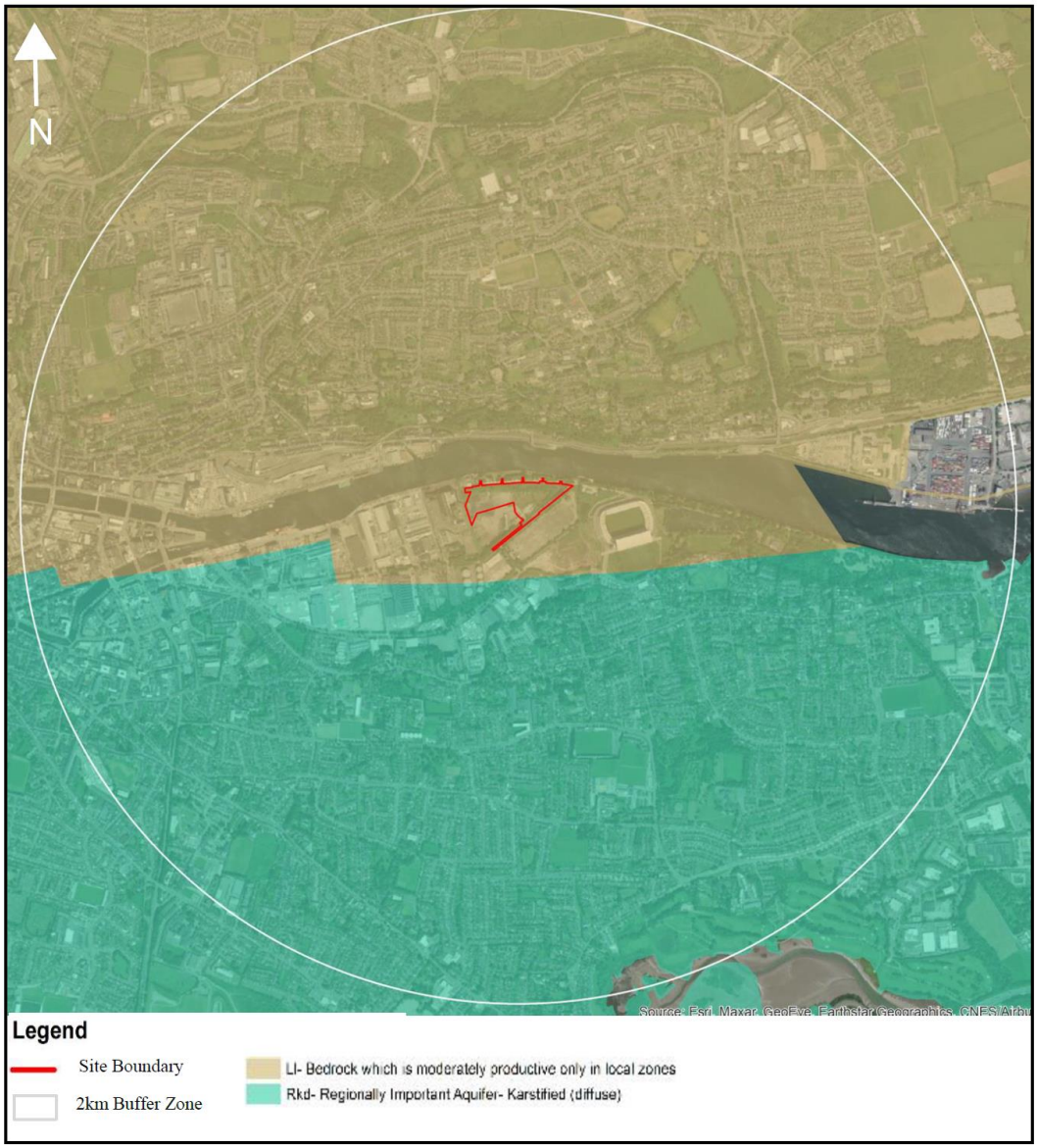


Figure 13.8 Regional Bedrock Aquifer | GSI | Not to scale

13.2.10.1 Recharge

Lee Valley Gravel Aquifer

The made ground and silt overlying the gravel are generally considered to be of moderate to low permeability, however the recharge to these layers will be affected by the paved urban areas of Cork City. The LVG aquifer is likely to receive a marginal amount of slow recharge from the made ground and silt.

Regionally it is more likely that the LVG aquifer is predominately recharged upgradient of and to the west of Cork City. It is likely that locally within the study area recharge from the Lee will also occur during tidal fluctuation.

Bedrock Aquifer

According to the GSI, the average recharge for the site is 126mm/yr. and the effective rainfall is 631mm/yr.

The bedrock aquifer is unlikely to receive any direct recharge from the site due to the depth at which the limestone is located (40m to 60m below ground level). In addition, as the site is located close to where the Lee Estuary Lower discharges into the sea it is more likely to be an area of discharge rather than recharge.

13.2.10.2 Groundwater Vulnerability

According to the GSI Groundwater Vulnerability map, the vulnerability of the groundwater in the bedrock aquifer beneath the site is classified as moderate across the site. The groundwater vulnerability in the vicinity of the site is shown on **Figure 13.9**. This vulnerability relates to the bedrock aquifer rather than the Lee Valley Gravels.

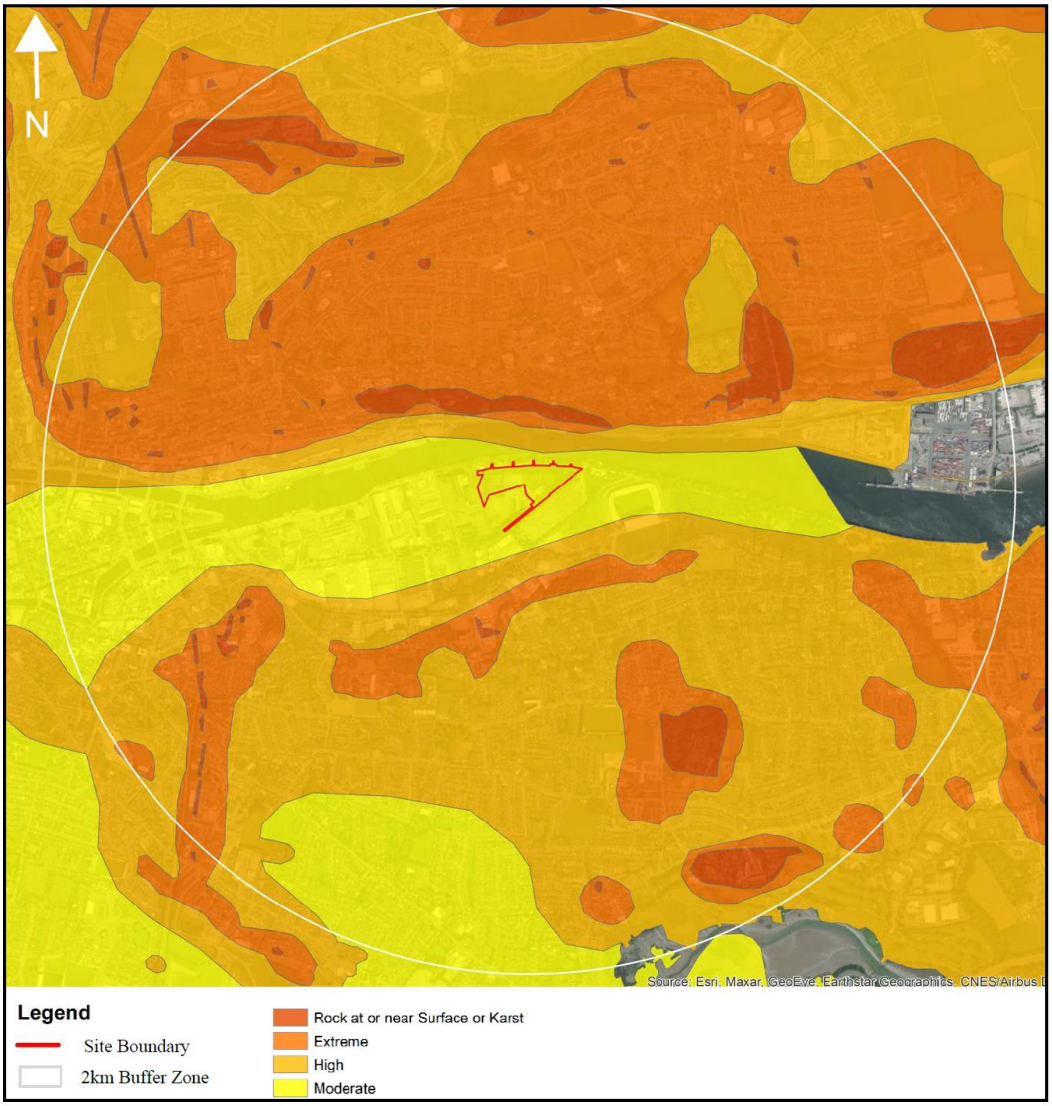


Figure 13.9 Groundwater Vulnerability | GSI | Not to scale

The aquifer vulnerability is dependent on both the permeability of the overlying subsoils and the depth to the water table, therefore where the groundwater level is within 3m of the surface the presence of moderate to highly permeability subsoil is likely to increase the vulnerability of the LVG.

13.2.10.3 Groundwater hydrochemistry

Lee Valley Gravels

According to the EPA, the water quality from the gravel deposits between 2013 to 2018 are indicated as good.

It is likely that the groundwater quality under the site will be heavily influenced by the water quality in the Lee Estuary Lower which is likely to be saline or brackish near the site.

Bedrock Aquifer

The Ballincollig GWB is classified by the EPA as having a good chemical and quantitative status for the period 2013 to 2018.

13.2.11 Surface water bodies

The hydrology in the surrounding areas is described in detail in Chapter 14. In summary the site is located within the catchment of the Lee Estuary Lower, the dominant water feature in Cork City. The Lee Estuary Lower flows generally from the west to the east through Cork and drains into Lough Mahon approximately 3.5km east of the site, which further discharges into Cork Harbor approximately 10km southeast of the site. The Lee Estuary Lower is tidal near the site.

Surface water runoff from the site drains to the existing open channels to the north and southeast of the site. There are two existing culverts on the south-eastern open channel, one at the southern corner of the site, and one at the main site entrance. Both of these culverts flow east before ultimately discharging to the Lee Estuary Lower via an outfall at the point of confluence of the two open channels. There is a one-way valve at that connects the open channels to the Lee Estuary Lower .

Surface water features in the site and surrounding area are shown on **Figure 13.10**.

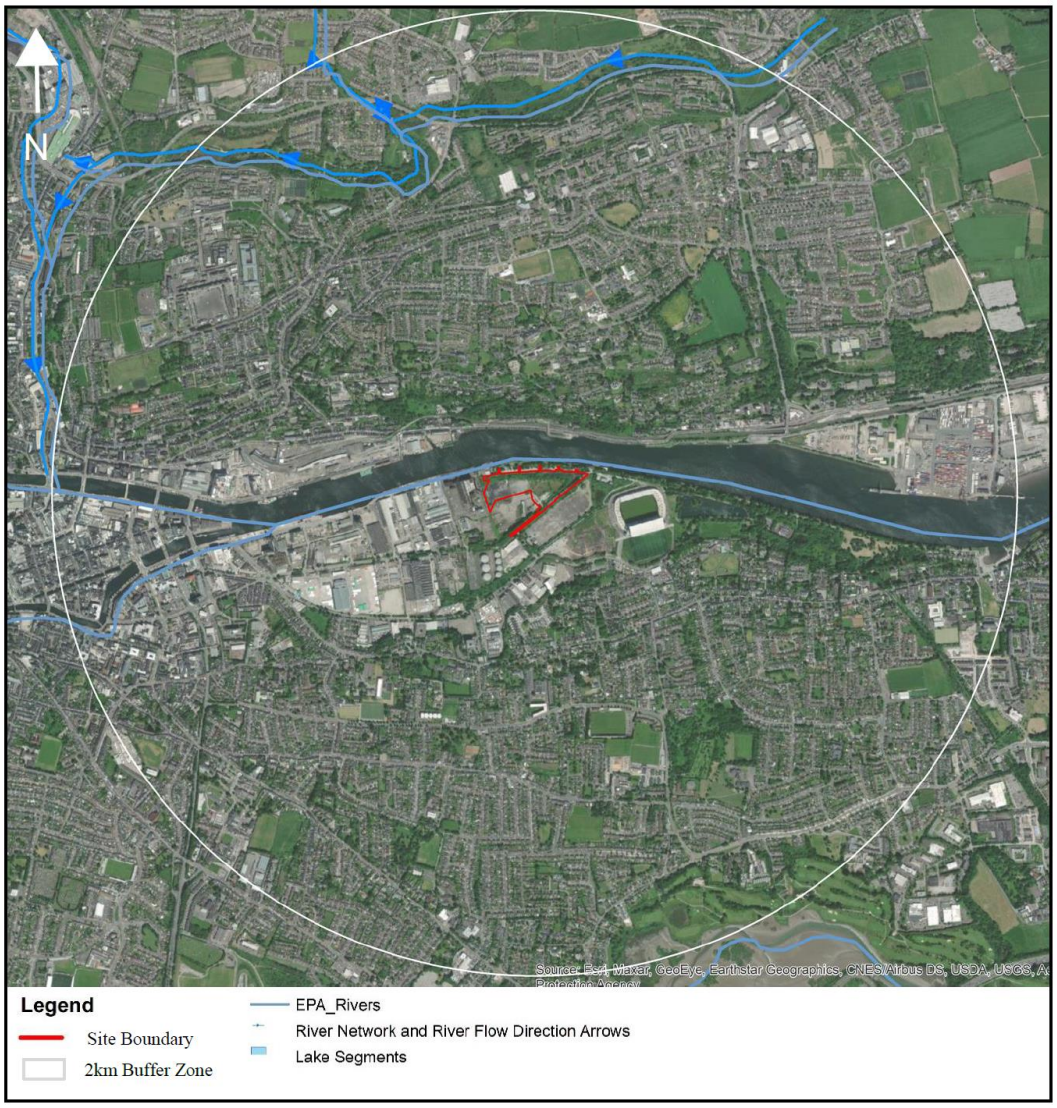


Figure 13.10 Surface Water Features GSI | Not to scale

13.2.12 Local geology

An interpreted generalized stratigraphy of the ground conditions based on the PGL 2021 Ground Investigation are presented in **Table 13.2**. The factual report is presented in **Appendix 13.3**.

Table 13.2 Generalised Stratigraphy

Lithology	Approx. thickness (m)	Depth to top of Stratum (mBGL)	Description
Hardcore /Concrete or Topsoil	to 0.5 0.10 to 0.15	0	Hardcore – This layer of gravel with weeds and grass growing up through it in areas. Topsoil: Brown, gravelly Silt with medium Cobble content
Made Ground	1.1 to 3.5	0 to 0.5	Firm black to grey sandy gravelly silt with cobbles. anthropogenic material such as glass, plastic, ceramics, concrete bricks and timber.
Probable Made Ground	1.4 to 3	0.4 to 2.8	Soft grey to dark grey or brown, slightly sandy, slightly gravelly silt with occasional organic material.
Estuarine silts and clays	2 to 4	0.4 to 2.2	Soft grey silt with shell fragments
Lee Valley Gravels	>30m Full thickness not proven	1.9* to 5.8	Red to purple slightly sandy gravel is medium to coarse and well rounded. *1.9mbgl is in one localised area of the site.

13.2.12.1 Made ground

During the ground investigation the following visual or olfactory evidence of contamination was noted in the made ground:

- Evidence of hydrocarbon contamination was described at one trial pit location, TP04. This included hydrocarbon odors in the soil and hydrocarbon staining on the soil.
- Materials from demolition were recorded in the made ground, including large concrete blocks (up to 1.3m in length), timber, red bricks, and metal wires (**Photography 13.1**).

Photograph 13.1 Black staining on the soil in TP04. Significant anthropogenic waste in the pit, such as timber and concrete blocks.

13.2.12.2 Silt

A consistent layer of black/dark grey silt is present beneath the top layer of made ground across the site. Some of the dark black silt contained gravel. Based on geology seen elsewhere in the South Docklands it is likely that this darker (upper) silt represents natural material that was dug up locally and placed on the marshland during the reclamation of the area and development of The Marina and the city park. The pale grey (lower) silt beneath is likely to comprise estuarine silt and clay seen on the GSI quaternary geology map (**Figure 13.5**) and originally comprised a natural marshland and part of the Lee Estuary Lower Estuary. The distinction between the natural grey silt and the reworked silt (probable made ground) has been interpreted by the presence of gravel, and the black colour of the silt.

13.2.12.3 Sand and Gravel

The sand and gravel was not recorded to have any significant variation across the site. The base of the gravel was not proven (deepest borehole was 39mbgl (-38.12mOD) in the north east of the site). No visual or olfactory evidence of contamination was noted in the sand and gravel.

The sand and gravels observed beneath the silt are considered to be part of the regional gravel aquifer known as Lee Valley Gravels.

13.2.12.4 Soil Contamination

As described in **Section 13.1.3** and following the EPA methodology the soil samples were compared against Generic Assessment Criteria (GAC) for human health which forms part of a Generic Quantitative risk assessment (GQRA). The soil samples were compared against GAC for human health relevant to a '*public open space with residential land use*', based on the English Environment Agency CLEA model. This is equivalent to the most conservative proposed use of the site which includes communal spaces. The results used to carry out the GQRA are presented in **Appendix 13.4** and are summarised below.

In the GQRA the results of soil analysis performed on samples collected have been compared against soil criteria applicable to human health risk for long term exposure to soil in a public open space close to a residential setting, which is directly applicable to the operational stage of the proposed development.

In summary, the results of the GQRA for the residential public setting are as follows:

- Metals (arsenic, molybdenum and nickel) were above the screening limit in WSBH01 at 0.7mbgl.
- Lead was above the screening limit in WS01 at 0.9mbgl and WSBH01 at 0.7mbgl.
- Benzo[b]fluoranthene and Benzo[a]pyrene were above the screening limit in TP01 at 1.4mbgl, and TP04 at 0.5mbgl and 1.4mbgl.
- Dibenz(a,h)Anthracene was above the screening limit in WSBH03 at 1.4mbgl, TP01 at 1.4mbgl, TP04 at 0.5mbgl and 1.4mbgl, WS02 at 0.2mbgl and 0.8mbgl, WS03 at 0.5mbgl, WS06 at 0.4mbgl, WS18 at 0.2mbgl and 1.8mbgl, WS19 at 0.5mbgl and WS21 at 0.7mbgl and 1.2mbgl.
- Asbestos was detected in TP01 at 1.4mbgl, TP02 at 0.5 mBGL, TP04 at 1.4mbgl, WS02 at 0.2 and 0.8mbgl, WS19 at 0.5mbgl and WS21 at 0.7 and 1.2mbgl. Ranging from 0.001% to 0.05% of amosite and chrysotile.

The following soil samples did not exceed the human health assessment criteria but were recorded above their detection limit:

- 1,3,5-Trimethylbenzene was above the detection limit (DL) in WSBH05 at 1.1mbgl and TP04 at 1.4mbgl.
- 4-Chlorotoluene, Tert-Butylbenzene, and N-Butylbenzene was above the DL in WSBH04 at 0.6mbgl.
- Sec-Butylbenzene was above the DL in WSBH04 at 0.6mbgl and WSBH05 at 1.1mbgl.
- 4-Isopropyltoluene was above the DL in WSBH04 at 0.6mbgl and WS02 at 0.8mbgl.
- 1,2-Dibromo-3-Chloropropane was above the DL in WSBH05 at 1.1mbgl

- 2-Methylnaphthalene was above the DL in WSBH05 at 1.1mbgl, TP04 at 0.5mbgl and 1.4mbgl, and WS02 at 0.8mbgl.
- Carbazole was above the DL in WSBH03 at 1.4mbgl, WSBH04 at 0.6mbgl, WSBH05 at 1.1mbgl, TP01 at 1.4mbgl, TP04 at 0.5mbgl and 1.4mbgl, and WS02 at 0.2mbgl and 0.8mbgl.
- (SVOC TIC) Dibenzothiophene was detected in TP01 at 1.4mbgl and WS02 at 0.8mbgl.

Details of the exceedance are presented in **Appendix 13.4**.

Soil plans were compiled for the Former Tedcastles Site highlighting the contaminants of concern, with results recorded in concentrations over their soil screening limit (SSL). The plans show the contaminant exceedances from 0mbgl to 1mbgl (**Figure 13.11**) and 1mbgl to 2mbgl (**Figure 13.12**). Below 2mbgl, no exceedances of the human health criteria were noted.

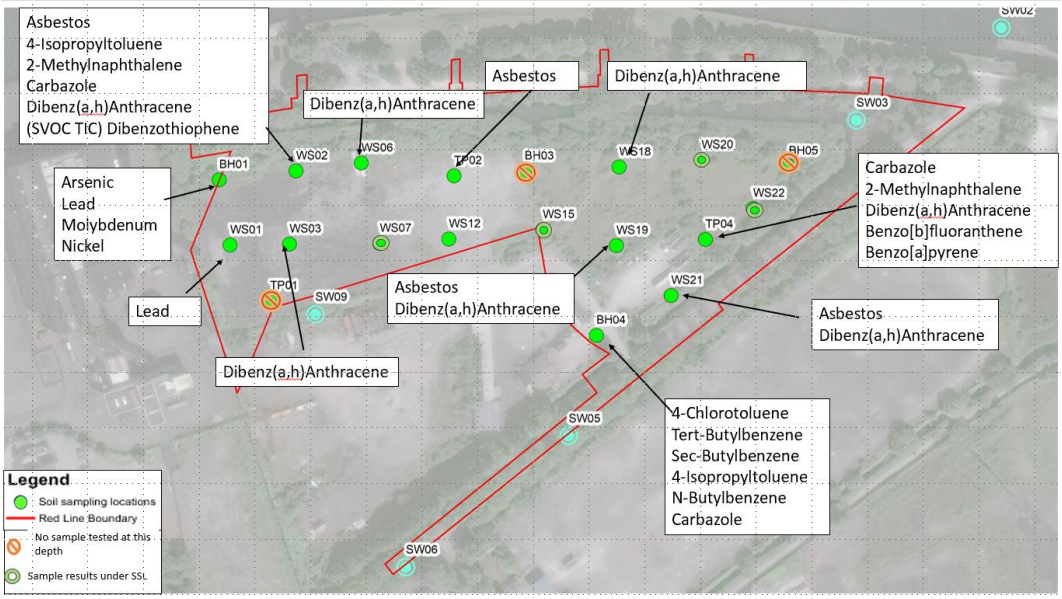


Figure 13.11 Soil contaminants exceedances from 0mbgl to 1mbgl.

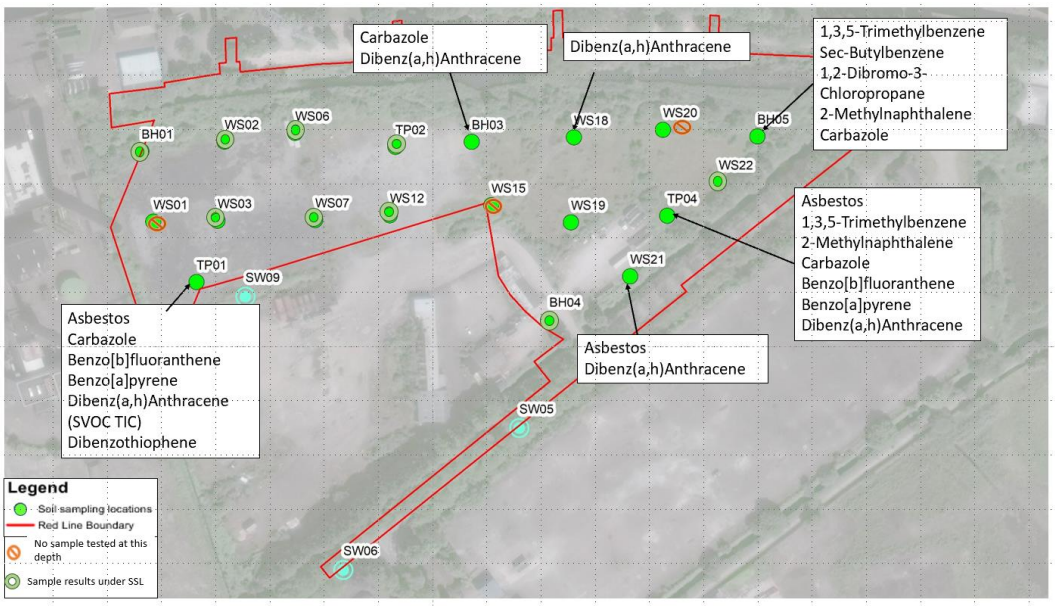


Figure 13.12 Soil contaminants exceedances from 1mbgl to 2mbgl.

Based on the HWO tool, out of the 49 total samples tested, 6 are classified as Hazardous, 5 are classified as Non-Hazardous and the remaining 38 are classified as Inert. The Hazardous samples have been classified as such due to elevated levels of; chromate, pH and hydrocarbons. The Non-Hazardous samples have been classified as such due to the presence of asbestos in soils (AiS) at less than 0.1%.

13.2.12.5 Ground gas

Ground gas samples were measured for standpipes installed in the made ground. **Appendix 13.5** presents the ground gas results. Differential pressure, borehole pressure flow, carbon dioxide, oxygen and methane were recorded during the three monitoring rounds. Based on the BS8485 2015, the results of the ground gas measurements categorised the hazard potential as *very low* with no special measures required for ground gas for the Former Tedcastles Site development.

Based on the ground gas monitoring, no ground gas protection is recommended for the development.

13.2.13 Local hydrogeology

During the 2021 ground investigation groundwater was observed in both the made ground and the sands and gravels. Groundwater was monitored within the site boundary by hand and using data loggers in up to 7 standpipes installed in either the made ground or sand and gravels between 4th November July 2021 and 6th December 2021. A summary of the water levels is presented in **Table 13.3** and a hydrograph showing the tidal fluctuations is presented in **Appendix 13.6**.

Table 13.3 Groundwater Levels (mOD) collected during the 2021 GI

Lithology monitored	Boreholes	Max and Min Level (mOD)
Made ground	WSBH04, WSBH05, WS02, WS15, WS22	1.2 to -0.1mOD
Gravel	WSBH01, WSBH03, WS20,	-0.0 to -1.3mOD
Tidal Fluctuation in the Lee Estuary Lower between +1.6mOD to -1.8mOD		

13.2.13.1 Made ground

The groundwater in made ground was recorded in the following window samples, WSBH04, WSBH05, WS02, WS15 and WS22. Water levels in the made ground appear to be unaffected by the tide based on data logger information from WSBH04. Consequently, it is considered that there no significant hydraulic continuity between the perched ground water in the made ground and the LVG.

13.2.13.2 Gravel aquifer

The groundwater level in the gravel is above the top of the gravel, hence it is confined beneath the silts. The potentiometric levels in the gravel aquifer are tidally influenced and fluctuate during a single cycle by up to 1.2m. Consequently, the groundwater in the gravel is considered to be in direct continuity with the Lee Estuary Lower. There is a 60 to 90 min lag between the tidal influence of the Lee Estuary Lower and the gravel aquifer on the site. The groundwater flow direction in the gravel varies due to tidal influence. During low tide groundwater under the site flows to the north-east towards the Lee Estuary Lower. However, during the high tide, as the Lee Estuary Lower water level rises above the water level in the gravel, the groundwater flow reverses and temporally flow towards the south-west.

The groundwater flow maps are presented in **Appendix 13.7**.

The difference in groundwater levels between the gravel and made ground suggests that hydraulic continuity between the two units is limited. The layer of silt between the two units is considered to act as at least an aquitard, limiting movement from one body of water to the other.

13.2.13.3 Groundwater quality

As described in **Section 13.1** and following the EPA methodology groundwater samples from the open channels, made ground and gravel aquifer have been compared against Environmental Quality Standards (EQS) which form part of a generic quantitative risk assessment (GQRA). The results used to prepare the GQRA are presented in Appendix 13.8 and results of the GQRA are summarized below.

From a review of the water analytical results, the following observations were made:

- Naturally occurring inorganic compounds: chloride, sulphate, potassium, magnesium and sodium exceed the screening standards in the water samples across the made ground, gravels and open channels. These compounds are associated with brackish conditions.
- Groundwater samples collected from the made ground, gravels and open channels showed elevated ammoniacal nitrogen above the screening value. As ammoniacal nitrogen is recorded in similar concentration up and down hydraulic gradient this is considered to be a background concentration. Ammoniacal nitrogen was also found to be above the screening standard in the Lee Estuary Lower but in quantities of generally an order of magnitude lower than the other water samples collected.

The made ground water samples contained metals elevated above the screening limit for: barium, chromium, iron, manganese and zinc. The made ground water samples from WS02, WS15 and WS22 indicate brackish water.

The water in the made ground is likely to be derived from a mixture of a small amount of surface infiltration, and potentially small amounts of water seeping up through the silt aquitard.

From the water assessment, the sand/gravel has an overall moderate quality, however, there are elevated concentrations in some determinants which are likely linked to off-site sources and background concentrations.

13.2.13.4 Open channels

The surface water sample in SW06 contained Trichloromethane and 1,1,1-Trichloroethane concentrations above the detection limit. During a site visit, a white film similar to firefighting foam was observed on the water and on the base of the southern open channel that runs next to Centre Park Road. Due to this observation, per- and poly-fluoroalkylated substances (PFAS) were tested for in the water sample and were found to be present at this location (SW05). However, PFAS was not detected in SW03 downstream in the northern channel.

The water quality in the open channels surrounding the site indicates brackish conditions with some elevated metals. Water quality monitoring carried out at the site indicated that the water quality in the made ground could impact on the water quality in the open channels surrounding the site. However, there is no evidence that the soil and water are impacting the water quality in the Lee Estuary Lower .

13.2.14 Sensitive features – groundwater abstractions

The GSI keeps a record of known groundwater abstractions consisting of wells and springs. The location of GSI wells and springs near the site are presented on **Figure 13.13**. Based on the GSI database there are 23 wells recorded within 2 km of the site.

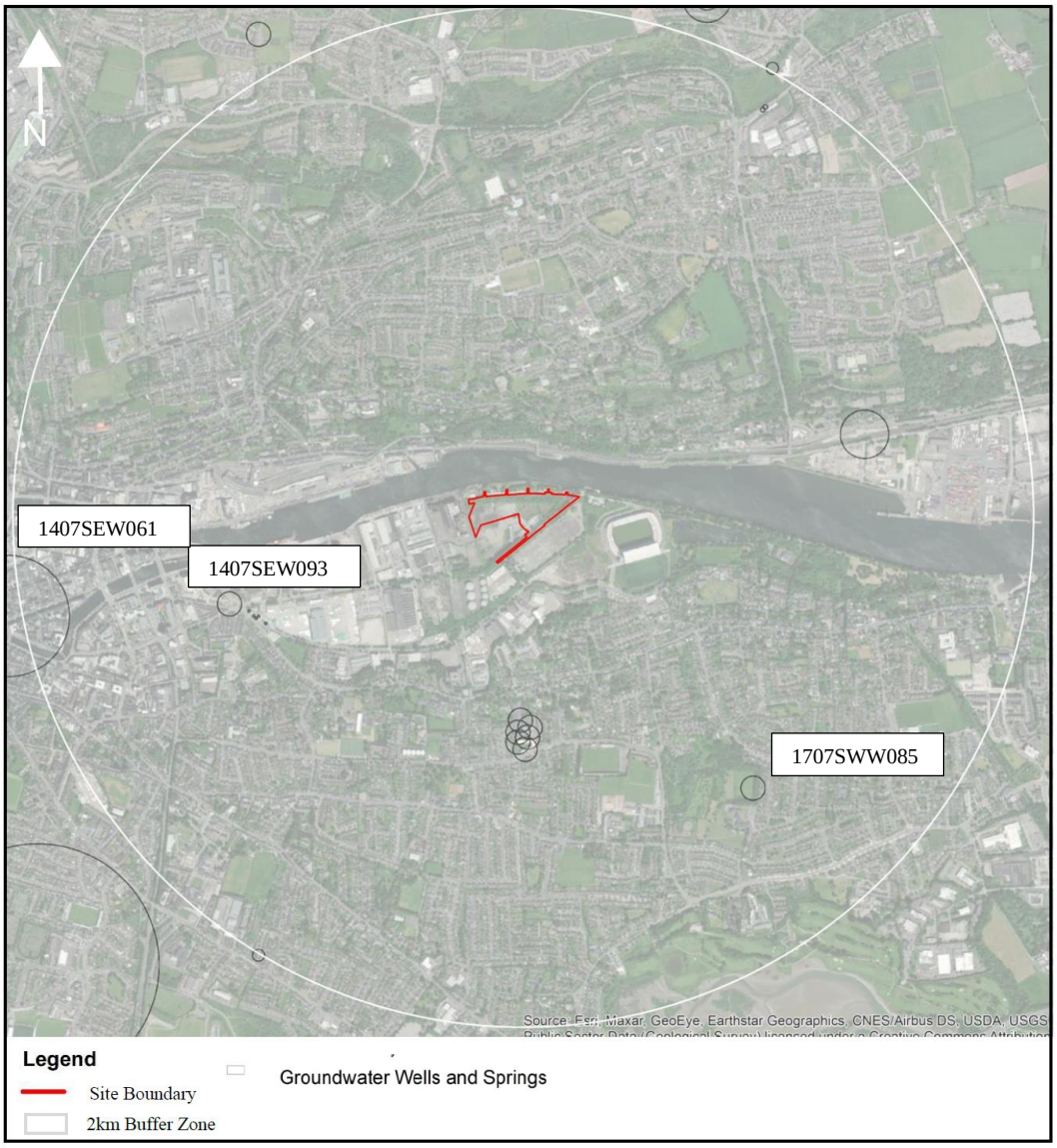


Figure 13.13 Recorded groundwater wells and springs GSI | Not to scale

Fourteen wells listed on the GSI database are considered to be from geotechnical investigations:

- six located in a cluster approximately 0.7km to the south of the site (1407SEW096, 1407SEW075, 1407SEW097, 1407SEW098, 1407SEW074 and 1407SEW095) and are drilled to a maximum depth of 13mbgl;
- Another six are located in a cluster approximately 1.0km to the west south west of the site (1407SEW185, 1407SEW186, 1407SEW187, 1407SEW188 and 1407SEW189) and are drilled to a depth of 5mbgl; and
- Two located in a cluster 1.9km to the north-east (1707SWW186 and 1707SWW187) and are drilled to a depth of 9mbgl.
- One located approximately 1.5km to the north east (1707SWW115) and is drilled to a depth of 11.2mbgl.

The remaining nine borehole are listed in **Table 13.4**.

Table 13.4 Groundwater abstractions in the Vicinity of the Site

Reference (source)	Distance and direction from the site (km)	Depth (mBGL)	Yield class (rate where provided)	Use
1707SWW085	1.9km south-east	n/a	27.3 poor	Public Supply (Co. Cork)
1407SEW093	0.8km west	14.8	n/a	Industrial Use
1407SEW061	1.8km west	42.7	n/a	n/a

According to the GSI Groundwater Data Viewer, there are no public supply drinking water, or group scheme preliminary source protection or National Federation Group Water Schemes source protection areas within 2km of the site (**Figure 13.13**).

There is no public supply source protection areas or areas in the site or within the 2km radius.

13.2.15 Sensitive features – groundwater dependent terrestrial ecosystems

Ecological features or habitats which need to be protected have designations based on Irish, European or international law. These designations include: Special Area of Conservation (SAC), Special Protection Area (SPA), National Heritage Area (NHA) and proposed National Heritage Area (pNHA).

The nearest recorded SPA to the site is the Cork Harbor SPA (Site Code 004030) located approximately 1.6km, to the south and southeast of the site (Figure 13.14). Based on the Natura 2000 Standard Data Form[49] The Cork Harbor SPA is a wetland site which supports in excess of 20,000 wintering water-fowl. The SPA comprises the main intertidal areas of Cork Harbour and is scattered with salt marshes.

[49] Cork Harbour SPA. Site IE0004030. NATURA 2000 - STANDARD DATA FORM For Special Protection Areas (SPA), Proposed Sites for Community Importance (pSCI), Sites of Community Importance (SCI) and for Special Areas of Conservation (SAC

Figure 13.14 Areas of ecological importance GSI | Not to scale

The nearest recorded NHA or pNHA is Douglas River Estuary pNHA (Site Code 001046). Based on the Natura 2000 Standard Data Form[50] The Douglas River Estuary is understood to comprise a similar habitat to the Cork Harbor SPA.

In addition, both the pNHA and SPA features are also located on the southern side of the Lee Estuary Lower approximately 1.9km and 2.4km east of the site. Further information on ecological features in the vicinity of the site is presented in the *Biodiversity* Chapter (**Chapter 10**). These features are generally of lower local importance from a biodiversity perspective as they are heavily modified with limited biodiversity (see **Chapter 10** *Biodiversity*).

[50] Cork Harbour SPA. Site IE0004030. NATURA 2000 - STANDARD DATA FORM For Special Protection Areas (SPA), Proposed Sites for Community Importance (pSCI), Sites of Community Importance (SCI) and for Special Areas of Conservation (SAC

13.2.16 EPA licensed facilities

EPA licensed facilities are sites which hold a license provided by the EPA. These sites include Integrated Pollution Control (IPC) sites; Industrial Emissions Licensing (IEL) facilities; Section 4 discharges to water sites; Integrated Pollution Prevention Control (IPPC) facilities; water and wastewater treatment plants. According to the EPA Maps data viewer, there is one active EPA licensed facility within the study area, as follows and shown on **Figure 13.15**.

- The Electricity Supply Board, Marina Generating Station is situated on the western boundary of the site. The Electricity Supply Board is a licensed generating station (IPPC Licence number P0578-03) and holds and IEL (license number P0578). The station has been decommissioned since June 2018, with no activity on site since.

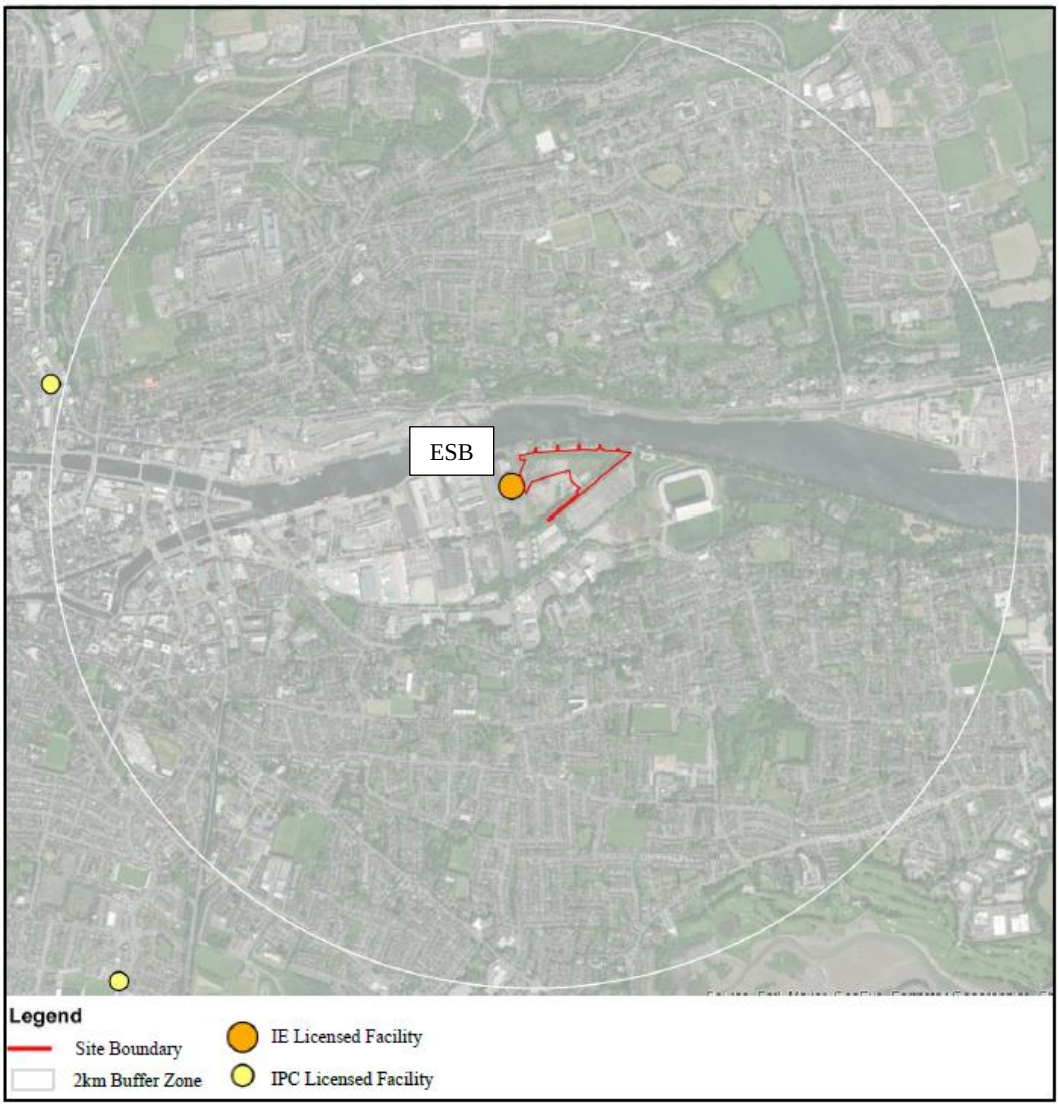


Figure 13.15 EPA Licensed facilities EPA | Not to scale

13.2.17 Protected Structure/Geological Heritage Features

There are no protected structures or geological heritage features on the site or in the immediate vicinity of the site.

The Blackrock Diamond Quarry is a Geological Heritage Feature and is located approximately 0.5km south-west of the site. Due its distance from the site this feature is not considered further in this assessment.

13.2.18 Conceptual site model

A Conceptual Site Model (CSM) has been developed from ground information surrounding the site area.

The CSM, as shown in **Figure 13.16** and described below, summarises the important geological and hydrogeological features near the site.

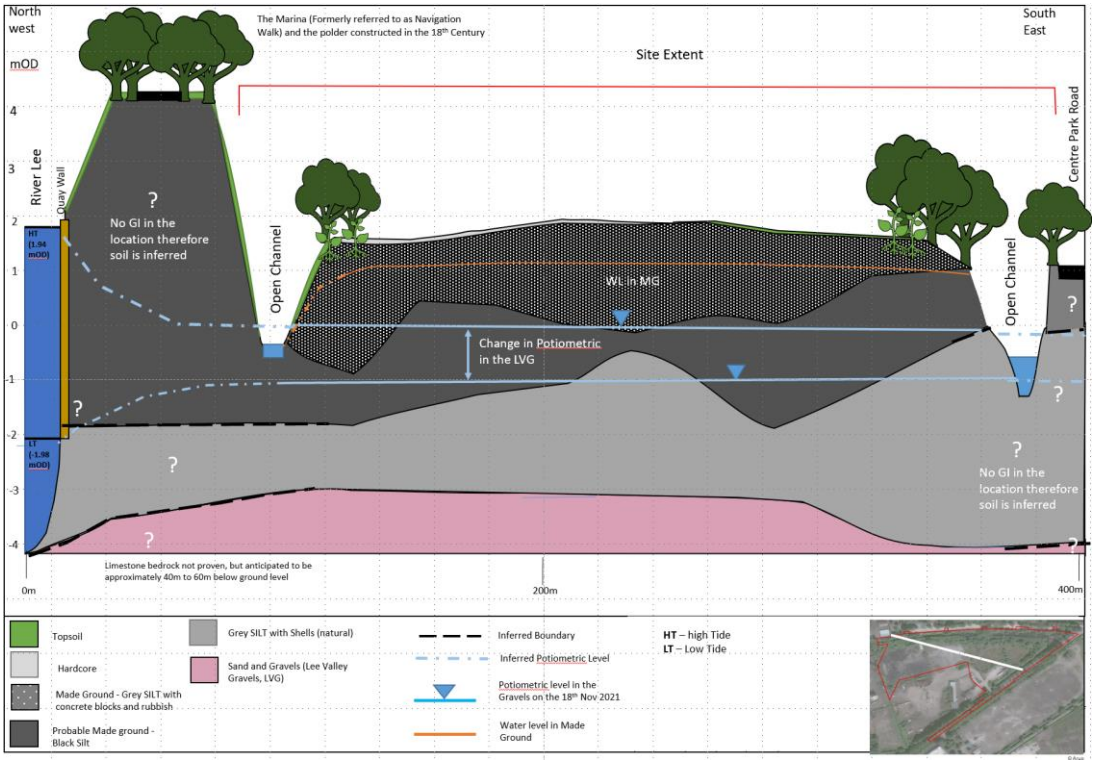


Figure 13.16 CSM for Former Tedcastles Site | not to scale

The site is located immediately south of the Lee Estuary Lower, to the east of Cork City. The Lee Estuary Lower flows from west to east and is tidal in the vicinity of the site.

Up to the late 1700s the site comprised the part of the marshland on the edge of the Lee Estuary Lower, before it was reclaimed to form a racecourse / City Park. Based on the geology seen on site this phase of reclamation is likely to have used locally derived silt and clay. During the 20th century the ground level was raised by importing made ground material. Once the ground level was raised the site was likely used for coal and/or oil storage (circa 1950s/1960s), then a vehicle storage and distribution site for Tedcastles (TopOil) and currently is unused.

The 1m to 4m of made ground used to raise the ground during the 20th Century, comprise clayey gravelly silt containing various materials including construction/demolition waste, placed during the land reclamation. The made ground is diffusely contaminated with heavy metals and asbestos, with localised areas of hydrocarbon contamination. The made ground overlies a layer of silt 1m to 3m in thickness comprising of black silt (probable made ground) used to reclaim the area over the natural marshland and natural silt. Beneath the black silt is a layer of pale grey (lower) silt which is likely to comprise estuarine silt and clay. Beneath the silts is a thick layer of sand and gravel known as the Lee Valley Gravel (LVG). The base of the LVG is reported to be 40m to 60m below the surface and is underlain by limestone bedrock at depth. Considering the depth and the location of the site, in an area of groundwater discharge, it is likely that the groundwater in the limestone discharges to the gravel rather than receives recharge.

Both the made ground above the silt and the LVG are water-bearing. The water level seen in the gravel wells is a potentiometric surface level, which is water pressure from the aquifer below pushing up. There is no connection between the open channels and the groundwater in the aquifer. The groundwater in the LVG are in direct continuity with the Lee Estuary Lower and are seen to be tidal, varying by up to 1.2m. Based on the groundwater monitoring completed in the made ground, it is not in direct continuity with the Lee Estuary Lower and the silt layer under it forms a relatively low permeability barrier between the made ground and the LVG aquifer.

The LVG is designated as a regionally important sand and gravel aquifer by the GSI. Due to the presence of hardcore and concrete recharge to the made ground from is low. Open channels in the north and southeast of the site collect surface water and any small seepages from the made ground. These open channels outfall to the Lee Estuary Lower by a one-way valve.

Regionally the recharge to the LVG is likely to occur west of the site and upstream of Cork City where there are fewer buildings and less ground cover. Despite the tidal fluctuations the general direction of groundwater flow in the LVG under the site is considered to be to the east where it discharges into the Lee Estuary Lower.

13.2.19 Features of importance

A summary of the geological and hydrogeological features of relevance within the study area is presented in **Table 13.5**. In addition, the importance ranking of the highlighted feature is established based on the IGI guidance.

Table 13.5 Summary of the Geological and Hydrogeological Features of Importance

Feature		Importance ranking	Justification
Surface water feature	Open channels northern	High	These are man-made functional drainage features but are not groundwater dependant. These features are of high local importance from a biodiversity perspective (see EIAR Chapter 10 Biodiversity).
	Open Channel Southern	Low	These are man-made functional drainage features but are not groundwater dependant. These features are of low local importance from a biodiversity perspective (see EIAR Chapter 10 Biodiversity).

Feature		Importance ranking	Justification
	Lee Estuary Lower	High	Groundwater from the LVG including under the site provides high a proportion of baseflow to the Lee Estuary Lower.
Aquifer	Lee Valley Gravels (LVG)	High	This attribute is a regionally important aquifer.
Groundwater abstractions	As listed in Table 13.4	Medium	A Public Supply borehole is located within the 2km study area but is reported to have a poor yield hence is likely to supply <1000homes. Conservatively the remaining abstractions have been given the same importance ranking.
Sensitive Features	Cork Harbour SPA and Douglas River Estuary pNHA	Extremely High	Cork Harbour is an internationally important wetland site. Douglas River Estuary forms part of the Cork Harbour SPA.
Soil on site	Contaminated soil on site from imported made ground and previous industrial usage	Medium	Contaminated soil on site with previous industrial usage.

13.2.20 Environmental Type

The hydrogeological environment at and near the study area is underlain by a regionally important aquifer, includes an area of groundwater discharge to surface water and highly permeable subsoils. Consequently, the hydrogeological environment is a naturally dynamic hydrogeological environment (Type B) as per the IGI guidance.

13.3 The Proposed Development

Chapter 4 provides a full description of the proposed development. **Chapter 5** describes the construction strategy. The Developer intends to apply to An Bord Pleanála (the Board) for consent for a Strategic Housing Development (SHD) with a total application area of c. 4.86ha on lands located on the Former Tedcastles site at Centre Park Road, in Cork City. The area is considered to be a brownfield site with a number of pre-existing structures on the site which have been partially demolished.

13.3.1 Construction

The proposed development is anticipated to be constructed from east to west in 4 phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase.

The sites surface level is between +5.3mOD at the northern boundary to +0.2mOD at the southern end. The proposed development requires the construction of excavation of ground level to podium level in Block A through to F. Lower ground floor level is at 1.3mOD and the deepest excavation will be to -1.3mOD (~3.6mBGL) to facilitate the ground floor level of the apartments. This will require the excavation of approximately 73,022m^3 soil and stone. Once the foundations are constructed, fill materials will be required to build up the site to the required levels. In addition, further fill will be required for under hard and soft landscaping areas.

The base of the excavation will be below the water level in the made ground. During the temporary works any groundwater and surface ponding from rainfall events will be gathered locally to facilitate pumping with subsequent discharge, under license, to the local sewerage drainage network. The Construction Environmental Management Plan (CEMP) covers potentially polluting activities from the dewatering process and include an emergency response procedure.

The base of the excavation is likely to be dug to approximately -1.3mOD. During construction the temporary ground level will be lower than the hide tide and low tide potentiometric level in the LVG under the silt.

Groundwater management of the LVG is envisaged during the construction stage. It should be limited to localized dewatering which will be carried out during the construction to assist dry working in temporary excavations. Any groundwater abstracted from the LVG is likely to be managed together with the groundwater from the made ground.

It is proposed that the buildings will be founded on Continuous Flight Auger (CFA) piles under pile caps. The piles shall be installed using a method that does not compromise the integrity of the low permeability silt layer between the made ground and the gravel. Where it is necessary for pile caps to penetrate the silt layer, the foundations will be detailed so that no new flow paths are created and that an equivalent aquitard function is maintained. This may be achieved by the use of a lean-mix fill or grout injection into the gravel to replace the low permeability layer around the foundations. The final pile length will be the subject to the detailed design but are likely to be advanced a significant distance into the gravel. A piling mat will be required at formation level to support the piling rig.

Based on the ground investigation carried out to date, the principal contaminants of concern are considered to comprise metals, hydrocarbons and asbestos, which are assumed to be present throughout the made ground. While the soil to be excavated contains contaminants, it may have suitable engineering properties that could make it suitable for re-use as a fill material on or off site. The remedial

measures are presented in the Land Contamination Remedial Strategy in **Appendix 13.9** and summarised in below.

The key to retaining soil onsite and demonstrating that it can be re-used, will be understanding the risk of respirable asbestos becoming airborne. A detailed analysis and risk assessment shall be undertaken to consider the potential options for reuse of the soil on and off site. Should this highlight potential options and subject to any legal requirements such as environmental licensing, the contaminated soil will be treated and retained on site for re-use where possible. Reuse offsite could include the inert natural soils under the made ground. This would be carried out under an Article 27 notification process. These are likely to comprise a sustainable solution but will probably require some offsite disposal for excess soils and/or residue from treatment. Consequently, for the purpose of this assessment it is conservatively assumed that all of the excavated soil will be disposed of off-site. Should treatment of contaminated soil be pursued, this is likely to include sorting and the environmental impacts are considered to be similar to those included within the other construction impacts assessed in this EIAR.

If it is required to export contaminated soil offsite for disposal (with or without treatment) it is likely to be classified as either soil suitable for a non-hazardous landfill, soil suitable for a non-hazardous with trace level of asbestos or soil suitable to a hazardous landfill. The assessment criteria used to categorise the soils are based on Irish and European standard criteria.

It is noted that asbestos contamination is present across the site. Once the foundations are constructed and contaminated soil removed, fill materials will be required to build up the site to the required levels, in addition further fill will be required for under hard and soft landscaping areas. The soil to be excavated may also have suitable engineering properties that could make it useful as a fill material. The soil could be reused where possible within the legislative framework with a view to limiting off site transport of material and unnecessary import of fill. The soil can be left in-situ under buildings where it poses no risk to site users. In addition, in the landscaped area such as the central garden area and open spaces between the buildings where soil is exposed the contaminated soil shall be covered by a separation layer comprising a geotextile and a suitable thickness of clean soil to prevent site users coming into contact with the contaminated soil.

The southern drainage channel shall be dredged and culverted. During the construction phase, it will be necessary to investigate the sediments in the drainage channel that runs parallel to Centre Park Road as PFAS is present in the surface water at this location and is likely to be present in the sediment. The sediments will need to be tested to understand the extent of contamination (depth and lateral extent). Further details are presented in the Land Contamination Remediation Strategy **Appendix 13.9**.

13.3.2 Operation

Any areas which shall be developed as public open space shall be completed as necessary with imported clean soil to prevent site users from interacting with

contaminated soil. This is likely to comprise a geotextile and a minimum of 0.3m to 0.5m of clean soil. The final remedial design shall be subject of a detailed risk assessment. Subject to detail design it is likely that to maintain infiltration rate close to current levels physical barriers shall be placed under the vegetated areas.

13.4 Predicted impacts

13.4.1 Do-nothing scenario

As noted in **Section 13.2**, the existing geology and hydrogeology in the study area has been interpreted from both desk study information and from project-specific site investigations. The current baseline would represent the "Do Nothing Scenario" as required under the EC Guidance. A conservative approach would be to assume no major changes to the baseline condition of the site over time.

There are a number of ongoing impacts resulting from the current scenario. These occur because of the presence on site of contaminated soils and surface water:

- Impact of PFAS on local surface water courses; and
- Impact on site users from contamination in the soil.

PFAS is a contaminant which was detected in a surface water sample in the southern open channel that runs parallel to Centre Park Road. It was tested for after a white film was observed on the water. PFAS was only detected in one sample in the southern open channel and has an adverse impact on a small area of the drain. The southern open channel has a low importance, therefore the significance of the PFAS in the surface water is slight.

The soils on site are impacted by contamination above generic suitability limits and asbestos is present in the soil. The presence of contaminants presents a risk to site users. Of particular concern is the asbestos as there are no safe limits for asbestos, hence where it is present in soil which site users could come into contact there is a risk of harm. While the probability of exposure is low it has the potential to have a large adverse impact on human health hence the overall significance on site-workers and member of the public in the immediate vicinity of the works is considered to be profound.

The remedial measures are presented in **Appendix 13.9**.

13.4.2 Construction phase

During the Construction Phase the following items have been highlighted that could have a potential impact on the environment:

- Removal of surfacing (hardcore /concrete/topsoil) and temporary stockpiling of contaminated soils which could have the following impacts:
    - mobilisation of contamination in the soil into the open channels;

  - mobilisation of contamination into the Lee Valley Gravel Regionally Important Aquifer; and
  - exposure of site workers and future residents to soil contamination, air borne contamination.

- Dredging the open channel mobilising PFAS into the local watercourse, Lee or Lee Valley Gravel regionally important aquifer;
- Removal of soil from site or potential re-use;
- Construction of the foundations of the building by piling;
- Temporary storage of hazardous substances associated with the operation of plant e.g. fuels; and
- Dewatering.

These are assessed in detail below.

13.4.2.1 Mobilisation of contamination in the soil into the open channels

During construction, areas of the site will be stripped of surfacing (hardcore /concrete/topsoil) and the soil exposed. The removal of surfacing could allow contaminants held in the unsaturated zone to percolate down into the groundwater in the made ground. In turn this could increase the concentration of contaminants in the perched groundwater in the made ground and/or increase the flow of contaminated groundwater out of the made ground into the open channels. This has the potential to have temporary reversible small to moderate adverse impact on the water quality of the open channels.

The southern open channels has a low importance hence the significance of the impact is likely to be imperceptible/slight. The northern open channel has a high importance hence the significance of the impact is likely to be moderate/slight to significant/moderate.

The open channels discharge into the Lee Estuary Lower via a one-way valve. The contaminants would be diluted within the Lee Estuary Lower hence any impact would be limited to a small area close to the outfall. Consequently this effect could have a temporary reversible small adverse impact in the River. The Lee Estuary Lower is of high importance hence the significance of the impact is likely to be moderate/slight.

13.4.2.2 Mobilisation of contamination into the Lee Valley Gravel Regionally Important Aquifer

During excavation the removal of the surface material will allow an increase in infiltration and increasing the risk of contamination mobilising to the underlying LVG. The silt, separating the made ground from the underlying LVG, is considered to act as an aquitard, limiting water movement between the made

ground and the LVG. Hence where the integrity of the silt is maintained the risk to the underlying LVG is negligible and the significance is imperceptible.

During the construction excavation will be mostly in the made ground and silt layer. Excavation could potentially temporarily be below the base of the silt and in the top of the sand and gravels in one localised area in the east of the site. Where this occurs there is a risk of contaminated groundwater in the made ground escaping into the aquifer. The area that could be affected is small. In addition, during the excavation of soil the groundwater shall be pumped from the made ground and the LVG as necessary to facilitate dry working. This will limit the amount of water from the made ground that could drain into the LVG hence effect is likely to be adverse but negligible to small and temporary. In addition, the constructed foundations built in the excavated area will comprise concrete structures and will not provide a pathway for water in the made ground to drain into the LVG. Hence overall the impact will at worst be of slight/moderate significance.

As only a temporary negligible to small adverse effect is envisaged on water quality in the LVG the consequential effect on water quality in other groundwater features down hydraulic gradient, including the Lee Estuary Lower, the SAC/SPA downstream of the site and the nearby groundwater abstractions, is also considered negligible and the significance is imperceptible.

13.4.2.3 Exposure of site workers to soil contamination and airborne contamination

During construction, made ground will be excavated which is diffusely contaminated with metals, hydrocarbons and asbestos. This will expose contaminated soils at the surface which could cause the following effects:

- contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- site workers being exposed to contamination in soil.

These are discussed in more detail below and their significance is assessed. The potential effects of dust or airborne contaminants have also been assessed in **Chapter 8** *Air Quality and Climate*.

Typically soil moisture is sufficient to prevent contaminants such as asbestos becoming airborne (Nathanail et al, 2014), however when uncovered, stockpiled or during handling soil can become dry with an increased risk of fibres becoming airborne. The risk of contaminated dust becoming airborne and affecting site users, construction workers and residents in the nearby houses is temporary and only at its highest when the soils are dry and able to be eroded by the wind.

The probability of fibres becoming airborne is low and the time over which it will occur is temporary. However, the adverse effect of exposure to asbestos fibres on the health of site-workers and members of the public in the vicinity of the site could be long-term. Hence the overall significance on site-workers and member of the public in the immediate vicinity of the works is considered to be potentially profound.

Across the site, the made ground contains levels of contaminants which exceed the long-term soil standards for the proposed use of the site. Consequently, there is a potential risk of an adverse effect on site workers from the exposure to contamination in soil. As the exposure will be temporary or short-term and during the time of the construction, the effect from exposure on soils is likely to be a negligible hence the overall significance is anticipated to be insignificant.

13.4.2.4 Mobilisation of PFAS

As discussed in **Section 13.4.1**, PFAS was found in one sample in the southern open channel.

During the construction phase the southern open channel in the area of the contamination will be dredged and culverted. PFAS is likely to be present in the sediment in the southern open channel. The dredging of the southern open channels could potentially mobilise PFAS that is present in the channel sediment therefore increasing the concentration of it in the surface water down stream and in the Lee Estuary Lower and potentially part of the northern open channel.

The effect of the presence of PFAS in the northern open channel is likely be localised to near the outfall. As it is limited to the time of the dredging the initial duration will be small. However, the PFAS could adsorb on to sediment and could be present for a medium to long term period. Hence the overall effect on the northern open channel could be adverse moderate and the significance moderate/significant.

The effect on the Lee Estuary Lower would be smaller due to the amount of dilution available in the estuary. Hence the effect on quality in the Lee could be medium to long term, adverse and small or negligible resulting in a significance of moderate/slight.

Dredging the open channel is not anticipated to extend through the base of the silt. Hence it not envisaged that the dredging will cause PFAS contaminated water to enter the LVG. The impact on the LVG aquifer of the dredging of the drain is considered to be negligible and the significance imperceptible.

13.4.2.5 Removal of soil from site or potential re-use

The made ground contains contaminated soil and without some level of remediation is not suitable for the proposed use of the site.

Part of the soil will be removed to facilitate the development and where necessary to reduce the current effect on the surrounding environment. Where there is a need for non-engineered fill, such as under hard and soft landscaping areas, soil could be reused onsite, but only where its quality is adequate (potentially after treatment). The proposed development will then substantially improve the quality of the soils at the site and will comprise a major permanent beneficial effect.

13.4.2.6 Construction of the foundations of the building by piling

The foundations for the proposed development comprise reinforced concrete piles. The piling process will involve drilling deep wide holes into the LVG aquifer. Addition of cement will raise the pH of the groundwater locally in the LVG around the piles.

This potential adverse effect will only be temporary as following the injection of the concrete, it will harden and cease to be a source of elevated pH. The amount of cement added to the aquifer per day will be relatively small compared to the volume of groundwater in the aquifer. Consequently, the overall temporary adverse effect on the aquifer is considered to be negligible to small and its significance will be slight/moderate.

As the potential temporary adverse effect in the LVG aquifer will be small the effect of groundwater with elevated pH levels passively discharging into the Lee Estuary Lower and affecting water quality is considered to be negligible and the significance imperceptible. In addition, as the magnitude of the effect will diminish rapidly with distance from the site and considering the distance to the other groundwater dependent receptors nearby any adverse temporary effects on water quality at down hydraulic gradient water dependent receptors is considered to be negligible and the significance is imperceptible.

The final pile length will be the subject to the detailed design but are likely to be advanced a significant distance into the gravel. This could, dependent on the tidal conditions, potentially lead to both an increased risk of localised groundwater flooding in this area or open up a pathway at the pile location for the contaminated perched water to flow into the LVG aquifer.

The piling method shall be selected to minimize any gaps between the pile and the surrounding ground. Continuous Flight Auger (CFA) drilling method is likely to be used and has been used successfully elsewhere in Cork as it prevents water moving along the pile during or after installation. Consequently, any permanent adverse effects from groundwater flooding or movement of contaminated water due to using a piled foundations are considered to be negligible and magnitude of the effect is considered to be imperceptible.

13.4.2.7 Temporary storage of hazardous substances associated with the operation of plant

During the construction stage there is a risk of pollution to the groundwater in the made ground by the spillage of fuels or chemicals used on the plant operated on site which could then escape to the surrounding open channels and/or the LVG aquifer.

The risks and effects from hazardous substances are very similar to those highlighted above for the mobilisation of contamination in the soil (**Section 13.4.2.1** and **13.4.2.2**). As the southern open channels has a low importance the significance of the impact is likely to be imperceptible/slight. However the northern open channel has a high importance and the significance of the impact is likely to be moderate/slight to significant/moderate. In addition, the effect on

water quality in the LVG is likely to be negligibly adverse to small adverse and temporary. Hence the significance of the impact on the LVG is likely to be imperceptible to moderate/slight.

13.4.2.8 Dewatering

Dewatering reduces the water table locally in the area of the abstraction and diverts water flowing through groundwater reducing flow temporarily to nearby features. Dewatering is needed to pump the small amounts of water from the made ground and potentially to reduce the water level in the gravel during high tide. As the made ground is only a shallow body of contaminated water the effect of dewatering will comprise a temporary minor beneficial effect as the contaminated water will be diverted from flowing into the open channels to local sewerage drainage network following treatment.

The potentiometric level of the LVG sits within the silts. Therefore, during construction temporary dewatering of the LVG to lower this level may be required. Dewatering from the LVG is likely to require reducing of the water level at high tide. Any temporary adverse effect on level or flows in the LVG aquifer are likely to be within the ranges of the natural tidal fluctuation with only a localised temporary negligible effect on level and an imperceptible significance.

The GSI does not recorded any abstraction wells nearby the site that may to be impacted by dewatering. Therefore, the impact on abstractions in the vicinity of the site is likely to be negligible and the significance imperceptible.

13.4.2.9 Indirect effects during construction

Indirect effects on water quality from the storage of contaminated soil on the surface or temporary storage of hazardous substances associated with the operation of plant on the water features downstream of the site such as the Lee Estuary Lower are assessed in **Chapter 14** *Water*.

No other indirect effects were highlighted during construction.

13.4.3 Operational phase

During the operational phase the following items have been highlighted that could have a potential impacts the environment:

- Impacts of the foundation on flow in the aquifer;
- Reduction in recharge to the aquifer; and
- Impact on site users and the environment from the retention of contaminated soils on site.

These are assessed in detail below.

13.4.3.1 Impacts of the foundation on flow in the aquifer

During construction, very localised areas of the LVG aquifer will be removed and replaced with piles, acting as a foundation for the development. The piles could act as a permanent partial barrier to groundwater flow and permanently remove a portion of the aquifer.

The extent of the piles will be limited relative to the extent of the aquifer, so that they will only comprise a negligible permanent adverse loss of the aquifer. In cross section they will also occupy only a small percentage of the area where groundwater flows and due to the high permeability of the gravels, groundwater will flow around the piles with ease. Hence the effect on the aquifer and on groundwater flow will be a negligible permanent adverse effect and the significance is anticipated to be permanent but imperceptible.

13.4.3.2 Reduction in recharge to the aquifer

The soil left in situ under the site also contains contaminants which in the do-nothing scenario are leaching down to the perched groundwater. As a consequence of the proposed development there will be a small reduction in recharge across the site. This could have a permanent small effect on the quantity of recharge to the made ground, which could reduce the flow by a negligible amount to the open channels. This could have a permanent minor beneficial effect on groundwater quality in the made ground and the open channels as it will permanently reduce the volume of contaminated water in the made ground.

In the vicinity of the site the LVG aquifer is likely to receive a marginal amount of recharge via the made ground. In addition, this is contaminated by the made ground. Consequently, reducing the rate of recharge will have a permanent negligible effect on recharge rates but a permanent minor beneficial effect on recharge to the LVG. Hence any adverse effects from reducing the recharge to the LVG aquifer will have an imperceptible significance.

13.4.3.3 Impact on site users and the environment from the retention of contaminated soils on site

Diffuse soil contamination was identified throughout the site, while a large volume will be removed, a large amount of soil will be retained and subject to the regulatory requirements, some of the soil excavated will be reused on site. The entire footprint of the proposed buildings, the landscaped courtyards and open spaces between the buildings will be covered by an impervious liner and podium structures comprising of reinforced concrete slab, thus preventing any future contact or exposure of the existing contaminated soil. In addition, any areas which shall be developed as public open space shall be completed as necessary with imported clean soil to prevent site users from interacting with contaminated soil.

Without suitable remedial measures the contamination in the soils under the proposed development poses a risk of a permanent moderate to large adverse effect on site users. As highlighted in **Chapter 2** and in **Section 13.3**, the

proposed development will place a separation layer (buildings or imported soils) which prevent the site users from coming into contact with the contaminated soil. Consequently, the proposed development will have a major beneficial permanent effect on the contaminated soil and reduce its effect on potential site users to a permanent negligible adverse effect.

13.4.3.4 Indirect Effects During Operation

No indirect effects were highlighted during operation.

13.4.4 Cumulative

The following confirmed and possible future adjacent projects may be constructed during one or more of the construction phases of the proposed development:

- Marina Park Development: Phase 2 (Design stage)
- Proposed BRT / LRT Corridor (Route selection stage)
- The Former Ford Distribution Site
- Strategic Housing Development at the Former Cork Warehouse Site
- Lands at South Docklands, Cork.

13.4.4.1 Construction Phase

No cumulative impacts were identified during the construction phase.

13.4.4.2 Operational Phase

Construction of other site nearby such as the Former Ford Distribution Site or Marina Park Development: Phase 2 site will increase the area of impermeable surface in the area which could cumulatively reduce the infiltration rate to the limestone aquifer. As this area is already covered by low permeability cover and the area is an area of groundwater discharge rather than recharge, the amount of infiltration resulting in recharge will be is minimal. Consequently, any permanent cumulative adverse effect caused by reduction in the rate of infiltration is likely to be negligible and have an imperceptible significance

13.5 Mitigation measures

13.5.1 Construction phase mitigation

Several likely potentially adverse significant effects were identified in **Section 13.4** which without mitigation could have potentially significant impacts. These include:

- Mobilisation of contamination in the soil into the open channels;

- Contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- Dredging the open channel mobilising PFAS into the local watercourse; and
- Temporary storage of hazardous substances associated with the operation of plant.

Mitigation measures and their consequence on the significance of the effect are highlighted are assessed below.

13.5.1.1 Mobilisation of contamination in the soil into the open channels

The removal of surfacing (hardcore /concrete/topsoil) could allow contaminants held in the unsaturated zone to percolate down into the groundwater in the made ground. In turn this could increase the concentration of contaminants in the perched groundwater in the made ground and/or increase the flow of contaminated groundwater out of the made ground into the open channels. This has the potential to have temporary reversible small to moderate adverse impact on the water quality of the northern open channels.

During the construction phase, the appointed contractor will ensure that excavations shall be kept to a minimum. In the excavation dewatering shall be used to maintain dry working. In addition, the excavation will be design to focus rainwater and seepage into discreet areas from where they will be pumped. This dewatering shall reduce infiltration during the excavation and will capture some of the groundwater in the made ground, thus reducing the flow into the open channels. The effect of the dewatering will reduce the potential adverse effect to negligible hance the significance of the impact will be imperceptible.

13.5.1.2 Asbestos Contamination

During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

"*Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed."*

And

"*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies."*

Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

As a consequence of these mitigation measures, the risk of exposure to site users, construction worker and residents in the nearby houses will comprise a negligible effect hence the significance will be imperceptible.

In addition to contaminated dust, there are risks to site workers from handling contaminated soils. Only suitably experienced contractors shall be used to carry out the remediation work. During construction, they shall employ standard practices to manage risk form contaminated soils. These will be designed by the contractor dependent on his construction practices and are likely to include the use of gloves, dust masks and potentially disposable overalls. These and other appropriate measures will minimise the exposure of the site workers. Hence following mitigation the risk associated with the potential permanent adverse effect of exposures will be negligible, and the significance will reduce to imperceptible.

13.5.1.3 Mobilisation of PFAS

During the construction phase there is a risk of mobilising PFAS from the channel sediment. A risk assessment will be carried out to assess the impact of the presence of PFAS on the gravels and the surrounding water courses, and to account for any seepage from the gravels into the base of the open channel. The risk assessment will determine a minimal concentration that can be left in place and will recommend an area and depth to be dug up and disposed of off-site.

During the remediation of the sediments, measures will need to be put in place to stop the sediments and PFAS contamination from being mobilised and to allow access for an excavator to remove the sediment. Reuse of the sediments in the open channel, onsite or offsite, will not be possible.

Following the implementation of these mitigation measures potential adverse effect of mobilization of PFAS into the open channels will be negligible, and the significance will reduce to imperceptible.

13.5.2 Operation phase

No mitigation is required as no significant impacts were identified for the operational phase of the proposed development.

13.5.3 Monitoring

13.5.4 Construction phase

During construction, the contractor will further develop the CEMP as included in **Appendix 5.1**. This will outline the methods of monitoring and frequency. In relation to the reuse of soil the appointed contractor will ensure acceptability of the soil and stone for reuse for the proposed development with appropriate handling, processing and segregation of the material. This will be achieved by testing and monitoring of the excavation work. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will

be stockpiled within the working area where possible, using an appropriate method to minimise the impacts of weathering. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications (e.g., Article 27 notification to the EPA).

As stated in **Section 13.5** it is a mandatory requirement by the HSA to implement an air monitoring program by an independent analyst for the removal of the asbestos in soil. The contractor who carries this out will be required to demonstrate through the monitoring that the control measures do not release airborne asbestos fibres.

13.5.5 Operation phase

No monitoring is specified as no significant impacts were identified for the operational phase of the works.

13.6 Residual effects

13.6.1 Residual effects during construction

With the implementation of the mitigation measures proposed in **Section 13.5** during construction, the potential adverse effects on human health, groundwater quality beneath the proposed scheme and Lee Estuary Lower will be negligible and imperceptible significance. Hence no significant residual effects are anticipated.

13.6.2 Residual effects during operation

No residual effects of significance on land soil geology and hydrogeology were identified during the operational phase.

13.7 References

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14 Water

14.1 Introduction

This chapter describes the potential significant effects of the proposed development on surface water, water quality and flood risk during construction, operation and decommissioning.

In addition, mitigation measures have been proposed, where appropriate, for each phase of the proposed development to minimise identified impacts on the water.

The assessment of impacts on the hydrogeological (including groundwater) aspects of the proposed development are addressed in **Chapter 13** *Land, Soils, Geology and Hydrogeology* and are not considered further in this chapter.

A detailed description of the proposed development, including design, operation and decommissioning of the proposed development are described in **Chapter 4** *The Proposed Development*, while **Chapter 5** *Construction Strategy* provides an outline of the general activities associated with the construction of the proposed development.

This chapter was prepared by Debbie Flynn. Details of Debbie's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

14.2 Assessment Methodology

14.2.1 General

This assessment has been completed according to relevant guidance outlined in **Section 14.2.2**. Desk studies were conducted using available datasets to evaluate the water quality status of the waterbodies in the receiving environment.

14.2.2 Guidance and Legislation

Mandatory information to be contained in an EIAR is formally prescribed in:

- Article 5(1) of Directive 2014/52/EU;
- Paragraph 10(d) of Part 11 (First Schedule) of the European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999; and
- Schedule 6 of the Planning and Development Regulations, 2001 (S.I. No. 600 of 2001) (as amended).

A list of relevant guidance documents and other pertinent material for the preparation of EIARs is presented below and, where appropriate, this chapter has been prepared having due regard to this material.

- EU Directives and national legislation (primary and secondary) concerning Environmental Impact Assessment (especially having due regard to the revised provisions of Directive 2014/52/EU;

- EPA (2002) *Guidelines on the Information to be Contained in Environmental Impact Statements;*
- EPA (2003) *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements;*
- EPA (September 2015) *Advice Notes for Preparing Environmental Impact Statements* – DRAFT;
- EPA (August 2017) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* – DRAFT*;*
- DHPCLG (15/05/17) *Circular Letter PL 1/2017 Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on Administrative Provisions in Advance of Transposition;*
- DHPCLG (May 2017) *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems: Key Issues Consultation Paper*.

Any other sources of information are referenced directly within the chapter.

14.2.3 Impact Assessment Methodology

The existing environment of the site was analysed using data collected from a desk study, following the statutory guidance summarised above. The relevant site information has been derived from several different sources, including:

- Online aerial photography available from Ordnance Survey Ireland (OSI) (www.geohive.ie), Bing and Google Maps
- Environmental Protection Agency Envision Mapping website (https://gis.epa.ie/EPAMaps/)
- Office of Public Works (www.floodinfo.ie)
- National Flood Hazard Mapping, OPW (www.floodinfo.ie)
- Flood history of the site from the OPW National Flood Hazard Mapping website (www.floodmaps.ie);
- Catchment Flood Risk Assessment and Management (CFRAM) Mapping produced by the OPW (map.opw.ie/floodplans);
- Preliminary Flood Risk Assessment (PFRA) Mapping produced by the OPW (www.myplan.ie)

Potential effects on hydrology, flooding and water quality were then evaluated in the context of the baseline environment, having regard to the relevant EPA guidance for the preparation of EIARs as set out in **Section 14.2.2** above.

Relevant authorities and utilities were also consulted to inform the assessment. This consultation process is summarised in **Chapter 1**, and included meetings

with Cork City Council's environmental department, and Irish Water. A Flood risk assessment accompanies this EIAR as **Appendix 14.1.**

With the implementation of the mitigation measures, the residual effects of the proposed development are set out in **Section 14.7**, followed by an assessment of cumulative effects.

A Flood Risk Assessment (FRA) report has been prepared and is included as **Appendix 14.1** to this EIAR. The FRA has been prepared in accordance with the Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management' published in November 2009, jointly by the Office of Public Works (OPW) and then the Department of Environment, Heritage and Local Government (DEHLG). The main findings from the FRA report are summarised as appropriate in this chapter.

14.3 Baseline Conditions

14.3.1 Site Location and Setting

The proposed development is located at the former Tedcastles Site (4.86 Ha) within the south docklands area, approximately 2km east of Cork City Centre and approximately 30m south of the River Lee.

The proposed development site is bounded by the Marina to the north, Centre Park Road to the southeast, and the former ESB power station to the west. The proposed development site is a brownfield site containing several storage and ancillary buildings. There are two open drainage channels, one adjacent to the southern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

For a detailed description of the proposed development refer to **Chapter 4** *The Proposed Development***.**

14.3.2 Hydrology Baseline Environment

The site is located within Hydrometric Area 19 which is the EPA classification for the catchments flowing into the River Lee, Cork Harbour and Youghal Bay. Hydrometric Area 19 is 1,732km^2 in area with ground elevations ranging from sea level to over 500mOD. Agricultural land comprises most of the hydrometric area land use with the main centres of population being Cork City and its suburbs, Blarney, Midleton and Macroom.

The Lee, Cork Harbour and Youghal Bay catchment is divided into 18 subcatchments with 92 river waterbodies, three lakes (Inniscarra, Carrigdrohid, Allua) 13 transitional, six coastal and 22 groundwater bodies.

The proposed development lies within the Glasheen [Cork City] sub catchment (Glasheen[Corkcity]_SC_010).

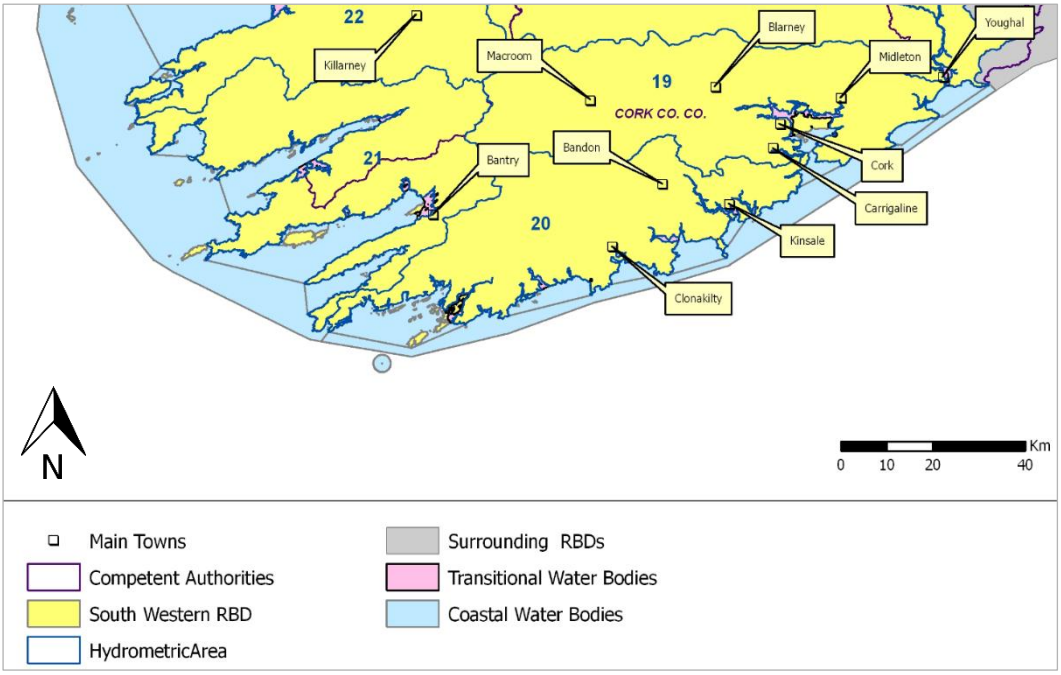

Figure 14.1 Hydrometric Area 19 as part of the Southwestern River Basin (Water Framework Directive Ireland, 2005) | not to scale

The Government has published the River Basin Management Plan (RBMP) for Ireland which sets out the measures that are necessary to protect and restore water quality in Ireland. The overall aim of the plan is to ensure that natural waters are sustainably managed and freshwater resources are protected. The RBMP has been established over three cycles, with its second cycle (2018-2021[51]) building on the progress made during the first cycle, and it's third cycle (2022-2027[52]) currently in draft status. Ireland is required to produce a river basin management plan under the Water Framework Directive (WFD)[53].

The Plan sets out the actions that Ireland will take to improve water quality and achieve *'good'* ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027. Data for the third cycle of the RBMP has not yet been released for the hydrometric area of the proposed development. The following subsections outline the most up to date water quality data for water bodies identified within the vicinity of the proposed development.

14.3.3 River Lee

The River Lee rises in the Shehy Mountains (Cork/Kerry border) and flows eastwards to Cork City. From there, it flows through the Lee Estuary (upper and lower) and Lough Mahon transitional water bodies, ultimately flowing to Cork

[51] Department of Housing, Planning and Local Government, 2018. River Basin Management Plan 2018-2021. https://www.gov.ie/en/publication/429a79-river-basin-management-plan-2018-2021/ [Accessed: October 2021]
[52] Department of Housing, Local Government and Heritage, 2021. Draft River Basin Management Plan for Ireland 2022-2027. Available at: https://assets.gov.ie/199144/7f9320da-ff2e-4a7d-b238-2e179e3bd98a.pdf [Accessed: January 2022]
[53] The EU Water Framework Directive (WFD), 2000/60/EC

Harbour Special Protection Area (SPA) (approximately 1.9km east of the proposed development site). The total catchment area of the River Lee covers an area of 1,150km^2.

The River Lee is located approximately 30 metres to the north of the proposed development site. According to the Water Framework Directive (WFD) data (3rd Cycle[54]), the River Lee's Transitional Waterbody WFD status is classed as *'at risk'*.

Cork Harbour coastal waterbody has also been classed as *'at risk'*.

The closest EPA water quality monitoring stations located within the River Lee include the LE160 – Tivoli Dock Station (TW04003159LE2002), which lies just upstream of the proposed development site on the opposite side of the river; and Tivoli Station (TW04003159LE2006), which lies approximately 375m downstream of the proposed development site. No online data was available for water quality.

There are two EPA biological quality ratings (Q-values) stations located upstream of the confluence of the Shournagh River and River Lee, approximately 8.9km upstream of the proposed development site. Q-values from the Bannow Br monitoring station (Shournagh River) have a Q-score of 4-5, indicating *High* biological status. Q-values from the Leemount Br monitoring station (River Lee) have a Q-score of 4, indicating *Good* biological status.

14.3.4 Open Channels

There are two existing open channels located along the northern and southeastern boundaries of the site. Both open channels ultimately discharge to the River Lee via the outfall at the north-eastern corner of the site. The southern channel is culverted in two locations, one at the southern corner of the site, and one at the main site entrance.

14.3.5 Flooding

The site of the proposed development benefits from flood defences against fluvial and tidal flooding. The risk of pluvial and groundwater flooding is considered low. The site is located within Flood Zone A, as it is located within the 1 in 200-year tidal flood extent according to CFRAM mapping. However, it is protected to a high standard by the existing polder defences along the quayside. Cork City Council intend to raise this polder defence in the future to ensure the existing standard of protection is maintained or increased.

Refer to **Appendix 14.1** Flood Risk Assessment for further details.

[54] EPA Mapping. Available at: https://gis.epa.ie/EPAMaps/

14.3.6 Site Drainage

14.3.6.1 Surface Water Drainage

Surface water runoff from the site drains to the existing open channels to the north and southeast of the site. There are two existing culverts on the southeastern open channel, one at the southern corner of the site, and one at the main site entrance. Both of these culverts flow east before ultimately discharging to the Lee via an outfall at the point of confluence of the two open channels.

14.3.6.2 Foul Water Drainage

There is a 525mm diameter Irish Water foul water sewer which flows east along Centre Park Road, which then increases to a 600mm diameter along Marquee Road, prior to connecting to the existing 3.2m diameter Interceptor Sewer along Monahan Road.

14.4 Likely Significant Effects

14.4.1 Do-Nothing Scenario

The current baseline as described in **Section 14.3** would represent the 'Do Nothing Scenario' as required under the EC Guidance. A conservative approach would be to assume no major changes to the baseline condition of the various working areas over time. No potential developments or environmental features have been identified which are likely to lead to further pressure on the baseline over time.

14.4.2 Construction Phase

The potential water quality and flood risk effects during the construction phase are presented in this section. The construction methodology for the proposed development is presented in **Chapter 5** *Construction Strategy*.

The construction of the proposed development is likely to give rise to a short term moderate negative effect on the receiving surface watercourse and the surface water regime of the area. There are potential sources of pollution from excavation within the open channels, and drainage from the site resulting from runoff and erosion from site earthworks and temporary stockpiles. The presence of fuels, lubricants and other chemicals from construction activities also have the potential to temporarily affect the surface/ground water regime of the area if not managed properly.

The identified potential effects on surface water during the construction phase include the following:

- There is the potential for silt-laden surface run-off during site preparation, site clearance and construction of site access roads. The potential for this silt laden run-off is likely to continue through the construction phase of the works, and until the ground has been completely consolidated;

- The washing of construction vehicles and equipment may pose a pollution risk to watercourses in the area if undertaken in inappropriate locations. Spillages of fuel and oil and concrete / cement run-off are a potential short term significant negative effect, from the use of vehicles and plant on the construction sites;
- Silt laden run-off from the storage of excavated material may present a pollution risk to watercourses;
- During the construction phase there is a risk that spills/leaks could result in surface water becoming contaminated with suspended solids or hydrocarbons entering the nearby watercourses via the existing drainage system on site;
- Removal of surfacing (hardcore /concrete/topsoil) and temporary stockpiling of contaminated soils which could facilitate the mobilisation of contamination in the soil into the open channels;
- Dredging the open channel may facilitate the mobilisation of PFAS into the local watercourse, Lee or Lee Valley Gravel regionally important aquifer;
- Temporary storage of hazardous substances associated with the operation of plant e.g. fuels may present a risk to watercourses; and
- Dewatering processes will comprise a temporary minor beneficial effect as the contaminated water will be diverted from flowing into the open channels to local sewerage drainage network following treatment.

All of the above would be likely short term moderate negative effects.

No likely significant adverse impact has been identified with respect to water during the construction phase of the proposed development with the implementation of mitigation measures as outlined in **Section 14.5** below.

14.4.3 Operational Phase

Potential effects on surface water during operation include the following:

- Hydrocarbons from the car park could be carried in the surface water and have the potential to contaminate the site's proposed surface water drainage system;

This would result in a short-term moderate negative effect.

With the employment of the mitigation measures outlined in **Section 14.5.1.2** below, it is predicted that there will be no significant effects on surface water as a result of the operation of the proposed development.

In relation to flooding, the recommended minimum finished floor level for highly vulnerable uses is 3.8mOD. In practice, an even higher level of protection is being provided by locating 'Highly Vulnerable' development at first floor level which is at 5.4mOD in the proposed development. This provides protection to the circa 1 in 1000-year tidal flood level plus an allowance of greater than 2m for sea level rise. This implies significant safeguarding and longevity against the potential impacts of climate change and is line with guidance provided in the OPW guidelines. It

also ensures that protection of the most vulnerable development is not contingent on the future raising of the polder defences.

To mitigate the residual risk to this development, the development will incorporate appropriate flood resistant and resilient construction, measures and finishes. Utilities are to be installed above a level of 3.8mOD, to be above the 1 in 200-year tidal flood level with allowance for sea level rise. This will be combined with demountable flood defence barriers at strategic openings in the defence perimeter and will include appropriate design of the structure to withstand the relevant hydrostatic load for up to 600mm of flood depth.

Therefore, no significant negative effects as a result of flooding are predicted as part of the proposed development.

Refer to **Appendix 14.1** *Flood Risk Assessment* for further details.

14.5 Mitigation Measures and Monitoring

14.5.1 Mitigation

14.5.1.1 Construction Phase

The employment of good construction management practices will minimise the risk of pollution of surface water. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al 2001).

The guide is written for project promoters, design engineers and site and construction managers. It addresses the main causes of pollution of soil, groundwater and surface waters from construction sites and describes the protection measures required to prevent pollution of groundwater and surface waters and the emergency response procedures to be put in place so that any pollution, which occurs, can be remedied. The guide addresses developments on green field and potentially contaminated brownfield sites. The construction management of the site will take account of the recommendations of the CIRIA guidance to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Site activities considered in the guidance note include the following:

- excavation
- earthmoving
- concreting operations.

Additional specific guidance is provided in the CIRIA technical guidance on Control of Water Pollution from Linear Construction Projects (Murnane et al 2006).

Surface run-off from wheel washing areas can contain pollutants such as:

- detergents
- oil and fuel
- suspended solids
- grease.

The following best practice water management measures will be implemented during the construction phase:

- A filter drain and silt pits will be located at the base of all embankments, settled solids will be removed from the silt pits regularly.
- Temporary stockpiles will be surrounded by silt fencing;
- Where at all possible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together. Excavation and earthworks will be suspended during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage
- Oil, petrol and other fuel containers will be double-skinned and bunded to be able to contain 110% volume to guard against potential accidental spills or leakages entering local watercourses.
- A spill kit including an oil containment boom and absorbent pads will be on site at all time;
- No vehicles will be left unattended when refuelling;
- Dedicated fuel storage areas will be introduced on-site;
- All vehicles and plant will be regularly maintained, washed and inspected for fuel, oil and hydraulic fluid leaks.
- Machinery including hand-tools will never be washed in watercourses or drainage ditches or within 15m of watercourses or drainage ditches.
- Concrete pouring will not take place during heavy rain when run off is likely due to excess water. Shuttering will be designed to accommodate small increases in the volume of material contained within the shuttered area due to rainfall. Pre-cast concrete will be used if possible; otherwise all cast-in-place concrete will be isolated from flowing water for a minimum of 48 hours to allow pH to reach neutral levels.
- Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at an appropriate facility offsite or at the location where concrete was sourced.
- Ensure that all areas where liquids are stored, or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access.
- Minimise the use of cleaning chemicals.

- Use trigger-operated spray guns, with automatic water-supply cut-off.
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference.
- Fuel, oil and chemical storage on site will be secure.
- Site storage will be on an impervious base within a secondary containment system such as a bund.
- A spill kit with sand, earth or commercial products that are approved for the stored materials will be kept close to the storage area. Staff will be trained on how to use spill kits correctly.
- Damaged, leaking or empty drums will be removed from site immediately and disposed of via a registered waste disposal contractor.
- Mobile plant will be refuelled in a designated area;
- A wheel-wash will be installed for use by all construction vehicles leaving site.
- A road-sweeper will be used to remove dirt and debris from roads.
- A bypass petrol interceptor will be installed in the car park drainage network prior to connection to the existing drainage network to prevent any hydrocarbon spills from entering the surrounding drainage network.

A summary of the best practice measures relevant to hydrology are provided as follows and are in accordance with CIRIA guidance:

- Construction compound will be located in areas that are at minimal risk of flooding (outside 1:100-year flood zone);
- A monitoring regime/programme for water quality will be put in place;
- There will be no tracking of machinery within watercourses;
- Silt fences/swales shall be provided at all locations where surface water run-off may enter/leave the working areas, and adjacent to the haul roads;
- All works undertaken will be fully consolidated to prevent run-off of silt;
- Access/haul roads shall be set back from watercourses by at least 10m where possible.

Flooding

During the construction phase, the following control measures will be adhered to:

- No construction materials or temporary stockpiles will be stored in flood plains or in areas which would impede flood flow paths; and
- In relation to effects of extreme weather events and related conditions the contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

Foul Drainage

The foul drainage associated with the welfare facilities at the construction compound includes a canteen, toilets, showers and hand wash basin only. Wastewater will be disposed of by connection to the existing foul drainage system or by removal from site to an appropriately licensed treatment facility.

14.5.1.2 Operational Phase

The mitigation measures which will be implemented during the operational phase are outlined below.

- Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to prevent any hydrocarbons from entering the surrounding drainage network and to ensure safe discharge into the receiving waters;
- Non-return valves will be fitted on the downstream end of the car park drainage to prevent water backing up into the carpark areas during conditions where the receiving drainage network is surcharged.
- Grease traps will be installed where required within the wastewater drainage system to prevent water contamination from fats, oils and greases (FOGs); and
- The flood risk assessment (**Appendix 14.1** of this EIAR) outlines any flood risk defences measures being implemented as part of the proposed development.
- Sustainable Urban Drainage (SUDS) features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to reducing the extent of grey infrastructure requirements. Examples of SUDS features that will be incorporated where practicable are permeable paving, under-drained planters/ tree pits, and an attenuation pond.
- It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

14.5.2 Monitoring

Construction

There are no monitoring measures proposed during the construction phase of the proposed development.

Operation

As part of the emergency response plan, staff at the buildings of the proposed development will maintain awareness of flood and weather forecasts on an

ongoing basis as well as receive warnings from Cork City Council and Met Éireann.

14.6 Cumulative Effects

Two projects have been identified with which there is the potential for cumulative effects on water. These are discussed below.

14.6.1 The Former Cork Warehouse Company

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

It is likely that there will be some overlap in construction durations. Potential cumulative effects which could arise include silt-laden surface water run-off from stockpiles during construction or hydrocarbon leaks from car parks during the operational phase. However, these can be mitigated through both the design process (i.e., integrated approach to site infrastructure design) and through the implementation of a CEMP (**Appendix 5.1**).

As such, no significant cumulative effects are predicted.

14.6.2 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021. The permission requires the implementation of detailed mitigation measures at both the construction and operational phases of that development to ensure that there will be no significant effects on water. The nature of the potential impacts and planned mitigation measures for the City Park development are such that no cumulative impacts on water will arise in either construction or operation.

14.7 Residual Effects

14.7.1 Construction Phase

With the employment of the above mitigation measures and standard good construction practices, it is considered that overall, there will be no significant effects on surface water as a result of the construction of the proposed development.

14.7.2 Operation Phase

With the employment of the above mitigation measures and the design of the proposed development, it is considered that overall, there will be no significant effects on water as a result of the operation of the proposed development.

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15 Resource and Waste Management

15.1 Introduction

This chapter describes the likely significant effects of the proposed development in relation to resource and waste management. **Chapter 4** provides a description of the proposed development whilst **Chapter 5** describes the construction strategy.

There is potential for surplus materials (resources and waste) to be generated during the demolition, excavation, construction, operation and decommissioning of the proposed development. Mitigation measures are proposed to reduce the effect of the waste generated by the proposed development in the excavation, construction and operational phases, and to identify opportunities for the conservation of resources.

This chapter was prepared by Debbie Flynn. Details of Debbie's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

15.2 Assessment Methodology

15.2.1 General

This resource and waste management assessment considers the following aspects:

- The legislative context;
- The construction of the proposed development, including excavation and demolition;
- The operational phase; and
- The decommissioning phase.

The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (Refer to **Figure 15.1**). In December 2015, the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy.

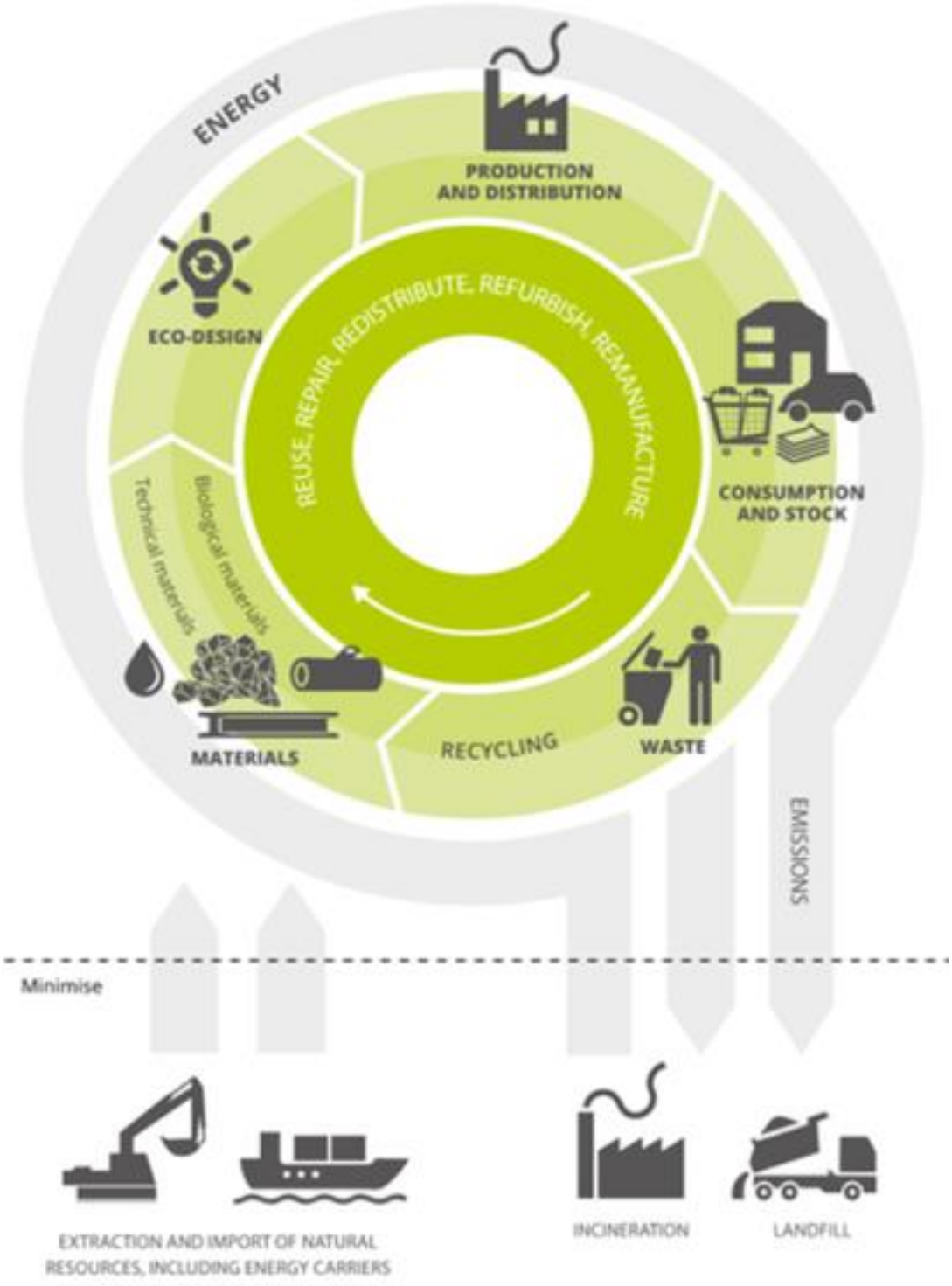

Figure 15.1: Circular Economy

However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy, as illustrated in **Figure 15.2,** and actively contributes to the economic, social and environmental goals of sustainable development.

Figure 15.2: Waste Hierarchy (European Union, 2010)

This chapter examines the potential environmental effects of the use of resources and the generation and management of solid waste streams arising from the proposed development, in the context of the local and national resource and waste management environment.

15.2.2 Guidance and Legislation

Resource and waste management takes place in a policy and legislative framework. A review of relevant legislation, policy and best practice guidance was undertaken to inform the impact assessment and recommended mitigation.

The key components of EU, national and local policy, legislation and guidance relevant to the proposed development are summarised as follows:

- Prevention of waste is the preferred option such that the value of products, materials and resources are maintained in the economy for as long as possible and the generation of waste minimised;
- Where construction waste is generated it should be source separated to facilitate reuse, recycling and maximise diversion of waste from landfill;
- Where waste may not be prevented, reused or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental impacts;
- Waste may only be transferred from the proposed development by a waste collection permit holder and delivered to an authorised waste facility (a facility which holds a certificate of registration, waste facility permit or waste licence); and

- Businesses must keep footpaths, pavements and gutters adjacent to premises litter free. Organisers of major events also have responsibilities in relation to collection and management of litter resulting from events.

15.2.3 Categorisation of Baseline Environment

A desk study was undertaken to establish the baseline conditions within the study area. The following sources of information have been used:

- Southern Waste Regional Authority (2015). Southern Region Waste Management Plan 2015-2021;
- Southern Waste Regional Authority (2018). Southern Region Waste Management Plan 2015-2021. 2nd Annual Report, 2017;
- Southern Waste Regional Authority (2018). Statistical Indicators Report Year 2 for Southern Region Waste Management Plan 2015-2021;
- EPA (2016) Ireland's Environment – An Assessment 2016;
- EPA (2021) Construction & Demolition Waste Statistics for Ireland;
- EPA (2021) Hazardous Waste Statistics for Ireland;
- EPA (2021) Municipal Waste Statistics for Ireland; and
- EPA (2021) Ireland's Environment – An Integrated Assessment 2020.

15.2.4 Impact Assessment Methodology

The methodology followed in carrying out this resource and waste impact assessment aligns with the overarching EIA guidance as described in **Chapter 1**.

A desk study was undertaken which included the following tasks:

- Review of relevant policy and legislation which creates the legal framework for resource and waste management in Ireland, including the Southern Region Waste Management Plan 2015-2021;
- Description of resource use during the construction, operational and decommissioning phases;
- Description of estimated waste generation during the construction, operational and decommissioning phases; and
- Identification of mitigation and movement of waste management up the waste hierarchy through implementation of best practice (refer to **Figure 15.2**.).

Mitigation measures are proposed to minimise the effect of the proposed development on the environment, reduce the quantity of finite resources used in the proposed development, reduce the quantity of waste sent for final disposal insofar as possible and to promote sustainable waste management practices. Monitoring measures are also outlined where likely significant effects have been identified. These are described in **Section 15.5.**

15.3 Baseline Conditions

15.3.1 Construction and Demolition Waste

The most recent complete figures published by the EPA[55] relating to Construction and Demolition (C&D) waste are for the year 2019 with just over 8.8 million tonnes of C&D waste generated and collected in Ireland. This represents a significant increase of 2.6 million tonnes on the quantity of C&D waste generated in 2018 (6.2 million tonnes), corresponding with a significant increase in construction activity nationally.

In 2019, 85% of this was comprised of soil and stones. The next largest C&D waste types in 2019 were concrete, brick, tile and gypsum waste (7%) and mixed C&D waste (4%).

The vast majority (96%) of C&D waste underwent final treatment in Ireland in 2019, while only 4% was exported abroad for final treatment. Backfilling was the dominant treatment operation in Ireland in 2019, with most of the C&D waste finally treated in Ireland (82%) backfilled in 2019, while only 7% of all C&D waste was recycled. The dominance of backfilling as a treatment operation reflects the large proportion of soil and stones in C&D waste. Recycling was the main treatment operation for the smaller fractions of metal, plastic, glass and wood.

Under the Waste Framework Directive (2008/98/EC) Member States must achieve 70 per cent of material recovery of non-hazardous, non-soil and stone C&D waste, by 2020. Ireland achieved 84% material recovery in 2019.

An approximate breakdown of the composition of C&D waste in Ireland in 2019 is set out in **Table 15.1**. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Table 15.1: Material categories of construction and demolition waste treated in Ireland in 2019 (Source: EPA)

Material from C&D Sources	Quantity (tonnes)	% of material stream in reference to total
Soil, Stone and Dredging Soil	7,488,357	84.8%
Mixed C&D Waste	398,247	4.5%
Concrete, Bricks, Tiles and Gypsum	680,746	6.9%
Metals	190,904	2.2%
Bituminous Mixtures	113,454	1.3%
Segregated Wood, Glass and Plastic	30,423	0.3%
Total	**8,825,130**	**100%**

[55] EPA (2021) Construction & Demolition Waste Statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/

The prominence of backfilling as a final treatment operation reflects the high tonnages of waste soil and stones managed. Recycling was the main treatment operation for the smaller metal, plastic, glass and wood fractions of C&D waste, while disposal was mainly used for C&D waste treatment residues (**Figure 15.3**).

Recycling rates for C&D waste could be improved by greater segregation of C&D waste into individual material streams, either at source or at waste processing facilities.

Having adequate authorised treatment capacity for C&D waste is vital to avoid unauthorised C&D waste disposal. The Waste Management Planning Regions have highlighted a lack of treatment capacity for soil and stone. Soil and stone accounted for 85% of the total quantity of C&D waste finally treated in 2019 and is a significant waste stream in terms of quantity arising.

The construction sector also generates hazardous waste such as hazardous contaminated soils, lead-acid batteries, waste electrical and electronic equipment, asbestos, solvent-based paints and varnishes, pesticides and waste oils. The latest reference year for hazardous waste statistics is 2020, in which 557,221 tonnes of hazardous waste was generated in Ireland. Approximately 65% of hazardous waste generated was from industry, 32% was from the construction sector and 3% was from municipal sources, such as households, small businesses, educational facilities etc[56].

[56] EPA (2021) Hazardous waste statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/

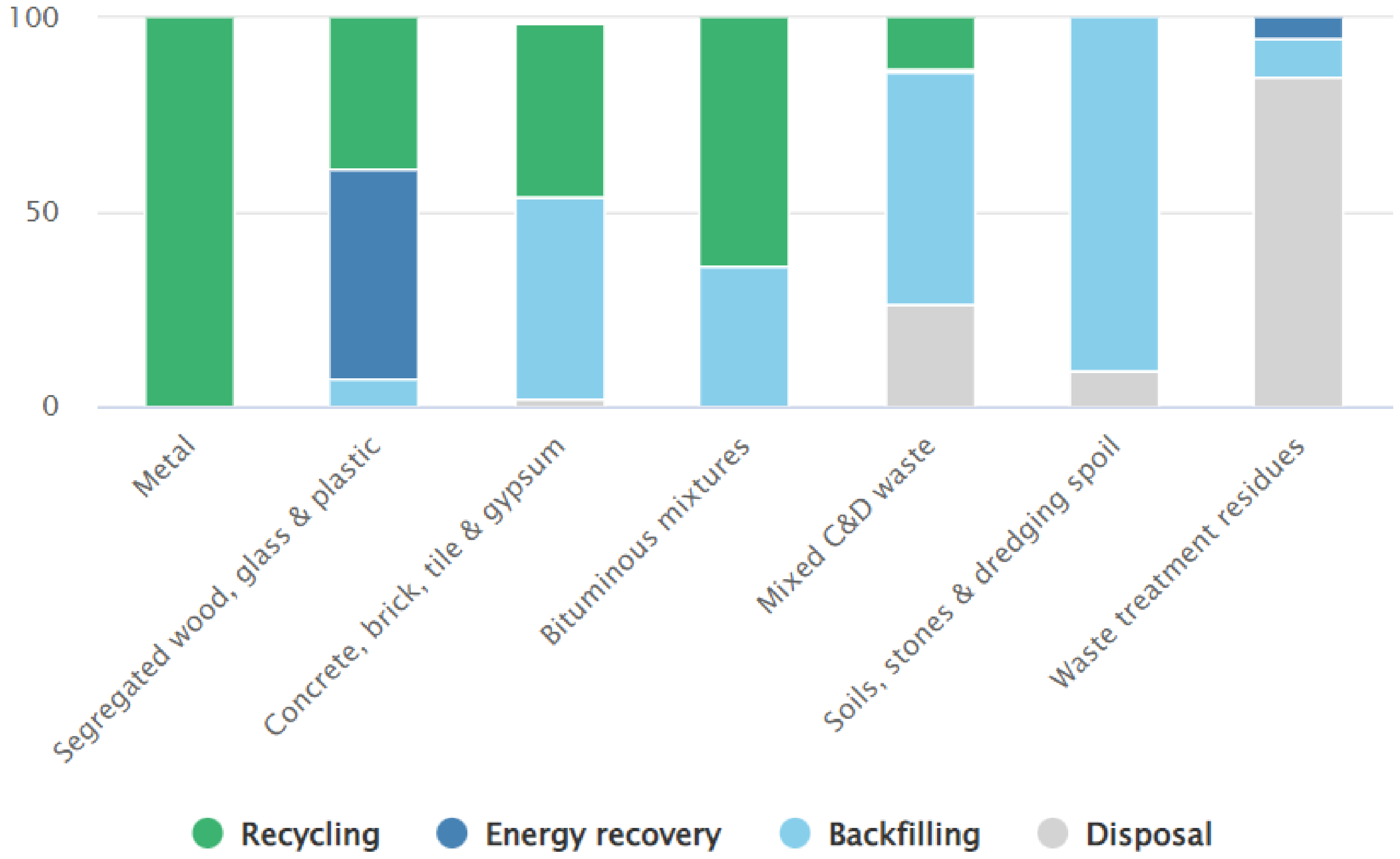

Figure 15.3: Final Treatment for C&D Waste Material Classes in Reference to Total for each Material Class, 2019 (https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/) (Accessed December 2021)

The Southern Waste Management Region publishes annual statistics on waste generation and management. The most recent report published relates to 2018.

The soil and stone waste collected within the Southern Region (SR) is primarily managed at local authority permitted infill sites with the other C&D waste types primarily managed at EPA activities. Contaminated soils are treated at appropriately licenced hazardous waste sites in the SR.

There are seven soil recovery facilities in the EPA licensing system for the SR. The available capacity of the seven soil recovery facilities in the SR is located in the eastern part of the region, in counties Wexford and Kilkenny, with one facility in each of these counties. The active and available annually capacity, at end-2018, is 525,000 tonnes, of which 400,000 tonnes (76%), is located in Wexford. These areas border the EMR where construction activity nationally is highest. There are currently three licenced facilities in County Cork – one is inactive and two are licenced facilities that are yet to commence operation. When operational these facilities will have a combined annual capacity of 580,000 tonnes. The Southern Region has two facilities at application stage.

These facilities located in Cork and Wexford have been at application stage since December 2019 and August 2019 respectively. When active these facilities combined will offer an additional 380,000 tonnes of annual capacity to the market.

At end-2018, a total of 80 active permitted facilities have been identified in the SR mainly authorised for class 5 activity, with a small number of class 6 operations. These facilities had a collective remaining capacity of 1.92 million tonnes out of a collective lifetime capacity of approximately 5.75 million tonnes. This is an increase of more than 1.2 million tonnes from 2016 data – due to a combination of the opening of new facilities and improved reporting.

15.3.2 Existing Operational Waste

Municipal Waste in Ireland is made up of household waste and some commercial and industrial wastes which are similar to household wastes. The EPA reports that in 2019 Ireland generated 3.1 million tonnes of municipal waste and of this 37% was recycled. This is down from 38% in 2018 due to a change in methods advised by the European Commission[57].

Currently, there is no municipal waste generated on site, as it is not in use.

The proposed development site is a brownfield site which is currently not in use, therefore no existing operational waste is generated on the site.

[57] EPA (2021) Municipal Waste Statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/municipal/

15.4 Likely Significant Effects

15.4.1 Do-Nothing Scenario

If no action is taken, the site will remain in its current condition, which is undeveloped and vacant. No wastes are being produced and so, there will be no effect on the resource and waste management of the site.

15.4.2 Demolition Resources and Waste

One structure currently remains within the boundary of the proposed development at the former Tedcastles Site, Centre Park Road. The proposed development includes the demolition of this structure, which is approximately 269 m^2, as identified in **Figure 15.4.**

A pre-demolition survey will be undertaken to provide sufficient information for the Main Contractor to prepare a detailed Demolition Management Plan (DMP), as well as informing of the structural framing, floor and wall construction of the remaining structures onsite.

Surface material removed from within the working area of the proposed development will be reused within the proposed development in so far as reasonably practicable. The storage of stock-piled materials will be subject to strict controls to prevent the generation of dust, contaminated run-off, or the degradation of the stockpiled material. Where this is not practicable, the material will be transferred for recovery or disposal at appropriately authorised waste facilities in respect of which a waste permit or a waste licence is granted. If material is to be re-used offsite, this will only be done at sites which have appropriate planning permission, with associated environmental assessments completed and approved, as required.

Waste arising will include concrete, block, and steel, and will be dealt with in a similar manner.

Figure 15.4: Existing Buildings and Structures – Extract from Demolition Plan – North Site, Drawing No. PE21055-CWO-ZZ-00-DR-A-0101 | not to scale

15.4.3 Construction Phase

During the construction phase, waste materials will be generated which will be source segregated on-site into appropriate skips/containers where practicable and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site.

A planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (refer to **Appendix 5.2**) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible. Circular economy principles will be implemented wherever possible.

Construction works, site offices and temporary works facilities will require the use of resources and will generate construction waste.

During the construction of the foundations, site services and attenuation tanks the site level will be lowered to approximately -1.30mOD. This will require the excavation of approximately 73,022m^3 of soil and hardstanding. Excavation will remove made ground and some of the silts and potentially some of the sand/gravels. This will require a dewatering strategy. Preliminary results indicate that the groundwater in the sand/gravel has a reasonable quality hence should treatment be required it is unlikely to be onerous, or significant in terms of waste generation.

The structure of the buildings will be concrete, and the majority of the facades will have a brick finish. Concrete and brick are very versatile and hard-wearing materials that can endure for hundreds of years. Plaster will be used in internal courtyard elevations, and this will have a high-quality and hard-wearing finish. The material used in balconies will include steel and glass. These building materials are widely used and widely available and will not require scarce or rare resources.

Construction waste can vary significantly from site to site but typically would include the following non-hazardous fractions:

- Soil and stone;
- Concrete and brick;
- Asphalt/tar;
- Metals;
- Wood; and
- Liquid wastes (wheel-wash run-off, sanitary waste from portable toilets).

The hazardous waste streams which could arise from construction activities may include the following:

- Tar containing asphalt;
- Waste electrical and electronic components;
- Batteries;
- Cleaning chemicals; and
- Waste fuels/oils.

Also included within the definition are surplus and damaged products and materials arising during construction work or used temporarily during the course of on-site activities.

In the case of the proposed development, the most likely type of construction waste will be surplus concrete and unusable or damaged construction materials. A breakdown of predicted construction waste arising has been summarised in **Table 15.2.** Refer to **Chapter 5** *Construction Strategy,* **Appendix 5.1** *Construction Environmental Management Plan* and **Appendix 5.2** *Construction and Demolition Waste Management Plan* for further details on the planned approach to the management of construction waste.

The potential effect of construction waste in the absence of appropriate mitigation measures is expected to be slight, negative and short term.

Provided mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the construction phase on the environment will be long-term, neutral and imperceptible.

Table 15.2: Breakdown of Construction Waste Arisings

Land Use	Area (GFA)	BRE Benchmark (Tonnes/100m^2)	Tonnage of Waste
Residential			
Residential	60,198m^2	16.8	10,113
Commercial			
Commercial Retail	1,571m^2	27.5	432
Internal Amenity	2,760m^2	22.4	618
Food & Beverage	1,089m^2	27.5	299
Crèche	662m^2	23.3	154
Neighbourhood Centre	913m^2	22.4	204
Other			
Circulation/Core and Auxiliary	20,302m^2	7.0	1,421
Plant and Bin Stores	3,698m^2	7.0	258
Total	**91,193m^2**	-	**13,499 tonnes**

15.4.4 Operational Phase

During the operational phase, waste will be generated from the residents, commercial areas and from transient users of the town square. This will result in an overall increase wastes quantities generated from the site.

The typical non-hazardous and hazardous wastes that will be generated at the proposed development during the operational phase will include the following:

- Dry Mixed Recyclables (DMR) – includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Park cartons;
- Confidential paper;
- Organic waste – food waste and green waste generated from general operation and maintenance such as plants/flowers/café;
- Glass; and

- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants or external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Light bulbs (Long Life, LED and Filament bulbs);
- Textiles (rags);
- Waste cooking oil;
- Sludge/wastewater from grease trap(s) if any passive grease trap(s) installed; and
- Furniture (and from time-to-time other bulky wastes).

In addition to non-hazardous commercial waste from the proposed pharmacy, medical centre and dentist within the proposed development, small quantities of medicines and healthcare risk waste such as sharps will be generated from these areas.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance whole maximising the re-use, recycling and recovery of waste diversion from landfill wherever possible.

Estimated Waste Arisings

The estimated volume of operational waste that will be generated from the residential units and amenities, commercial areas, neighbourhood centre and childcare facilities of the proposed development is based on the schedule of accommodation for the proposed development which details floor area and number of bedrooms.

The estimated waste generation from residents arising during operation of the proposed development has been outlined in **Table 15.3.** The numbers have been calculated using the formulas assumptions and calculations noted in **Appendix 15.1** *Operational Waste Management Plan*. Estimated waste arisings from the commercial units associated with the proposed development have been outlined in **Table 15.5.**

Table 15.3: Estimated Residential Waste Arisings

Assumptions	Formula	Calculation
1 bed: 2-person occupancy rate 2 bed: 3- or 4-person occupancy rate 3 bed: 5-person occupancy rate	No of People = No. of units * occupancy rate	1 bed: 282 units * 2 people = 564 people. 2 bed: 31 units * 3 people = 93 people. 2 bed: 383 units * 4 people = 1,532 people. 3 bed: 127 units * 5 people = 635 people. **Total people = 2,824**
330kg per annum waste generation	Tonnes of waste = waste per annum * No. of people	0.33 tonnes/person/year * 2,824 people **Total Waste = 931.92 tonnes/year**

A compositional breakdown of municipal waste has been outlined in **Table 15.4.** These figures were obtained from the most recent waste characterisation surveys conducted in Ireland undertaken in 2016 and published in 2018. They should be considered as a guide only, as municipal waste can vary significantly from one location to another, depending on the nature of the development and the waste management practices employed on-site. The predominant waste streams in municipal waste include plastics, papers and organic waste, with these streams comprising 40% of total municipal waste composition.

Table 15.4: Composition of Municipal Waste[58]

Category	Composition
Plastics	17.2%
Papers	15.3%
Organic waste (non-garden)	12.5%
Cardboards	8.5%
Fines (<20mm)	8.6%
Organic waste (garden)	7.6%
Textiles excl. nappies	7.6%
Nappies	6.7%
Metals	4.2%
Unclassified Combustibles	4.3%
Glass	2.6%
Unclassified Incombustibles	1.7%
Haz Municipal Waste (excl. WEEE &Tubes)	0.9%
Composite beverage cartons	0.8%
Wood	0.8%
WEEE & Tubes	0.7%
Total	**100.0%**

[58] EPA (2018) Household Waste Characterisation Campaign - Final Report. https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/Household_Surveys_Final_Report1.pdf [Accessed: March 2022]

Table 15.5: Commercial Waste Generation Rates and Waste Splits

		Retail 1	Retail 2	Crèche	Pharmacy/Dentist	Medical Centre	Food & Beverage	Post Office/Library
Generation rate		100 litres/ 100m^2/day[59]	75 litres/ 100m^2/day[60]	450 g/child/ day[61]	100 litres/ 100m^2/day[4]	340 litres/ 100m^2/day[62]	180 litres/ 100m^2/day[63]	27 litres/ 100m^2/day[64]
Waste Split[65]	**Residual**	10%	10%	10%	10%	10%	5%	10%
	Dry Mixed Recyclable	60%	60%	60%	60%	60%	20%	60%
	Organic	25%	25%	25%	25%	25%	50%	25%
	Glass	5%	5%	5%	5%	5%	25%	5%

[59] Based on Retail – Non-food shops >100m^2 - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.
[60] Based on Retail – Non-food shops <100m^2 - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.
[61] Based on primary school waste generation rate, with adjustments made for toddlers and nappy generation – *WRAP (2008) The nature and scale of waste produced by schools in England*.
[62] Based on Community centres (low) – *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.
[63] Based on Retail – Food Shops (average) – Recyclables rate of 20% also included – *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.
[64] Based on Office (average) - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.
[65] Based on Waste Compositions from *EPA (2009) Municipal Waste Characterisation Surveys 2008*.

Waste Collection

There are several private contractors that provide waste collection services in the Cork City area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered/permitted/licenced facilities only.

A high level of recycling, re-use and recovery at the proposed development will be carried out. All recyclable materials will be segregated at source to ensure maximum diversion of materials from landfill. There will be sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles. All relevant guidance/legislation will be complied with and there is ample capacity within existing licensed and permitted waste facilities to accept the waste likely to be generated by the proposed development.

Therefore, the potential effect from the operational phase on municipal waste disposal is predicted to be long term and slight negative.

Provided mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible.

15.4.5 Decommissioning

It is intended that the proposed development will endure into the future, with modifications and refurbishments carried out as required, in response to changing commercial requirements. Should some or all of the proposed development be decommissioned, planning consent and environmental assessments would be required to ensure that adverse effects on the environment would be minimised. Any potential effects associated with the decommissioning of the proposed development would be similar in nature, and less severe that those associated with the construction of the proposed development.

15.5 Mitigation Measures and Monitoring

15.5.1 Construction Phase

During the demolition and construction phases, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Completion of the undercroft car park and construction of new foundations and the installation of any underground services will require the excavation of approximately 73,022m^3 of soil and hardstanding.

Should the removal of any of this material be necessary, it will be removed offsite for appropriate reuse, recovery, recycling and/or disposal. A planned approach to

waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (included with this planning application) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible. Circular economy principles will be implemented wherever possible

In addition to the inherent design measures which will be implemented during construction, the following mitigation measures will also be implemented:

- Waste disposal will be minimised so far as is reasonably practicable;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- Waste from the proposed development will be transported by authorised waste collectors in accordance with the relevant Irish waste legislation (Waste Management (Collection Permit) Regulations, 2007 as amended);
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the relevant Irish waste legislation (Waste Management Acts 1996-2016 as amended);
- Source segregation: Where possible metal, timber, glass and other recyclable material will be segregated on site in a designated area within the construction compound during construction works and will be removed off site to a permitted/licensed facility for recycling. Where required, waste stream colour coding, and photographs of wastes will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;
- Material management: ‘Just-in-time’ delivery will be used so far as is reasonably practicable to minimise material wastage;
- Supply chain partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;
- Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a contractor who holds the appropriate waste collection permit;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered, and which is disposed of; and

- The Contractor(s) will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place.

15.5.2 Operational Phase

A dedicated communal waste storage area will be allocated for the residents at ground level. The waste storage area will be appropriately sized to accommodate the estimated waste arisings. The commercial tenants will also have a dedicated waste storage area. These waste storage areas will be allocated to ensure a convenient and efficient management strategy with source segregation as a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan (**Appendix 15.1**) has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture. The Plan will comply with all legal requirements, waste policies and best practice guidelines and will demonstrate that the required storage areas have been incorporated into the design of the development.

15.6 Cumulative Effects

A review of Cork City Council online planning records has indicated that several other developments have been proposed within the surrounding area that may give rise to cumulative effects. Appropriate mitigation measures as well as a Construction Environmental Management Plan (CEMP) will be implemented in order to mitigate any potential negative cumulative effects arising from these developments.

15.6.1 Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

The project has been subject to various environmental assessments. To that end, as part of the planning application process, an Environmental Impact Assessment (EIA) screening report has been undertaken and a Nature Impact Statement (NIS) report has been prepared.

Although the proposed development may be constructed at the same time as the development at the former Cork Warehouse Company site, given their temporary nature, the implementation of the CEMP for both projects and the capacity within the existing networks, the likelihood of any significant cumulative effects on resource and waste management is not significant to slight.

15.6.2 Other Developments

15.6.2.1 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

Due to the absence of significant resource and waste effects associated with this permitted development, no potential for significant cumulative effects have been identified.

15.6.3 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and "nature" zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

Due to the minimal environmental effects associated with the proposed development, significant cumulative effects are not envisaged.

Any potential cumulative effects will be managed with the implementation of the *Construction Environmental Management Plan* (**Appendix 5.1**).

15.7 Residual Effects

Following the implementation of the mitigation measures described in **Section 15.5,** the residual effects are expected to be as follows:

- The effect of excavation waste is expected to be slight, negative and short-term.

- The effect of construction waste is expected to be slight, negative and short-term.
- The effect of operational waste is expected to be negligible and long-term.

There is expected to be adequate capacity in the region to receive the wastes likely to be generated by the construction and operation of the proposed development.

With the implementation of the Construction and Demolition Waste Management Plan (CDWMP), and the Operational Waste Management Plan (OWMP), the residual impact of the proposed development on resources and waste management will be direct, slight, negative and long-term.

15.8 References

Department of Environment Community and Local Government (2006). *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*

Environmental Protection Agency (2015). *Waste Classification – List of Waste and Determining if Waste is hazardous or Non-Hazardous*

Environmental Protection Agency (2016) *Ireland's Environment – An Assessment 2016*

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16 Population and Human Health

16.1 Introduction

This chapter describes the likely significant effects of the proposed development on population and human health (i.e., socio-economic and public health aspects respectively) during construction and operation. It should be noted that **Chapter 18** *Major Accidents and Disasters* separately addresses the likely significant effects of possible unplanned events (i.e., major accidents or disasters). **Chapter 4** provides a description of the proposed development whilst **Chapter 5** describes the strategy for construction.

The following aspects are particularly relevant to the population and human health assessment:

- Design
    - Aspects relating particularly to the design and location of the proposed development, where it is in proximity to residential and commercial properties or in areas publicly accessible in Cork City. A Wind Microclimate Assessment and a Daylight and Sunlight Analysis have been prepared to assess the potential effect on surrounding building users. Both reports have been included in this Planning Application package.
- Construction
    - Construction of all infrastructure;
    - Potential disturbance to local community, tourism and economy due to construction works, including associated effects on traffic (i.e. pedestrian, cyclist and vehicle movement) and amenity associated with visual, air quality, odour, noise and vibration effects;
    - Likely significant effects on human health including the effects of emissions including noise and emissions to air and water from plant and equipment; and
    - Likely significant effects on human health associated with disturbance and annoyance, including construction traffic, asbestos and contaminated land and how that may interact with human health.
- Operation
    - Likely significant effects of the proposed development on community, tourism and future development in Cork city; and
    - Operation of the proposed development including any emissions and movement of operational vehicles to the site.

Potential effects on population and human health have also been addressed in the following chapters of the EIAR:

- Traffic and Transportation **(Chapter 7)**

- Air Quality and Climate **(Chapter 8)**
- Noise and Vibration **(Chapter 9)**
- Townscape and Visual **(Chapter 12)**
- Land, Soils, Geology and Hydrogeology **(Chapter 13)**
- Water **(Chapter 14)**
- Major Accidents and Disasters **(Chapter 18).**

This chapter was prepared by Dan Garvey. A description of the authors' qualifications and experience is presented in **Chapter 1** *Introduction* of this EIAR.

16.2 Assessment Methodology

16.2.1 General

The assessment of effects on population and human health involved a desk study of the relevant policies (as outlined in **Chapter 6** *Planning and Policy*) and other demographic information relevant to the area from the Central Statistics Office (CSO).

Population aspects of relevance to this assessment include social considerations, traffic and accessibility, land use and economic activity which includes business, tourism and employment opportunities.

Human health aspects are primarily considered through an assessment of the environmental pathways by which health may be affected (i.e., the determinants of health) such as air, noise, water or soil. The assessment on human health therefore draws on the findings of other sections of the EIAR as necessary to ensure that the likely significant effects that have the potential for significant effects on human health are considered herein.

16.2.2 Guidance and Legislation

The assessment of the likely significant effects of the proposed development on population and human health has taken account of the policy and legislative documents listed in **Chapter 1** *Introduction* and **Chapter 6** *Planning and Policy* of this EIAR, particularly Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The term human health was introduced in the amended 2014 EIA Directive. However, no definition or advice on how this new factor should be considered is

provided in the Directive. Subsequent Guidance from the European Commission in 2017 (EC, 2017a[66]) stated the following:

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

This chapter has also had regard to the guidance provided in recent national publications on the EIA Directive by the European Commission (EC, 2017b[67]), the Department of Housing Planning and Local Government (DHPLG, 2018[68]) and the EPA (EPA 2017a[69]).

The identification of the sensitive receptors to the proposed development have been identified based upon the EPA Guidelines (2017[69] and 2002[70]) and EPA Advice Notes (2015 and 2003[71]). These documents identify sensitive receptors as neighbouring landowners, local communities and other parties which are likely to be directly affected by the proposed development. Homes, hospitals, hotels and holiday accommodation, schools and rehabilitation workshops and commercial premises are noted. Regard is also given to transient populations including drivers, tourists and walkers.

The issue of land use and compatibility with the surrounding areas has been assessed at the strategic level by the Strategic Environmental Assessments (SEAs) completed for the Cork City Development Plan (2015-2021).

The SEA Environmental Report for the Cork City Development Plan (2015-2021) includes one specific Environmental Protection Objective (EPO) for Population and Human Health:

- EPO 1: *To create a sustainable compact city, a high quality safe environment in which to live, work or visit.*

The objective is to be addressed using the following identified targets:

[66] EC (2017a) Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)]
[67] EC (2017b) Commission Implementing Decision (EU) on greenhouse gas emissions for the year 2015 covered by Decision No 406/2009/EC of the European Parliament and of the Council.
[68] DHPLG (August 2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
[69] EPA (2017) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
[70] EPA (2002) Guidelines on information to be contained in Environmental Impact Statements (EIS)
[71] EPA (2003) Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)

- Increase in population;
- Increase in number of residential properties;
- Increased modal shift from private car to public transport and cycling;
- Avoid incompatible development near SEVESO and Integrated Pollution Prevention and Control (IPPC) sites; and
- Improved access to community and recreational facilities.

This assessment has also been undertaken with due regard to the following guidance:

- US EPA (2016) Health Impact Assessment Resource and Tool Compilation;
- IEMA (2017) Health in Environmental Impact Assessment - A Primer for a Proportionate Approach;
- Institute of Public Health Ireland (2009) Health Impact Assessment Guidance;
- British Standards Institution (2014) 5228-1 and 2:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites. Noise and Vibration;
- EPA (2016) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4);
- Air Quality Standards Regulations 2011; and
- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No 272 of 2009) as amended by the European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2012 (S.I. No. 327 of 2012); and the European Communities Environmental Objectives (Surface Water) (Amendment) Regulations 2015 (SI No. 386 of 2015).

16.2.3 Study Area

The proposed development is located in the Cork City South Central area. The wider study area is the greater Cork City area. See **Figure 1.1** in **Chapter 1** *Introduction*.

For the assessment of effects during construction, the relevant study area includes those areas frequented by people in the immediate environs of the working areas as well as those receptors who might be affected by ancillary activities such as construction traffic.

For the assessment of effects during operation, the wider study area includes all receptors that may be affected by the proposed development including primarily, those who live and work in Cork City, as well as those who may come in contact with the proposed development (i.e., residents customers, recreational users).

16.2.4 Site Visits

Site visits were undertaken between September and November 2021 to examine the nature of existing land use in the area by conducting a survey of the site and receiving environment, as part of a visual assessment for **Chapter 12** *Townscape and Visual*. The principal areas of pedestrian and traffic movement and the extent and nature of leisure activities in Cork City were also observed.

Other site visits and surveys conducted as part of this planning application have been delt with in the relevant chapters of this EIAR, including **Chapter 7** *Traffic and Transportation*, **Chapter 9** *Noise and Vibration*, **Chapter 10** *Biodiversity*, **Chapter 11** *Archaeology, Architectural and Cultural Heritage* and **Chapter 13** *Land, Soils, Geology and Hydrogeology*.

16.2.5 Categorisation of Baseline Environment

As assessment of population and human health requires that an understanding of the baseline environment and local community is acquired through background research, site visits, and discussions with local people and community representatives where necessary. Specifically, data has been collected by means of:

- Primary data sources (e.g., demographic data from Census 2016 and preceding Census data produced by the Central Statistics Office;
- Design drawings of the proposed development;
- Street maps of the study area obtained in 2021;
- Other relevant environmental baseline data gathered and considered as part of this EIAR, especially traffic and air quality, noise, townscape and visual assessments;
- A review of relevant planning documentation including the Cork City Council Development Plan 2015-2021 (Refer to **Chapter 6** *Planning and Policy* for further detail); and
- Observation of local settlement, travel patterns and amenity activity along with the identification of community facilities.

Utilising the information gathered from the desktop study completed, it was possible to consider the people most affected by the proposed development and the potential likely significant effects on both individuals and the wider community.

The nearest sensitive receptors were identified, and a broad study area was identified as Cork City and South Docklands areas.

Population data and human health data have been derived from information provided in the most recent Population Census, published for 2016 and 2011[72].

16.2.6 Impact Assessment Methodology

The requirement to carry out an assessment of potential effects on population and human health is set out in the new EIA Directive (2014/52/EU). The recitals to the 1985 and 2011 Directives refer to 'Human Health' and include 'Human Beings' as the corresponding environmental factor. The 2014 Directive changes the title of this factor to 'Population and Human Health'.

According to the Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017) *"in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc*."

The Draft Guidelines also note that:

"The legislation does not generally require assessment of land-use planning, demographic issues or detailed socio-economic analysis. Coverage of these can be provided in a separate Planning Application Report to accompany an application for planning permission."

Potential effects of the proposed development on population and human health arise from traffic and transportation, air quality and climate, noise and vibration, townscape and visual, material assets: utilities and the risk of major accidents and/or disasters. These aspects are dealt with in the specific chapters in this EIAR dedicated to those topics, and this Chapter refers to the findings of those assessments included elsewhere in this EIAR for which human health effects might occur.

The initial assessment as outlined in **Section 16.3** examines the existing population statistics and the status of human health in the proposed study area.

Section 16.4 outlines the likely significant effects associated with the proposed development.

It should be noted that human health aspects are primarily considered through an assessment of the environmental pathways by which health may be affected (i.e., the determinants of health) such as air, noise, water or soil. The assessment on human health therefore draws on the findings of other sections of the EIAR as necessary to ensure that the likely significant effects that have the potential for significant effects on human health are considered herein.

The likely significant effects on population are assessed under the following headings:

[72] CSO Census Reports 2016 and 2011. Available at: https://data.cso.ie/ and: https://www.cso.ie/en/csolatestnews/presspages/2017/census2016profile2-populationdistributionandmovements/ [Accessed: January 2022]

- Social Considerations;
- Traffic and Accessibility;
- Economic Activity;
- Land Use; and
- Human Health.

Impact assessment criteria are based on those outlined in the EPA guidelines[69].

Following the assessment of effects, specific mitigation and monitoring measures have been developed to avoid, reduce and, if possible, remedy any negative effects on population and human health. These are described in **Section 16.5**.

Cumulative and residual effects are described in **Section 16.6** and **Section 16.7**, respectively.

16.3 Baseline Conditions

16.3.1 Introduction

The description of the baseline conditions has been made in the context of the site and land-use; and demographics in relation to population, age structure and economic activity.

An assessment of the receiving environment is necessary to predict the likely significance of the effects of the proposed development. Demographic data published by the Central Statistics Office (CSO) in Ireland helps to demonstrate the nature of the population near the proposed development and who could be affected during either the construction, operational or decommissioning phases.

16.3.2 Context of the Site and Land Use

The site of the proposed development has a total area of c. 4.86 hectares.

The EPA Corine (2018) data has classified the site of the proposed development as *Artificial Surfaces – Industrial and Commercial Units.*

The existing site is bounded by Centre Park Road to the southeast, by the Marina to the north and by the former ESB power station to the west. The site is a brownfield site. There are two open channels located within the proposed development site, one adjacent to the south-eastern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

The site is not accessible to the public.

The proposed development sits approximately 30m from the River Lee which flows to Cork Harbour approximately 1.9km east of the site.

A number of commercial facilities are located to the west of the site in the Marina Commercial Park along Centre Park Road, including the Office of Public Works (OPW) and the Marina Market amenity.

Páirc Uí Chaoimh GAA Pitch sports and leisure facility is located to the southeast of the proposed development

16.3.3 Zoning

The proposed development aligns with the following Zoning Objectives outlined in the Cork City Development Plan (CCDP) 2015-2021:

- ZO 9: Neighbourhood Centres – to protect, provide for and/or improve the retail function of neighbourhood centres and provide a focus for local services.
- ZO 14: Public Open Space – to protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing land zoned public open space areas for alternative purposes, including public open space within housing estates.
- ZO 16: Mixed Use Development – to promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency.

Having regard to these zoning objectives, the proposed development will provide 823 no. apartments, café/restaurant units, retail and commercial units, creches, open spaces and supporting tenant amenity facilities which are permitted in principle which are permitted in principle uses on the subject lands.

For a detailed description of the proposed development refer to **Chapter 4** *The Proposed Development.*

The site is not designated as an area of architectural conservation. The proposed development is partially located within an Area of High Landscape Value.

The site zoning will help implement the policy objectives of the National Planning Framework (NPF) and Regional, Spatial & Economic Strategy (RSES) for Cork, including a target additional population of 125,000 people by 2040 (requiring 3,000 homes per year)

The promotion of regeneration opportunities to intensify housing development in inner suburban areas has been identified in the NPF and RSES as one of the key growth enablers for Cork City.

16.3.4 Population and Employment

16.3.4.1 National Context

Population

Data from the 2016 Census for the State[73] (**Table 16.1**) indicates that from 2011-2016, Ireland's population has increased by 173,613 (3.8%) from 4,588,252 to 4,761,865.

[73] https://www.cso.ie/en/census/census2016reports/

Table 16.1: Population Change 2011-2016

Population Change 2011-2016			
	2011	*2016*	*% Change 2011-2016*
State	4,588,252	4,761,865	+3.8%

The CSO Population & Migration Preliminary Estimates for April 2016 (published in August 2016) indicate that there has been a significant shift in migration patterns in recent years, with a significant change in net in-/out-ward migration at a national level. There was net inward migration from April 2015 to 2016 (+3,100). This is the first net inward migration for Ireland since 2009.

Among Irish nationals it remains net outward migration but at a much lower level, falling from 23,200 people in 2015 to 10,700 in 2016. The trend of net inward migration to the country among non-Irish nationals continued in 2016 for the fourth year in a row from 11,600 to 13,800. Ireland now has fewer citizens leaving the country and an increasing number of non-Irish nationals taking up residence.

Based on CSO Population and Migration Estimates for April 2021, Ireland's population was estimated to be 5.01 million[74], which is the first time the population has risen above five million since the 1851 census, when the comparable population was 5.11 million. April 2021 estimates have also shown a 61.25% decrease in migration since April 2020, with a net inward migration of 11,200.

Employment

The most recent Labour Force Survey[75] released by the CSO for the fourth quarter (Q4) of 2021 indicated that in Ireland there was an annual increase in employment of 10.1% or 229,200 in the year compared to Q4 of 2020, bringing total employment to 2,506,000. This compares with an annual increase of 9.8% in the previous year (2020) to Q4 2019.

Since March 2020, the CSO has been producing a supplementary measure of monthly unemployment in parallel with the routine Monthly Unemployment Estimates, which incorporates those in receipt of the Pandemic Unemployment Payment (PUP) into the calculation to produce a COVID-19 Adjusted Measure of Monthly Unemployment. By the end of December 2021, the new COVID-19 Adjusted Measure of Employment is currently estimated to have been 2,439,099 with an associated COVID-19 Adjusted Employment Rate of 70.7%.

There was an annual decrease in unemployment of 14,400 (-10.1%) in the year compared to Q4 2020, bringing total unemployment to 127,400.

[74] CSO (2021) Population and Migration Estimates, April 2021. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-pme/populationandmigrationestimatesapril2021/mainresults/ [Accessed January 2022]
[75] CSO (2022) Labour Force Survey Quarter 4 2021. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter42021/ [Accessed March 2022]

Under the Economic Recovery Plan, some previous recipients of PUP have been transitioning to a jobseeker's payment and are now appearing on the Live Register.

Live Register numbers are the only source of official information in relation to levels of people signing on at Social Welfare offices. The Live Register is not designed to measure unemployment. It includes part-time workers (those who work up to three days a week) and seasonal and casual workers entitled to Jobseeker's Benefit or allowance. However, the live register is a good indicator of current levels of unemployment.

In unadjusted terms, there were 163,248 persons signing on the Live Register in February 2022. This represents an annual decrease of 23,454 (-12.6%) since February 2021.

A total of 214,019 persons were either on the Live Register or were benefitting from the PUP in February 2022. This compares to 237,138 in the month of January 2022.

The official indicator in relation to unemployment is that given in the Labour Force Survey, which does not give specific levels of unemployment for Cork City or County.

Data regarding the number of persons at work and the related industries for Ireland from the 2016 Census for the State[73] are represented in **Table 16.2** and **Table 16.3**.

Table 16.2: Persons at work by occupation and sex (State)

Occupation	Male	Female	Total
Managers, Directors and Senior Officials	105,704	63,328	169,032
Professional Occupations	172,799	220,809	393,608
Associate Professional and Technical Occupations	145,431	102,982	248,413
Administrative and Secretarial Occupations	50,294	177,738	228,032
Skilled Trades Occupations	287,177	29,136	316,313
Caring, Leisure and Other Service Occupations	29,517	136,646	166,163
Sales and Customer Service Occupations	54,592	100,438	155,030
Process, Plant and Machine Operatives	134,949	27,692	162,641
Elementary Occupations	120,395	79,892	200,287
Not stated	129,269	103,815	233,084
Total	**1,230,127**	**1,042,476**	**2,272,603**

Table 16.3: Persons at Work by Industry (State)

Industry	Male	Female	Total
Agriculture, forestry and fishing	78,631	10,485	89,116
Building and construction	94,638	7,211	101,849
Manufacturing industries	162,979	66,569	229,548
Commerce and trade	248,323	231,794	480,117
Transport and communications	124,866	46,328	171,194
Public administration	55,951	50,846	106,797
Professional services	129,677	341,979	471,656
Other	181,609	174,755	356,364
Total	**1,076,674**	**929,967**	**2,006,641**

16.3.4.2 Local Context

Population

Cork County (including Cork City) has the second highest population in the State: 542,868 (CSO: 2016). Over a 25- year period Cork has experienced a major and consistent expansion of its population. From 1991 to 2016 Cork County experienced a 32.3% increase in its population base. This growth can be attributed to the numerous employment locations within the county. **Table 16.4** compares population change in Cork County and Cork City.

Table 16.4: Population Change 2011-2016

Population Change 2011-2016			
	2011	*2016*	*% Change 2011-2016*
State	4,588,252	4,761,865	+3.8%
Cork County	399,802	417,210	+4.4%
Cork City	119,230	125,657	+5.4%
Cork (Total)	519,032	539,867	+4.01%

The most recent census results (2016) show the population growth for Cork City for 2011-2016 exceeded that for both the State and County at 5.4%, whereas the State and County showed population growth of 3.6% and 4.4% respectively. It is predicted that Cork City's population will continue to grow.

The smallest administrative area for which population statistics are published is the Electoral Division (ED). The proposed development site lies in electoral division Knockrea B within Cork City, which is bounded to the north by ED Tivoli A and ED Saint Patrick's A, to the west by ED City Hall B, to the east by ED Mahon A and to the south by ED Knockrea A and Mahon C. Population

changes from 2011 to 2016 occurring in Cork County and City[76], and within these electoral divisions[77] have been summarised in **Table 16.5.** The table demonstrates that the trend in population is towards growth.

The electoral division in which the proposed development sits (Knockrea B) has shown a slight decrease (6%) in population from 2011-2016. However, overall, most electoral divisions in proximity (Tivoli A, Saint Patrick's A, Mahon A and Knockrea A) have all shown population increases from 2011-2016, in the order of 10.8%, 24%, 2.7% and 0.3% respectively. City Hall B and Mahon C have both shown decreases in population (0.8% and 1.7%).

Table 16.5: Population by state, county, city and electoral division 2011-2016 | Source Central Statistics Office (CSO)

Population Change 2011-2016			
	2011	2016	% Change 2011-2016
State	4,588,252	4,757,976	+3.6%
Cork County	399,802	417,210	+4.4%
Cork City	119,230	125,657	+5.4%
Knockrea A	1,472	1,476	+0.3%
Knockrea B*	1,114	1,047	-6%
Tivoli A	1,505	1,667	+10.8%
Saint Patrick's A	1,299	1,611	+24%
City Hall B	1,201	1,191	-0.8%
Mahon A	4,931	5,066	+2.7%
Mahon C	3,330	3,727	-1.7%

**Site contained within this ED*

Table 16.6 provides details of the age profile for the Study Area based on the 2016 Census. The table shows that all geographical areas follow relatively the same pattern; the modal category for Cork City is the 20-39 area group, followed by 40-59 years, 0-19 years, 60-79 years and finally 80+ years.

[76] Population and Average Annual Rates 2011 to 2016 (City and County)
[77] Population and Average Annual Rates 2011 to 2016 (Electoral Division)

Table 16.6: Age Profile of the Study Area

Area	Age 0-19	Age 20-39	Age 40-59	Age 60-79	Age 80+
State	27.57%	27.82%	26.33%	15.16%	3.12%
Cork County	29.36%	25.15%	27.48%	15.02%	2.99%
Cork City	20.58%	35.46%	23.29%	16.64%	4.02%

Employment

Analysis of the Census 2016 data for the Settlements Cork City and Suburbs provides information in relation to the jobs that are located within the area and on the place of employment for the people who live in Cork city and suburbs.

Table 16.7 outlines the occupations of all those usually resident members of the population within the area who are ‘at work.’ Some 99,388 persons in Cork City are stated to be ‘at work’.

Table 16.7: Persons at work by occupation and sex (Settlements Cork City and Suburbs)

Occupation	Male	Female	Total
Managers, Directors and Senior Officials	4,187	2,417	6,604
Professional Occupations	9,693	10,636	20,329
Associate Professional and Technical Occupations	7,378	4,920	12,298
Administrative and Secretarial Occupations	2,236	6,839	9,075
Skilled Trades Occupations	8,319	922	9,241
Caring, Leisure and Other Service Occupations	1,226	5,240	6,466
Sales and Customer Service Occupations	3,629	5,819	9,448
Process, Plant and Machine Operatives	5,646	1,250	6,896
Elementary Occupations	5,036	3,984	9,020
Not stated	5,542	4,419	9,961
Total	**52,892**	**46,446**	**99,338**

Information is also provided in relation to the industries in the area. **Table 16.8** outlines the industry type of all those usually resident members of the population within the area who are ‘at work.

Table 16.8: Persons at Work by Industry (Settlements Cork City and Suburbs)

Industry	Male	Female	Total
Agriculture, forestry and fishing	308	65	373
Building and construction	3,277	231	3,508
Manufacturing industries	8,893	4,481	13,374
Commerce and trade	10,800	10,133	20,933
Transport and communications	6,268	2,299	8,567
Public administration	2,239	1,627	3,866
Professional services	6,705	15,537	22,242
Other	7,976	7,645	15,621
Total	**46,466**	**42,018**	**88,484**

According to 2016 Census data, the journey time to work, school or college of 30% of the usually resident population of the Settlements Cork City and Suburbs area is under 15 minutes, refer to **Table 16.9**.

Table 16.9: Journey time to work, school or college (Settlements Cork City and Suburbs)

Journey time	Persons
Under 15 mins	40,278
1/4 hour - under 1/2 hour	52,168
1/2 hour - under 3/4 hour	22,740
3/4 hour - under 1 hour	3,997
1 hour - under 1 1/2 hours	2,830
1 1/2 hours and over	1,157
Not stated	9,218
Total	**132,388**

Refer to **Table 16.10** for means of travel to work According to 2016 Census data, for the usually resident population of Settlements Cork City and suburbs, who are noted as being ‘at work’.

Table 16.10: Means of travel to work, school or college (Cork city)

Means of Travel	Work	School or College	Total
On foot	11,492	15,457	26,949
Bicycle	2,326	961	3,287
Bus, minibus or coach	6,854	5,041	11,895
Train, DART or LUAS	362	132	494
Motorcycle or scooter	380	56	436
Car driver	51,460	2,466	53,926
Car passenger	4,472	21,377	25,849

Means of Travel	Work	School or College	Total
Van	3,403	81	3,484
Other (incl. lorry)	248	27	275
Work mainly at or from home	1,988	52	2,040
Not stated	3,936	1,857	5,793
Total	**86,921**	**47,507**	**134,428**

Table 16.11 outlines the main types of accommodation in Cork City and suburbs, with a private household/bungalow being the primary type of housing in the city with over 87% of the population.

Table 16.11: Private households by type of accommodation (Cork city)

Type of accommodation	Households	Persons
House/Bungalow	64,414	177,617
Flat/Apartment	11,729	23,032
Bed-sit	184	234
Caravan/Mobile Home	76	286
Not stated	990	2,557
Total	**77,393**	**203,726**

16.3.5 Human Health

16.3.5.1 National Context

The 2021 edition of the Health in Ireland: Key Trends[78] report provides summary statistics of the overall health status of the country.

Population health at the national level presents a picture of decreasing mortality rates and high self-perceived health over the past ten years. Ireland has the highest self-perceived health status in the EU, with 83.9% of people rating their health as good or very good. The number of people reporting a chronic illness or health problem is also better than the EU average, at around 25.8% of the population. However, health status reflects income inequality, with fewer low-income earners reporting good health both in Ireland and across the EU.

Age-standardised mortality rates have declined for all causes over the past decade by 16%. This decrease is particularly strong for mortality rates from suicide (-41.6%), pneumonia (-49.4%) and stroke (-44.9%). Infant mortality, measured as deaths per 1,000 live births, has also decreased by 22.2% since 2010 and remains below the EU average.

Ireland is currently below the EU average for suicide rates for both men and women. Ireland performs better than the European average for treatable deaths.

[78] https://www.gov.ie/en/publication/350b7-health-in-ireland-key-trends-2021/

As can be seen from **Table 16.12** approximately 84% of the population of Ireland consider themselves to have "Very Good" or "Good" health.

Table 16.12: Self-Perceived Health Status

General Health	Total (%)
Very good	46.4% (male) and 44.3% (female)
Good	38.1% (male) and 40.2% (female)
Fair, Bad, Very Bad	15.5% (male) and 15.5% (female)

16.3.5.2 Local Context

Cork City Council are members of the National Healthy Cities and Counties of Ireland Network which is accredited to the World Health Organisation (WHO). The purpose of the network is to develop a structure to support Local Authorities in implementing a Health Ireland Framework. The network aims to:

- promote lifelong health and wellbeing,
- provide a means where local issues can influence national policy, and
- provide a voice for Ireland in the WHO Network of European National Healthy Cities Networks.

The Cork City Development Plan 2015-2021 seeks to *"…strengthen the green infrastructure of the city for recreational purposes, to promote biodiversity and to protect the landscape of the city"* and recognises that *"A diverse range of recreation and open spaces facilities, such as sports pitches, public parks, amenity spaces, indoor sports centres, and walking / cycling routes are vital to the health and wellbeing of Cork's residents, as well as those working and visiting the city."*

The plan has identified seven strategic goals for Cork City, which includes emphasis on human health. Specifically, Goal 2 aims to:

"Achieve a Higher Quality of Life, Promote Social Inclusion and Make the City an Attractive and Healthy Place to Live, Work, Visit and Invest In"

The 2016 Census results provides information on the self-perceived health status of the district. Results from the 2016 Census indicated that 90% and 84% of the population in Cork County and Cork City, respectively, identified themselves as being of "Very Good" or "Good" health. Refer to **Table 16.13.**

Table 16.13: Self-Perceived Health Status in Cork County and Cork City

General Health	Cork County Total	Cork City Total
Very good	263,057	67,953
Good	110,351	37,054
Fair	28,786	12,567
Bad	4,276	2,231
Very bad	967	555

General Health	Cork County Total	Cork City Total
Not stated	9,774	5,297
Total	**417,211**	**125,657**

According to the data, the highest percentage of the population of Cork City identified themselves as being of 'very good health', and the lowest percentage of the population identified themselves as being of 'very bad health'.

Table 16.14 outlines the self-perceived health status of the population living within Cork City.

Table 16.14: Perceived Health Status of the Population (Cork City)

General Health	Male	Female	Total
Very good	33,569	34,384	67,953
Good	18,075	18,979	37,054
Fair	5,929	6,638	12,567
Bad	1,062	1,169	2,231
Very bad	251	304	555
Not stated	2,836	2,461	5,297
Total	**61,722**	**63,935**	**125,657**

The 2016 Census also shows that 32,357 usually resident persons within the Cork City Municipal District were noted as having a disability, and 8,876 usually resident persons were noted as being carers of someone with a disability.

Figure 16.1 illustrates the trends in death rates per 100,000 for the four principal causes of death over the period 2007-2012 for all ages for the Cork area, compared to the overall figures for Ireland.

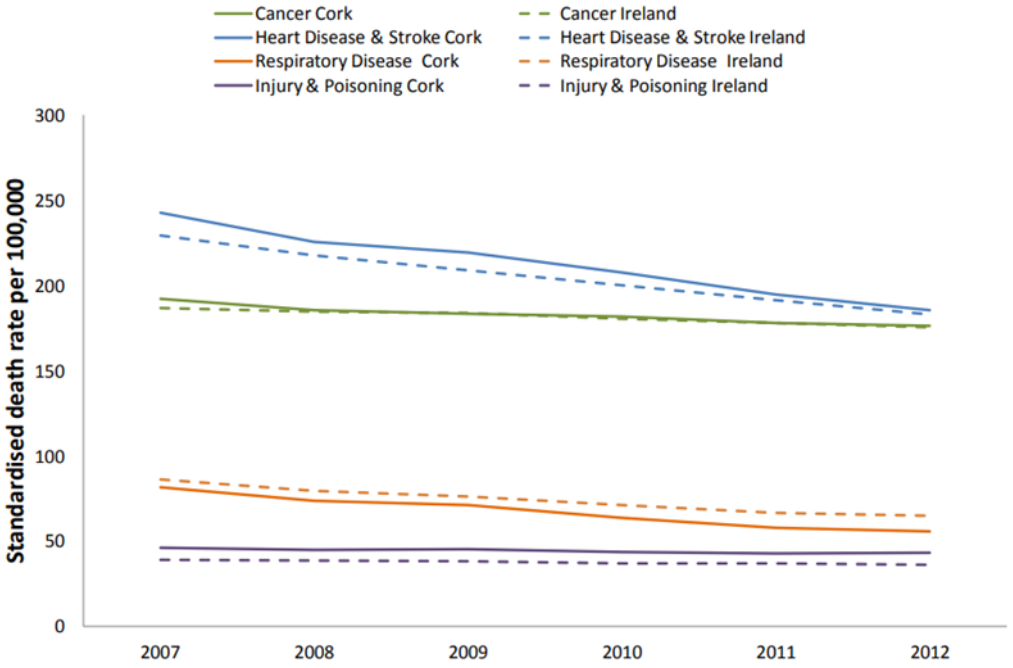

Figure 16.1: Trends in death rates per 100,000 for the four principal causes of death over the period 2007-2012 for all ages compared to Ireland. Note: Data is for Cork City and Cork County | Source: County Cork Age Profile (HSE, 2015).

Radon accounts for more than half of the total radiation dose received by the Irish population. As a known carcinogen in the same category as tobacco smoke and asbestos, it is a cause of lung cancer. Approximately 300 cases of lung cancer in Ireland every year can be linked to radon. These lung cancer cases are principally associated with exposure to radon in the home, but exposure in the workplace is also a contributor. In the workplace, the employer must protect the health of workers from this identifiable risk.

Certain areas of the country are more likely to have a high number of homes with excessive levels of radon and these areas are known as High Radon Areas. The online EPA maps were reviewed to determine the risk of the proposed development site to exposure to Radon. According to the EPA, 1 to 5% of the homes in the10km grid square in which the proposed development lies are estimated to be subject to radon concentrations exceeding the national Reference Level of 200 Becquerel per cubic metre (Bq/m^3)[79].

Information on the receiving environment with regards air and water quality is provided in **Chapter 8** *Air Quality and Climate*, and **Chapter 14** *Water* in this EIAR.

16.3.6 Health and Safety

The proposed development site is a brownfield site and is currently undeveloped. The remainder of the site is currently vacant.

[79] https://www.epa.ie/radiation/radonmap/ [Accessed 2021]

Based on the ground investigation carried out to date, the principal contaminants of concern are considered to comprise metals, hydrocarbons and asbestos, which are assumed to be present throughout the made ground. Per- and poly-fluoroalkylated substances (PFAS) are also a contaminant of concern, and was detected in the surface water sample from the drainage channel that runs parallel to Centre Park Road. PFAS is likely to be present in the sediment in the drainage channel.

The main pathways for these contaminants to reach site users (construction workers and future residents) are though dermal contact with the soil or consuming produce grown in the soil (metals and hydrocarbons) or inhalation of dust generated by the soil (AiS).

Exposure to the metals and hydrocarbons in the soil are considered to be a long-term issue and short-term exposure is not envisaged to have any significant impacts on health of those exposed to them. However, there is no safe limit for asbestos, hence, even short-term exposure is considered potentially harmful.

For the soil on site, as AiS presents the greatest risk to receptors, if soil exposure is minimised to reduce the impact of AiS then this will manage the risks from metals and hydrocarbons.

Further details on the contaminants identified within soils has been described in **Chapter 13** *Land, Soils, Geology and Hydrogeology* and the Contaminated Land Remediation Strategy report which has been included with this planning application. Refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** *Construction Environmental Management Plan (CEMP)* for details on mitigation measures to be implemented during construction activities.

16.4 Likely Significant Effects

The potential effects of the proposed development on population and human health are assessed under the following headings:

- Social Consideration
- Traffic and Accessibility
- Economic Activity
- Land Use
- Human Health.

16.4.1 'Do-Nothing' Scenario

Social Consideration

It is likely that the land would continue to remain undeveloped if the proposed development did not go ahead.

The effect of a Do-Nothing Scenario on social considerations for the lands would therefore be neutral.

Traffic and Accessibility

If the proposed development did not go ahead, the current traffic and accessibility to the proposed development area (identified in **Chapter 7** *Traffic and Transportation*) would remain the same.

The effect of a Do-Nothing Scenario on traffic and accessibility would be neutral.

Economic Activity

If the development was not to go ahead, it is likely that most of the land would remain in a derelict state. As the site has been zoned the Cork City Development Plan 2015-2021 as "*Mixed Use Development", "Public Open Spaces" and "Neighbourhood Centres",* it is likely that the site could be developed at a later stage under an alternative development proposal.

Assuming the land remained under its current use, there would be no increase in either direct or indirect employment through construction or operation.

Land Use

If the development site was to remain in its current state, there would be no effect in terms of conflicts with surrounding land uses. However, the proposed development site is currently underutilised. Therefore, the effect of a Do-Nothing Scenario on land use would therefore be moderate negative.

Human Health

If the proposed development did not proceed, the health and safety issues associated with the site identified in **Section 16.3.6** (in the form of asbestos containing materials within soils) would remain present. Furthermore, due to the undeveloped nature of the site, possible anti-social behaviour may occur. This would result in an adverse effect on health and safety.

Conclusion

In the scenario where the proposed development does not proceed as planned, the underlying risk to human health as a result of asbestos containing materials identified in the area would remain. However, none of the proposed effects concerning social considerations, traffic and accessibility, economic activity and land use as a result of the construction and operation of the proposed development would occur. Under the 'do nothing' scenario, the population and human health baseline as presented in **Section 16.3** would persist and no new significant effects would arise.

In addition, under the 'do nothing' scenario the positive effects associated with the proposed development, such as the creation of employment during construction and operation, the economic benefits to the proposed development area associated with an increase in trade, and the provision of residential units would not arise. Consequently, the contribution of the proposed development towards the national housing crisis and national policy objectives would not occur.

16.4.2 Construction Phase

The proposed development is anticipated to be constructed from East to West in 4 phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase (as described in **Chapter 4** *Construction Strategy*). An opening year of 2025 is assumed for Phase 1 and Phase 2 of the development. Following this, construction will commence at Phase 3 and Phase 4, for completion in 2030.

Social Consideration

This phased construction strategy will allow completed residential and retail units to open and operate, while the subsequent construction phases occur. This will have a positive impact on the surrounding area, as the opening of these units will contribute to meeting the population demand for housing in Cork City, as efficiently as possible.

However, this will create an increased local exposure to construction traffic, noise, vibration or dust on site while the residential units are in use. This may negatively affect the social activities in the proposed development site and wider Cork City and South Docklands area. Refer to **Chapter 7** *Traffic and Transportation*, **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration* for a quantification of these effects.

The nearest residential areas include existing residences on the north side of the River Lee, such as Myrtle Hill Terrace circa 220m to the north, existing residences to the southeast, such as Birch Grove and Botanika, circa 300m distant, future residences that are already subject to planning consent, such as the those on the neighbouring former Ford Distribution Site to the east, future residents within the site of the proposed development that may be affected by the later phases of the proposed development, and the neighbouring amenity areas of the Marina Walk and the Marina Park Development.

Other sensitive receptors in the wider area include Páirc Uí Chaoimh (200m), Shandon Boat Club (20m), Lee Rowing Club (60m), the School of the Divine Child (Lavanagh Centre) circa 600m southeast of the subject site, Ballintemple National School on Crab Lane circa 670m to the south, and St Joseph's SMA Church on Blackrock Road, circa 570m to the south.

Hoarding/security fencing will be erected along all boundaries adjacent to public areas which will restrict access to the work area for health and safety reasons. Therefore, there will be a visual effect to some degree during the construction phase as it will alter the passive amenity available to the residents, visitors to local businesses, and passers-by. The hoarding that will be erected along the boundary will therefore have a temporary slight negative effect on people using the surrounding area, for the duration of the construction phase.

Taking into consideration the proximity of future proposed development dwellings (following each construction phase) and commercial properties to the proposed development, it is considered with appropriate mitigation measures (as detailed in the CEMP and throughout the EIAR) in place, traffic, noise, vibration and dust from the construction process will have intermittent temporary

imperceptible to slight adverse effects on social activities in the local area. In the short-term these impacts will mostly affect future residents of the proposed development during construction Phases 3 and 4.

Traffic and Accessibility

The level of traffic generated during the construction phase of the proposed development has the potential to affect road users. In addition, due to the phasing of the proposed development, construction traffic will also impact the residents of the proposed development as subsequent Phases 3 and 4 are constructed.

During construction, diversions regarding traffic flow and pedestrian access within the site will be put in place. However, with the implementation of the Construction Traffic Management Plan the potential effects will be slight and temporary.

It is anticipated that the average number of construction workers employed during the construction phases including supervision will be in the region of 350, with a peak of up to 400 personnel at the most intensive fit-out and landscaping phases. This will result in a total of 250 vehicles travelling to the site on a daily basis for construction workers. Allowing for a 10% increase to account for miscellaneous trips and a further 10% increase for lunchtime, this increases the total to 300 vehicles per day at the site. Refer to **Chapter 7** *Traffic and Transportation* for further details.

There will be intermittent short-term slight effects on the residents and road users in the vicinity of the proposed development for the duration of the works.

Potential effects on the local transport network and resultant disruptions to vehicle, pedestrian and cyclist movements are discussed in **Chapter 7** *Traffic and Transportation*.

Economic Activity

The construction process will result in direct employment of an average of 350 to 400 (peak) construction workers on site during the proposed construction period.

The employment of the construction workers would therefore have a moderate positive effect on economic activity in the short term.

In addition to direct construction employment, the construction of the proposed development will require suppliers and materials which will have an indirect slight positive impact on construction suppliers and associated economic activity in the short term.

Please refer to **Chapter 7** *Traffic and Transportation*, **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration* for details of predicted traffic, noise and air quality effects respectively arising from construction activities. No significant residual effects are predicted in respect of these aspects during the construction phase.

With appropriate mitigation measures such as a Construction Environmental Management Plan (CEMP) in place, noise, vibration and dust from the construction process will have an imperceptible effect on adjacent businesses and

it is considered that there will be a positive effect on economic activity. Refer to **Appendix 5.1** for the CEMP.

Land Use

The site will have a temporary hoarding/security fencing during the construction phase, which will be erected along boundaries as necessary to restrict access to the work area for health and safety reasons. Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate.

Hoarding/security fencing will block views of the area and alter the passive amenity available to local residents and passers-by. This will mostly impact residents throughout construction Phases 3 and 4. It is therefore considered that this will result in a short-term slight negative effect.

Construction activities will have a short-term slight negative effect on surrounding land uses related to traffic, noise, vibration or dust.

Human Health

The construction strategy will require all contractors to comply with legislation and good industry practice with regard to the health and safety of both workers and the public. As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses. Further details are provided in **Chapter 5** *Construction Strategy*.

There is potential for the release of asbestos fibres to the environment, during the construction phase, which could have an effect on human health. However, any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility. If these procedures are adhered to, there will be no significant negative effect on human health as a result of asbestos. In addition, the construction works are not expected to cause any change to disease vectors (typically insects such as ticks, fleas, flies, sandflies and some freshwater snails). The construction phase will have no effect on living conditions or on vulnerable groups in the vicinity or wider area.

Metals, hydrocarbons and PFAS were also detected on site. Exposure to the metals and hydrocarbons in the soil are considered to be a long-term issue however short-term exposure is not envisaged to have any significant impacts on human health. During the construction there is a risk of PFAS coming in to contact with the gravels underneath the sediment in the drainage channel if construction is poorly managed, however this does not pose a significant risk to human health. Appropriate remediation and mitigation measures will be implemented for the identified contaminants. Further details have been included in **Chapter 13** *Land, Soils, Geology and Hydrogeology* and the Contaminated Land Remediation Strategy report which has been included with this planning application package.

Prior to the commencement of works, the contractor will prepare site specific risk assessments and implement the identified control measures. To ensure all employees, and visitors, are aware of the hazards on site an induction will be given to all personnel. In addition, the contractor will prepare method statements for construction activities.

Due to the phasing of the proposed development, there is an increased risk of exposure to construction traffic, noise, dust and odours to the residents within the proposed development area. This may negatively affect population and human health in the proposed development site and wider Cork City South Central area. Refer to **Chapter 7** *Traffic and Transportation*, **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration* for an evaluation of these effects.

Table 16.15 presents a summary of the conclusions of the assessments of the effects of air and noise emissions and major accident and disasters on human health during the construction of the proposed development.

Table 16.15: Potential effects on Human Health during Construction

Aspects	Potential Effects on Human Health	Additional Information
Air Quality	Background concentrations of air pollutants are well below the air quality standard limits determined for the protection of human health. Any increase in the concentrations, due to the construction of the proposed development, are not expected to cause an exceedance of the air quality standards. However, due to the phasing of the proposed development, the construction activities in relation to dust would be of "moderate" scale. Following the implementation of mitigation measures, dust from construction related activities is predicted to have a short term, imperceptible to slight negative effect.	**Chapter 8** *Air Quality and Climate*
Noise and Vibration	The noise associated with proposed development, including traffic noise, will be temporary in the construction phase, and discontinuous. However, due to the phasing of the proposed development there is an increased risk of noise affecting residents within the proposed development site. Vibration limits as per BS 7385-217 will be adhered to during construction to ensure minimal effects of vibration on human health.	**Chapter 9** *Noise and Vibration*

Aspects	Potential Effects on Human Health	Additional Information
Land, **Soils**, Geology and Hydrogeology	While a number of contaminants are present within the proposed development site, prolonged exposure is not predicted and with the implementation of appropriate mitigation measures, no significant negative effects are predicted.	**Chapter 13** *Land, Soils, Geology and Hydrogeology*
Major Accidents and Disasters	The phasing of the proposed development includes risk of major accidents and disasters as residents occupy buildings while subsequent construction Phases 3 and 4 are completed. No potential significant effects on human health associated with major accidents and disasters have been identified in the proposed development.	**Chapter 18** *Major Accidents and Disasters*

Taking into consideration the scale and nature of the proposed construction works and the mitigation measures to be implemented, it can be concluded that there will be no significant effect on human health as a result of the construction of the proposed development. To minimise the effects of the proposed development on human health during construction site specific management plans, such as Construction Environmental Management Plan (CEMP), Construction and Demolition Waste Management Plan (CDWMP) and Construction Traffic Management Plan (CTMP) will be developed. These detailed and robust plans will outline the mitigation and monitoring measures to be implemented.

Conclusion

During the construction phase of the proposed development, there is potential for negative effects on population and human health resulting from construction related traffic, noise, dust, odour and contaminated materials. Potential effects will be managed by means of a Construction Environmental Management Plan (CEMP), Construction Traffic Management Plan (CTMP) and Contaminated Land Remediation Strategy. These effects will be not significant and short term in nature.

16.4.3 Operational Phase

An opening year of 2025 is assumed for Phase 1 and Phase 2 of the development. Following this, construction will commence at Phase 3 and Phase 4, with completion of the proposed development planned for 2030.

Some construction impacts will occur during initial operational phases as a result of continued construction at the site. These have been considered within the construction phase of the proposed development, as outlined in **Section 16.4.2.**

Social Consideration

In terms of operational effects, the issues of concern for social activities in the area would be primarily visual amenity and traffic safety.

Considering the size and scale of the proposed development it is predicted the site will have a visual effect on the surrounding population as it will be visible from a number of locations. However, the proposed development has been designed to be in keeping with the immediate surroundings. Impacts on visual amenity are addressed in detail in **Chapter 12** *Townscape and Visual*.

The proposed development will bring back into use a derelict site which is undeveloped and respond to the demand for housing in Cork City, which will have a positive effect on the local community, in visual terms, as well as personal safety, well-being (in terms of a derelict site) and availability of a public realm.

The proposed development will provide local amenity through the provision of residential units, retails units, gym, crèche, café / restaurant, neighbourhood centre and public realm, and indirectly support businesses in the area.

The proposed development includes public realm design, which will contribute to an increase in open green spaces in the area, which is known to have a positive effect on human health.

The proposed development will also provide local employment as outlined in **Section 16.4.2.**

However, due to the phasing of the proposed development, there may be potential visual impacts within the proposed development site for the period while the remaining phases of construction are carried out. This will have a short-term negative impact and will not occur in the long-term once the construction phase has been completed.

Due to the height of the proposed development blocks, the local wind microclimate may be influenced which could affect the existing and proposed pedestrian environment. Accordingly, a Wind Microclimate Assessment was carried out to assess this impact and ascertain if the proposed development enhances or reduces the quality of the public realm.

Overall, the proposed development is expected to provide a suitable environment for pedestrians and occupants to carry out a wide variety of ‘sitting’, ‘standing’ and ‘strolling’ activities. Most thoroughfares in and around the development are expected to experience wind conditions that are suitable for their intended use, with the exception of Block A which is subject to higher wind speeds due to its height. Wind mitigation measures, such as landscaping, balcony screens and higher balustrades, have been adopted throughout the design to reduce the windiness across the site and to assist in keeping wind conditions within acceptable limits. The Wind Microclimate Study report is included in the planning application documentation.

A Daylight and Sunlight analysis was completed in order examine the performance of the proposed development and the impact of the proposed development on the surrounding environment. It was concluded that there will be

a negligible impact on the levels of daylight and sunlight availability within the permitted development site to the south-east and good daylight and sunlight is possible for any future development to the west of the proposed development. In addition, the proposed development will provide an environment that allows for sunlight penetration into the created amenity spaces and the south facing apartment windows, in addition to producing appropriate levels of daylight within the apartments themselves.

No significant adverse effects on social considerations are predicted during the longer-term operation of the proposed development.

Traffic and Accessibility

Traffic associated with the operational phase of the proposed development is predicted to have an insignificant impact on national roads and a minor impact on local roads within the surrounding area. As outlined in **Section 16.4.2**, the phasing of the proposed development will have an increased risk of impacting local roads during initial operational phases of the proposed development, while the remaining construction Phases 3 and 4 are carried out.

In the long-term, the proposed development will generate additional vehicles on the road network within the local vicinity, however this impact will not be significant.

Economic Activity

On completion, the proposed development will lead to additional direct employment opportunities. This employment would come from the commercial and retail units, maintenance services required for the buildings, grounds and security. Management services may also be required for premises occupied by tenants. The direct economic effect would be long-term and positive.

Indirect employment will come from residents/visitors of the proposed development contributing to the local economy. The proposed development will contribute to attracting new businesses and services to the area which would also benefit the wider community.

The indirect economic effect of the operational phase on the local population will therefore be moderate, long-term and positive.

Land Use

The operational phase of the proposed development will result in a change of land use. The development proposed is the conversion of an existing undeveloped site to an area for use as residential development. This will consist of the demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works.

The proposed development will align with a number of zoning objectives listed in the Cork City Development Plan (2015-2021) as discussed above in **Section 16.3.3**, in that it is a mixed-use development that will provide 823 no. apartments, café/restaurant units, retail and commercial units, creches and supporting tenant amenity facilities which are permitted in principle uses.

Human Health

No effects on human health are predicted during the operational phase. However, in the short term, while subsequent construction phases are carried out, there will be potential short-term effects on the human health of residents on the site in terms of construction noise, odours, dust and traffic.

The proposed development will promote health and safety in terms of layout and design and therefore the operational effect in terms of health and safety will be neutral in the long term.

There will be no emissions of toxic substances to the environment, during the operation of the proposed development, which could have an effect on human health in the long-term. However, while subsequent construction phases are carried out in the short-term there is potential for the release of asbestos fibres to the environment. Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility. If these procedures are adhered to, there will be no significant negative effect on human health as a result of asbestos.

Similarly, sediments containing PFAS that present a risk to the environment will be removed from site during the construction phase. Consequently, there will be no risk to the environment or significant effect on population and human health during the operational phase.

Given the appropriate and stringent mitigation measures to be employed, the long terms effects on population and human health are not considered to be significant as a result of contaminated material.

The operation of the proposed development is not expected to cause any change to disease vectors or have any effect on living conditions or on vulnerable groups in the vicinity or wider area.

Table 16.16 presents a summary of the conclusions of the assessments of the effects of air and noise emissions and major accident and disasters on human health during the operation of the proposed development.

Table 16.16: potential effects on Human Health during Operation

Aspects	Potential Effects on Human Health	Additional Information
Air Quality	Short term impacts on air quality from subsequent construction phases will be present on site during initial phases of operation. (Refer to **Section 16.4.2**) Background concentrations of air pollutants are well below	**Chapter 8** *Air Quality and Climate*

	the air quality standard limits determined for the protection of human health. There will be no long-term, routine operational process emission to air. Any increase in the concentrations, due to the operation of the proposed development, are not expected to cause an exceedance of the air quality standards. No perceptible effects on air quality are predicted.	
Noise and Vibration	Noise from subsequent construction phases will be present on site during initial phases of operation. This will have a short-term negative impact on residents. (Refer to **Section 16.4.2**). No perceptible increase in noise levels is predicted associated with the operation of the proposed development at sensitive receptors, and therefore no adverse effects on human health are predicted in the long term.	**Chapter 9** *Noise and Vibration*
Land, Soils, Geology and Hydrogeology	While a number of contaminants are present within the proposed development site, prolonged exposure is not predicted and with the implementation of appropriate mitigation measures, no significant negative effects are predicted.	**Chapter 13** *Land, Soils, Geology and Hydrogeology*
Major Accidents and Disasters	No adverse effects on human health have been identified that could plausibly be attributed to major accidents and disasters in the operational phase of the proposed development in the long term. However, there is an increased risk in the short-term while subsequent construction phases are carried out. (Refer to **Section 16.4.2**)	**Chapter 18** *Major Accidents and Disasters*

Conclusion

During the operational phase of the proposed development, there is potential for negative effects on population and human health resulting from construction related traffic, noise, dust and odour and contaminated material as a result of the project phasing. However, these impacts have been identified as short-term.

In the long-term, the proposed development is likely to result in an operational residual significant positive effect on the population through the provision of a range of residential units.

Employment will be generated during the operation of the proposed development resulting in a long-term positive impact.

16.4.4 Decommissioning Phase

It is intended that the proposed development will endure into the future, with modifications and refurbishments carried out as required, in response to changing commercial requirements. Should some or all of the proposed development be decommissioned, planning consent and environmental assessments would be required to ensure that adverse effects on the environment and associated adverse effects on population and human health would be minimised.

16.5 Mitigation Measures and Monitoring

16.5.1 Mitigation

A number of mitigation measures have been integrated into the design; or are proposed to reduce or eliminate any negative effects on nearby dwellings and businesses. These are discussed in the relevant chapters and include the following:

16.5.1.1 Construction Phase

There will be dust, noise and vibration emissions as well as traffic effects during the construction of the proposed development. The selected construction methodologies will minimise these short-term effects. Mitigation measures as discussed below, will also help to avoid/minimise effects during the construction phase of the proposed development.

Measures which will be implemented to minimise effects on the general amenity of residents will include:

- The erection of directional and information signage for members of the public to indicate alternative routes and paths to be taken and convey “Business As Usual” for adjoining businesses;
- The provision of information to local householders and businesses during the construction phase;
- The provision of community liaison and nomination of personnel to manage community relations;
- The implementation of a Construction Environmental Management Plan (CEMP) to minimise effects of construction works on local amenity and on traffic flow (refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** for further details);
- The implementation of a dust minimisation plan during the construction phase of the development as part of the CEMP;
- The preparation of an emergency response plan to cover foreseeable risks;
- Building design specifications which will take into account sustainable building practices;
- Building design which is of high quality, which will minimise the visual effect of the proposed tower development;

- The implementation of a Traffic Management Plan during the construction phase of development. A Construction Waste Management Plan will also be prepared by the Contractor; and
- Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility.

Mitigation measures in relation to contaminated material are outlined in **Chapter 13** *Land, Soils, Geology and Hydrogeology*.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions. Refer to **Chapter 7** *Traffic and Transportation* for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Chapter 8** *Air Quality and Climate* for details of dust mitigation measures.

Noise and vibration disturbance will also be minimised. Best practice measures for noise control on construction sites will be adhered to during construction. Refer to **Chapter 9** *Noise and Vibration* for further details of noise and vibration mitigation measures.

As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses. Further details are provided in **Chapter 5** *Construction Strategy*.

The overall design of the proposed development will be in accordance with the provisions of all relevant technical guidance and regulations.

16.5.1.2 Operational Phase

The overall effects of the proposed development will be permanent and positive, however, due to the construction phasing of the proposed development, construction mitigation measures will be required during operation (as outlined in **Section 16.5.1.1**).

Mitigation is only proposed for the operational phase when subsequent construction phases are being carried out or when maintenance works are required. Routine maintenance activity will include landscaping, cleaning of buildings, maintenance of hydrocarbon interceptors and grease traps, and picking of litter.

16.5.1.3 Decommissioning

The same mitigation measures will be employed for the decommissioning phase as for the construction phase, where relevant, and updated to reflect best practice at that time.

16.5.2 Monitoring

No monitoring is required during the construction or operation of the proposed development in relation to population and human health.

Any monitoring necessary for air quality and noise have been specifically outlined in **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration*, with respect to effects from the construction and/or operation and/or decommissioning of the proposed development.

16.6 Cumulative Effects

A review of Cork City Council online planning records has indicated that several other developments have been proposed within the surrounding area that may give rise to cumulative effects. Appropriate mitigation measures as well as a Construction Environmental Management Plan (CEMP) will be implemented to mitigate any potential negative cumulative effects arising from these developments.

16.6.1 Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the predicted increased in traffic volumes and the implementation of the Construction Environmental Management Plans for both projects, no significant cumulative negative effects on population and human health are predicted.

During the operational phase, there will be a long-term positive effect on population and human health, as a result of the provision of commercial and residential units through both projects which will aid in alleviating the current housing crisis and provision of local amenities for the public.

16.6.2 Other Developments

Several local developments have the potential to give rise to cumulative effects. Developments granted or pending planning permission or currently under construction include the following:

16.6.2.1 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will

require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

Due to the absence of significant effects on population and human health associated with this permitted development and the implementation of a Construction Environmental Management Plan, significant negative cumulative effects are not predicted.

During the operational phase, there will be a long-term positive effect on population and human health, as a result of the provision of residential units through both projects which will aid in alleviating the current housing crisis.

16.6.2.2 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and "nature" zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

Should the construction phases of these projects coincide for a period of time with that of the proposed development, given their temporary nature, the likelihood of any significant cumulative effect on population and human health is low and short term. In addition, any potential cumulative effects will be managed through the implementation of a *Construction Environmental Management Plan* (**Appendix 5.1**) and a Construction Traffic Management Plan.

No cumulative effects on population and human health are predicted to arise from the proposed development during the operational phase.

The potential for cumulative effects on population and human health has also been addressed in a number of chapters of this EIAR including **Chapter 7** *Traffic and Transportation*, **Chapter 8** *Air Quality and Climate*, **Chapter 9** *Noise and Vibration*, **Chapter 13** *Land, Soils, Geology and Hydrogeology*, **Chapter 14** *Water* and **Chapter 19** *Cumulative and Interactive Effects.*

It is anticipated that there will be no significant cumulative effects on the social, economic or land-use activity of the surrounding or transient population or on human health as a result of the proposed development. Further details have been included in **Chapter 19** *Cumulative Effects.*

16.7 Residual Effects

Overall, a direct moderate positive long-term residual effect on population and human health is predicted to occur as a result of the addition of residential areas and economic and employment opportunity associated with the proposed development.

16.7.1 Construction Phase

There will be short term adverse effects on population and human health during construction of the proposed development, from increased dust, noise and traffic. These are discussed in the relevant chapters of this EIAR, with suitable mitigation measures identified to avoid or minimise effects. As such, no significant negative residual effects are predicted.

16.7.2 Operational Phase

Operation of the proposed development will generate a long-term positive impact on the population of Cork City through provision of housing in response to the current housing crisis and contribution to meeting population demand. The operation of the proposed development will also result in a significant positive long-term effect on the local economy through direct employment, local trade, business opportunities and tourism.

The proposed development will permanently generate additional vehicles on the road network within the local vicinity, however this impact is considered to be non-significant.

16.8 References

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Cork City Council (2016) *Cork City Development Plan (2015-2021) – Variation No. 3 Vacant Sites*. Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-3-vacant-sites-copy.pdf [Accessed: January 2022]

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Directive 2012/18/EU of the European Parliament and the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (OJ L 197, 24.7.2012, p. 1).

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EPA (2003) Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)

EPA (2016) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)

EPA (2017) Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

EPA (August 2017) Guidelines on the information to be contained in Environmental Impact Assessment Reports

EPA Radon Map: https://www.epa.ie/environment-and-you/radon/radon-map/ [Accessed February 2022]

European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No 272 of 2009) as amended by the European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2012 (S.I. No. 327 of 2012); and the European Communities Environmental Objectives (Surface Water) (Amendment) Regulations 2015 (SI No. 386 of 2015).

IEMA (2017) Health in Environmental Impact Assessment - A Primer for a Proportionate Approach

Institute of Public Health Ireland (2009) Health Impact Assessment Guidance

US EPA (2016) Health Impact Assessment Resource and Tool Compilation

17 Material Assets

17.1 Introduction

This chapter describes the material assets, including utilities that could potentially be affected by the proposed development and the potential effects on land use at, and adjacent to the proposed development. Material assets are defined as:

"*Resources that are valued and that are intrinsic to specific places*"[80]

Whilst the current Draft EPA Guidelines[81] state that Material Assets:

"*Can now be taken to mean built services and infrastructure*".

The effects of the proposed development on the existing utility network are considered in this chapter, which includes effects on the following infrastructure:

- Electricity;
- Water Supply Infrastructure;
- Foul and Surface Water Drainage;
- Gas;
- Telecommunications (including broadband and TV).

Potential land-use issues include severance, loss of rights of way or amenities, conflicts, or other changes likely to ultimately alter the character and use of the surroundings. The EPA Guidelines state the following issues should be noted in particular in the consideration of land use:

- Hotels and holiday accommodation;
- Tourism and recreational facilities and amenities;
- Economic activities such as visitor attractions based on cultural/historic or natural assets; and
- Other premises which although located elsewhere, may be the subject of secondary effects such as alteration of traffic flows or increased urban development should also be considered.

Material assets of natural origin are addressed in other chapters of this EIAR, namely, **Chapter 11** *Archaeology, Architecture and Cultural Heritage,* **Chapter 13** *Land, Soils, Geology and Hydrogeology,* **Chapter 14** *Water* and **Chapter 15** *Resource and Waste Management*.

This chapter was prepared by Debbie Flynn. Details of Debbie's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

[80] Environmental Protection Agency (2015) Draft Advice Notes for Preparing Environmental Impact Statements
[81] EPA (2017) Guidelines on Information to be contained in Environmental Impact Assessment Reports (draft)

17.2 Assessment Methodology

17.2.1 Study Area

The study area comprises the main areas of the proposed construction works, i.e., the former Tedcastles site, and the surrounding infrastructure network.

A description of the existing environment of the study area is given in **Chapter 4** *The Proposed Development*.

17.2.2 Significance Criteria – Utilities

Significance criteria for effects on utilities are set out in **Table 17.1** in accordance with the requirements of the relevant EPA guidance documents.

Table 17.1: Significance Criteria for Effects on Material Assets - Utilities

Significance Level	Criteria
Profound	Profound effect occurs where there is permanent disruption to a utility service or where there is significant surcharging of an existing system.
Major	Major effect occurs where there is long-term disruption to a utility service or where there is minor surcharging of an existing system.
Moderate	Moderate effect occurs where there is medium-term disruption to a utility service or significant increase of flow within an existing system.
Slight	Slight effect occurs where there is short-term disruption to a utility service or minor increase of flow within an existing system.
Imperceptible	Imperceptible effect occurs where there is temporary disruption to a utility service or no quantifiable increase of flow within an existing system.

17.2.3 Significance Criteria – Land Use

The assessment of land use considers any significant existing trends evident in the overall growth or decline of various land uses, or any changes in the proportion of one type of activity relative to any other. Consideration is also given to any residential, commercial or sensitive land use activities which are likely to be directly affected, including any resultant environmental effects.

The location of any sensitive neighbouring occupied premises likely to be directly affected, and other premises which although located elsewhere, may be the subject of secondary effects such as alteration of traffic flows or increased urban development is also considered.

The assessment of land use effects is carried out in accordance with the criteria outlined in **Table 17.2**.

Table 17.2: Classification of Effects to land-use

Significance Level	Criteria
Significant Negative	An effect that would substantially affect land use and property (i.e. property acquisition and CPO)
Moderate Negative	An effect that causes a noticeable negative change to the character of land use in the area (including business and trading environment)
Slight Negative	An effect that causes noticeable negative changes in businesses or premises without affecting trade
Imperceptible	No appreciable effects on land use (property use and operation)
Slight Positive	An effect that causes noticeable positive changes in land use or property
Moderate Positive	An effect that causes a noticeable positive change to land use (character, intensity etc.)
Significant Positive	An effect that would substantially positively affect land use (causing positive changes in property, intensity and nature of use and attractiveness of business or trading patterns)

17.3 Baseline Environment

17.3.1 Land Use and Property

This section addresses the land use context of the receiving environment only. The historic and cultural significance of the urban fabric is addressed in **Chapter 11** *Archaeology, Architectural and Cultural Heritage*.

17.3.1.1 Core Study Area

All works for the proposed development are within the redline planning boundary which is shown in **Figure 1.2** of **Chapter 1** *Introduction.*

The site is a brownfield site containing several storage containers and external storage areas. There are two open channels, one adjacent to the southeastern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

The proposed development aligns with the following Zoning Objectives outlined in the Cork City Development Plan (CCDP) 2015-2021:

- ZO 16: Mixed Use Development – to promote the development of mixed uses to ensure the creation of a vibrant urban area, working in tandem with the principles of sustainable development, transportation and self-sufficiency;
- ZO 14: Public Open Space – to protect, retain and provide for recreational uses, open space and amenity facilities, with a presumption against developing

land zoned public open space areas for alternative purposes, including public open space within housing estates; and

- ZO 9: Neighbourhood Centres – to protect, provide for and / or improve the retail function of neighbourhood centres and provide a focus for local services.

There is no residential development proposed on lands zoned Public Open Space or Schools.

For a detailed description of the proposed development refer to **Chapter 4** *The Proposed Development.*

17.3.1.2 Adjoining Land Uses

The existing site is bounded by Centre Park Road to the south, by the Marina Greenway to the north and by the former ESB power station to the west.

The EPA Corine (2018) data has classified the site of the proposed development as *Artificial Surfaces – Industrial and Commercial Units.*

The proposed development is located approximately 30m to the south of the River Lee.

Several commercial facilities are located to the west of the proposed development site in the Marina Commercial Park along Centre Park Road, including the Office of Public Works (OPW) and the Marina Market.

Páirc Uí Chaoimh GAA Pitch sports and leisure facility is located to the east of the proposed development.

17.3.1.3 Construction Compound

The site will be securely fenced in advance of construction, and a construction compound will be established within the boundary of the site.

17.3.2 Existing Infrastructure

17.3.2.1 Utilities

Due to the previous uses of the site, there are various existing underground services present throughout the area. Most of these will be deemed redundant in the context of serving the proposed development.

Electricity

There are currently 110kV overhead power lines in the western part of the proposed development site, which cross the River Lee north of the site, and these lines are currently live. A former ESB power station is located to the west of the proposed development site. The generating station is not operating but the there is an ESB substation on the site and this is live and has available capacity.

There are also existing underground power cables located within the proposed development site.

While there are no lighting poles located within the proposed development site, there are several of them located along Centre Park Road, Marina Road and Marquee Road.

Telecommunications

Eir have existing telecommunications infrastructure outside of the proposed development site along Centre Park Road and Marquee Road. Telecommunications cables enter the proposed development site from the existing access point along Centre Park Road. There are existing overhead telephone poles and lines located within the proposed development site.

There are several telecommunications installations for mobile network and wireless broadband connections within the surrounding area from which the site may be served. The closest is located at the Marina Radio Site on Centre Park Road, approximately 60m south of the site. Other telecommunication infrastructure in the wider area is located at Pairc Uí Chaoimh (approximately 250m southeast), Beechbrook Capital Ireland DAC (approximately 500m southwest) and Ballintemple (approximately 750m southeast).

Gas

There is no gas infrastructure located within the proposed development site. A gas pipeline currently runs along Centre Park Road and south along Marquee Road outside of the proposed development site.

17.3.2.2 Water Supply

There is a 300mm diameter Irish Water potable watermain located along Centre Park Road, west of the junction with Marquee Road, which then downsizes to 100mm diameter east of the junction with Marquee Road.

17.3.2.3 Surface Water

Surface water runoff from the site drains to the existing open channels to the north and southeast of the site. There are two existing culverts on the southeastern open channel, one at the southern corner of the site, and one at the main site entrance. The open channels flow east before ultimately discharging to the Lee via an outfall at the point of confluence of the two open channels.

17.3.2.4 Foul Water

There is a 525mm diameter Irish Water foul water sewer which flows east along Centre Park Road, which then increases to a 600mm diameter along Marquee Road, prior to connecting to the existing 3.2m diameter Interceptor Sewer along Monahan Road.

17.4 Likely Significant Effects

17.4.1 'Do-Nothing Scenario'

In the "Do -Nothing" scenario, where the proposed development does not proceed as planned, the existing land use and material assets in the study area will remain in their current state.

17.4.2 Construction Phase

17.4.2.1 Utilities

Electricity

A connection will be made to the existing network where there is sufficient capacity for the proposed development. No significant disruptions to power supply in the area are envisaged as part of the proposed development unless decided by the ESB. There is adequate capacity in the existing network to cater for the electrical load associated with the proposed construction activities. Therefore, the effect on electricity supply during construction is predicted to be slight negative and short-term.

Telecommunications

There will be no disruption to existing telecommunications as a result of the construction of the proposed development.

Gas

There will be no effect on gas services as a result of the construction of the proposed development.

Water Supply

A temporary water and sewer connection will be made to facilitate the works. These temporary construction connection points will be agreed with Irish Water. Discussions with Irish Water indicate there is sufficient potable water capacity in the vicinity of the site to serve the proposed development. As the potable water demand due to construction is expected to be less than the proposed development it is assumed there is sufficient capacity for the construction phase.

Surface Water

During construction, surface water will be drained via the existing surface water drainage system. The contractor will be required to put temporary measures in place to limit the rate of surface runoff from the site. They will also manage the quality of surface water runoff and ensure run-off from the site does not result in excessive siltation of the receiving drainage channels. This will be managed in line with the Construction Environmental Management Plan (CEMP), which is included as **Appendix 5.1**. Several measures may include:

- Silt traps located around the site to collect run off, with settled solids removed regularly and water recycled and reused where possible.
- Filter drains and silt pits will be located at the base of all embankments, settled solids will be removed from the silt pits regularly.

Bypass hydrocarbon interceptors will be installed in the car park drainage network prior to connection to the existing drainage network to prevent any hydrocarbon spills from entering the surrounding drainage network.

Foul Water

The foul drainage associated with the welfare facilities at the construction compound will include a canteen, toilets, showers and hand wash basins.

Foul water from the construction phase of the proposed development will tie into the existing infrastructure in which there is sufficient capacity. If this is not the case it is expected the contractor will store foul flows on site and periodically dispatch it for disposal at an appropriately licensed treatment facility.

Therefore, there will be no significant negative effect.

17.4.2.2 Land Use

The construction of the proposed development will require temporary use of lands during the construction phase, which will transition to a permanent change during the operational phase.

There will be no direct effect on any property adjoining the redline boundary during the construction phase.

Construction phase effects on land use and property are expected to be slight negative, temporary effects**.**

17.4.3 Operational Phase

Following consultation with relevant service and utility providers, it is understood that all local service and utility networks have sufficient capacity to support the operation of the proposed development. The potential for effects on material assets is therefore not expected to be significant during the operational phase.

17.4.3.1 Utilities

Electricity

There will be an increase in demand on the existing power supply network during the operation of the proposed development. The estimated electrical load for the operation of the proposed development is 6.5mVA. Eight new substations (14 new transformers) will be installed as part of the proposed development including new diesel generators, which will be for emergency use only. A connection will be made to the existing network.

As there is sufficient capacity within the network this effect is expected to be slight negative and long-term.

Telecommunications

During operation, there is sufficient existing telecommunications capacity to serve the proposed development.

Gas

A connection will be made to the existing gas pipeline located on Centre Park Road.

Gas will only be used in the 3 no. restaurant/café and not for heating the proposed residential units. There is capacity within the existing network to serve the proposed development.

As such, the effect on gas supply is predicted to be slight negative and long term.

Water Supply

It is proposed that a new potable watermain will be provided to serve the proposed development with a single new connection from the existing watermain located in Centre Park Road. Downstream of the connection point a bulk water meter will be installed as per Irish Water requirements. External fire hydrants are expected to be served from the potable water network.

The average water demand for the proposed development site is predicted to be 6.07 l/s, while the peak demand is estimated to be 30.31 l/s. A pre-connection enquiry has been submitted to Irish Water. Irish Water have reviewed this and provided a Confirmation of Feasibility (CoF) letter. This letter states that upgrade works to Irish water infrastructure as part of a strategic project for the South Docks is required in order to serve the proposed development. The current timeline for delivery of these works is Q4 2022. Irish Water have confirmed that they have no objection to the proposal.

Therefore, the effect on water supply as a result of the proposed development will be slight negative and long term.

Surface Water

It is proposed to collect all surface water from the proposed development within a new dedicated surface water network. A network of primary carrier pipes will be provided, located predominantly within the development roads. Proposed roads and part of the proposed buildings will discharge to this pipe network and will ultimately discharge to existing open channels located adjacent to the proposed development site. Parts of the proposed buildings will also discharge directly to the open channels.

Where possible external levels will be designed to encourage surface water runoff towards soft landscaping features to reduce peak runoffs, provide additional attenuation and improve water quality.

There will be a requirement to make amendments to the existing channels where the proposed development interfaces with them. This will include re-profiling the

channel located to the north and culverting sections of the channel to the south. The re-profiling of the northern channel will ensure the existing levels and storage volumes are maintained as per the CSDLS (Cork South Docklands Levels Strategy). Where the southern channel is proposed to be culverted, the culvert size will be agreed with CCC to ensure it meets the requirements set out in the CSDLS.

The proposed surface water drainage strategy for the site has been developed to meet the requirements as set out in the CSDLS.

The CSDLS states that development plots in the south docklands must limit their post development peak discharge rate to a maximum of 68 l/s/ha.

In order to meet this criterion, attenuation/tidal holding tanks/ponds will be provided on site. Each catchment will discharge to the existing open channels along the northern and southern boundaries at a rate no greater than 68 l/s/ha.

SUDS features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to the attenuation/tidal holding volume requirements. Rain gardens, permeable paving and under drained planters/tree pits will be incorporated into the design where feasible.

While the above-mentioned SUDS features will contribute to improved water quality it is also proposed that the surface water runoff collected from carparking areas will pass through a Class 1 By-Pass Hydrocarbon Interceptors. It is proposed to discharge all surface water runoff from the under-croft carparks to the foul network. Furthermore, all surface water channel drains and road gullies will include sump units where silt can be collected and removed.

As such, no significant negative effects on surface water are predicted.

Foul Water

It is proposed to collect all foul water from the proposed development through a dedicated foul sewer network. As described above, there is an existing Irish Water sewer along Centre Park Road, east of the junction with Marquee Road. It is proposed that one connection point to this existing sewer will be made from the new foul water drainage network. It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

Although the carparks are covered by the podium deck, drainage will be provided for the carpark hardstanding in the form of linear drainage channels. Any rainfall associated with vehicles entering the carpark will be conveyed to the foul water drainage network. This will be kept separate from the surface water drainage beneath the under-croft carpark i.e. there will be no positive connection to any external stormwater drainage. Runoff from the car parks will pass through a hydrocarbon interceptor prior to discharging into the foul water network. Non-return valves will be fitted on the downstream end of this drainage connection to

prevent water backing up into the carpark areas during conditions where the receiving drainage network is surcharged.

If required grease traps will be incorporated into the development at any required locations to collect fats, oils and greases (FOGs) from entering the main foul drainage network. A maintenance routine will be established on all grease traps as required based on the levels of FOGs produced.

A pre-connection enquiry form has been submitted to Irish Water outlining the details of the proposed development and anticipated wastewater flows. Irish Water have confirmed that there is capacity within their network to serve the proposed development without upgrade to their network.

As their will be an increase in foul run-off as a result of the proposed development, the effect on foul drainage will be slight negative and long term.

17.4.3.2 Land Use

The effect of the proposed development on land use will be significant, positive and permanent as the proposed development will create a new residential asset for the Cork City docklands area. The proposed development will provide additional housing for the growing City population, as well as amenity areas for retail and childcare. The proposed development will result in a boost for the local economy in the area.

Indirect effects will occur due to an increase in population at the area as a result of the proposed development. This will encourage increased spending in the area.

This will have a moderate positive and long-term indirect effect on land-use.

17.4.4 Decommissioning Phase

It is intended that the proposed development will endure into the future, with modifications and refurbishments carried out as required, in response to changing commercial requirements. Should some or all of the proposed development be decommissioned, planning consent and environmental assessments would be required to ensure that adverse effects on the environment would be minimised.

17.5 Mitigation Measures and Monitoring

17.5.1 Construction Phase

Utilities

The Contractor will be required to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained throughout construction unless this has been agreed in advance with the relevant service provider and local authority.

All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

Land use

No mitigation measures for land-use are required.

17.5.2 Operational Phase

Utilities

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained throughout operation unless this has been agreed in advance with the relevant service provider and local authority.

Land Use

No mitigation measures are required as it is expected that the proposed development will have a positive effect on land use and property.

17.5.3 Monitoring During Construction and Operation Phase

During both construction and operational phases, services will continue to be consulted throughout the design and construction processes.

17.6 Cumulative Effects

Projects with which there is the potential for cumulative effects on material assets are discussed below.

17.6.1 The Former Cork Warehouse Company

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the implementation of the Construction Environmental Management Plans for both projects and the capacity within the existing networks, the likelihood of significant cumulative effects on material assets is slight and short-term.

During the operational phase, there will be a long-term positive effect on land-use as a result of the provision of residential units through both projects which will aid in alleviating the current housing crisis.

17.6.2 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the implementation of the Construction Environmental Management Plan and the capacity within the existing networks, the likelihood of significant cumulative effects on material assets is slight and short-term.

During the operational phase, there will be a long-term positive effect on land-use as a result of the provision of residential units through both projects which will aid in alleviating the current housing crisis.

17.6.3 Marina Park Development Phase 2

This project will provide improved public amenities and “nature” zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

There will be a cumulative long term positive effect on land use due to the provision of residential units and amenity areas which will help to transform the docklands into an attractive place to live.

17.7 Residual Effects

No significant negative effects on land-use or utility services are predicted.

The effect of the proposed development on land use will be significant, positive and permanent as the proposed development will create a new residential asset for the Cork City docklands area. The proposed development will provide additional housing for the growing City population, as well as amenity areas for retail and childcare. The proposed development will result in a boost for the local economy in the area.

17.8 References

Cork City Council (2016) *Cork City Development Plan 2015-2021 – Variation No. 3 Vacant Sites*. Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-3-vacant-sites-copy.pdf [Accessed: January 2022]

Cork City Council (2016) *Cork City Development Plan 2015-2021*. https://www.corkcity.ie/en/existing-cork-city-development-plan-2015-2021/ [Accessed: December 2021]

Cork City Council (2021) *(Draft) Cork City Development Plan 2022-2028*. Available at: https://www.corkcity.ie/en/proposed-cork-city-development-plan-2022-2028/draft-plan-documents/ [Accessed: December 2021.]

EPA (2017) *Guidelines on Information to be contained in Environmental Impact Assessment Reports (draft)*

EPA Corine (2018) Available at: https://gis.epa.ie/EPAMaps/

18 Major Accidents and Disasters

18.1 Introduction

This chapter describes the likely significant negative effects on the environment arising from the vulnerability of the proposed development to risks of major accidents and/or disasters.

The assessment of the vulnerability of the proposed development to major accidents and disasters is carried out in accordance with the EIA Directive that entered into force on 16 May 2017 (EC, 2014) which states the need to assess:

"The expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned"

The underlying objective of this assessment is to ensure that appropriate precautionary actions are taken for any development projects which *"because of their vulnerability to major accidents and/or natural disasters, are likely to have significant adverse effects on the environment".*

Based on the requirements of the EIA Directive, this chapter seeks to determine:

- The relevant major accidents and/or disasters, if any, that the proposed development could be vulnerable to;
- The potential for these major accidents and/or disasters to result in likely significant adverse environmental effect(s); and
- The measures that are in place, or need to be in place, to prevent or mitigate the potential significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

A detailed description of the proposed development is provided in **Chapter 4** *Proposed Development.*

This chapter was prepared by Dan Garvey. Details of Dan's qualifications and experience are included in **Chapter 1** of this EIAR *Introduction*.

18.2 Assessment Methodology

18.2.1 General

Major accidents and/or disasters are hazards that have the potential to affect and be affected by the proposed development. These include accidents during construction and operation caused by operational failure and/or natural hazards.

The scope and methodology of this assessment is centred on the understanding that the proposed development will be designed, built and maintained in line with best international current practice and in compliance with the relevant health and safety standards. As such, major accidents resulting from the proposed development will be very unlikely.

Notwithstanding the above, a risk analysis-based methodology that covers the identification, likelihood and consequence of major accidents and/or disasters has been used for this assessment. The scope and methodology presented in the following sections is based on the provisions of the EIA Directive, the Draft EPA Guidelines and guidance documents and other published risk assessment methodologies as described in **Section 18.2.2,** as well as professional judgement.

18.2.2 Guidance and legislation

18.2.2.1 Legislation

The following paragraphs are set out in the EIA Directive in relation to major accidents and/or disasters.

Recital 15 of the EIA Directive states that:

"In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council and Council Directive 2009/71/Euratom, or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met."

Note: Directive 2012/18/EU **is the directive** on the control of major-accident hazards involving dangerous substances, referred to as the COMAH or Seveso III Directive.

Article 3 of the EIA Directive provides that the EIAR shall identify, describe and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape deriving from (amongst other things) the "*vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned*".

Specifically, the information relevant to major accidents and/or disasters to be included in the EIAR is set out in Section 8 of Annex IV of the EIA Directive as follows:

"(8) A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried

out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies".

18.2.2.2 Guidance documents

Several guidance documents and published plans have been reviewed and considered in order to inform this assessment as described in the following sections.

Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)

The European Commission Guidance outlines the legislative and key considerations that should be taken into account in the preparation of EIARs with respect to major accidents and/or disasters.

The Guidance lists the following issues which EIARs should address:

- What can go wrong with a Project?
- What adverse consequences might occur to human health and to the environment?
- How likely are these consequences?
- What is the Project's state of preparedness in case of an accident/disaster?
- Is there a plan for an emergency situation?

Draft EPA Guidelines (EPA, 2017)

The draft EPA guidelines refer to major accidents and/or disasters in several sections including:

- Characteristics of the Project – Under Section 3.5.2, it is stated that the project characteristics should include *"a description of the Risk of Accidents – having regard to substances or technologies used."*
- Impact assessment - Under Section 3.7.1 it is stated that the impact assessment should, in accordance with Annex IV (5) of the EIA Directive, include *"the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)."*
- Likelihood of Impacts - Under Section 3.7.3 it is stated that *"To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk).*

- *This may be supported by general risk assessment methods or by systematic risk assessments required under other regulations e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment."*

Guidance on Assessing and Costing Environmental Liabilities (EPA, 2014)

The EPA has developed guidance that presents a systematic approach for assessing and costing environmental liabilities associated with the closure, restoration/aftercare and incidents associated with licensed facilities. This guidance is targeted at activities governed by EPA authorisations including Industrial Emissions Directive (IED), Integrated Pollution Prevention and Control (IPPC), wastewater discharge authorisations (WWDA) and dumping at sea (DaS) regimes.

Specifically, this document provides guidance on the identification and quantification of risks, focusing on unplanned, but possible and plausible events that may occur during the construction and operational phases of projects. Guidance is also provided on a range of risk assessment and evaluation techniques that could be employed.

A Framework for Major Emergency Management Guidance Document 1-A Guide to Risk Assessment in Major Emergency Management (Government of Ireland, 2010)

The Department of the Environment, Heritage and Local Government, as it then was, published a guidance note[82] in January 2010 on best practice in the area of risk assessment for major emergency management.

This Guidance sets out a risk assessment procedure that should be applied and documented by the principal response agencies as a basis for major emergency management. The risk assessment procedure underpins work in the later stages of the emergency management cycle. A significant benefit of the risk assessment process is that it can help establish confidence in the Major Emergency Management system, by showing it to be both realistic and logical.

This document describes the various stages of the risk assessment process and how it should be employed to inform mitigation and detailed planning during major emergency situations. Part 1 of the guidance sets out the risk assessment process and defines criteria for classifying impact and likelihood scenarios, as well as a process for recording the risk assessment.

National Risk Assessment for Ireland 2020 (Government of Ireland, 2020)

The most recent National Risk Assessment forms a critical subset of the strategic process ('National Risk Assessment: Overview of Strategic Risks') undertaken by the Government on an annual basis to assess national risks. The purpose of the assessment is to identify national hazards across a broad range of emergencies, to

[82] Department of the Environment Heritage and Local Government (2010) A Guide to Risk Assessment in Major Emergency Management. Available from: http://mem.ie/wp-content/uploads/2015/05/A-Guide-to-Risk-Assessment.pdf

assess the likelihood and effect of these risks and to inform actions at national level aimed at mitigating such risks, including the allocation of resources.

18.2.3 Baseline Conditions

A desk-based study has been undertaken to establish the baseline environment relevant to the risk assessment, as this will influence both the likelihood and the effect of a major accident and/or disaster.

Establishing the local and regional context, prior to completion of the risk assessment, enables a better understanding of the vulnerability and resilience of the area to emergency situations, and of the potential for the surrounding environment to pose a risk of a major accident or disaster, which could affect the proposed development. **Section 18.3** provides an overview of the baseline environment that has been considered for this assessment.

18.2.4 Impact Assessment Methodology

18.2.4.1 General

As discussed above, the scope and methodology of this assessment is based on the intention that the proposed development will be designed, built and maintained in line with best international current practice and, as such, the vulnerability of the proposed development to risks of major accidents and/or disasters is considered to be *low*.

Certain potential unplanned events, such as pollution incidents to ground and watercourses and flooding events, are addressed in detail in the relevant environmental assessment chapters. These include **Chapter 13** *Land, Soils, Geology and Hydrogeology* and **Chapter 14** *Water*.

18.2.4.2 Risk Assessment Methodology

Overview

The site-specific risk assessment identifies and quantifies risks focusing on unplanned, plausible incidents occurring during the construction, operation and decommissioning of the proposed development. The following steps were undertaken as part of the site-specific risk assessment:

- Identification of potential risks;
- Risk classification - likelihood and consequence assessment; and
- Risk evaluation.

Identification of Potential Risk

In accordance with the EC Guidance, potential risks are identified in respect of:

(1) Potential vulnerability to major accident or disaster; and

(2) Potential to cause major accidents and/or disasters.

The identification of potential risks has focused on non-standard but plausible incidents, which could occur at the proposed development during construction, operation and decommissioning, and which could cause a non-trivial impact on the environment. Similarly, if an off-site event could cause the proposed development to have a non-trivial impact on the environment, this was also classified as a plausible risk.

Risk Classification

Classification of Likelihood

Once the potential risks were identified, the likelihood of occurrence of each was assessed. The effectiveness of safety procedures and pollution prevention measures was considered when estimating the likelihood of an identified potential incident occurring. **Table 18.1** indicates the likelihood ratings that have been applied.

The approach adopted has assumed a 'risk likelihood' where one or more aspects of the likelihood description are met.

Table 18.1: Risk Classification Table – Likelihood

Ranking	Likelihood	Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communities; and/or little opportunity, reason or means to occur. May occur once every 100-500 years.
3	Unlikely	May occur at some time; and/or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisation's worldwide; some opportunity, reason or means to occur. May occur once per 10-100 years.
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence. Will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

Classification of Consequence

The consequence rating assigned to each potential risk has assumed that mitigation measures and/or safety procedures have failed to prevent an effect on the environment. The consequence rating of the effect, if the incident occurs, is indicated in **Table 18.2**.

The consequence of a potential risk to the proposed development has been determined where one or more aspects of the consequence description are met i.e. potential risks that have no consequence have been excluded from the assessment.

Table 18.2: Risk Classification Table – Consequence

Ranking	Consequence	Effect	Description
1	Minor	Life, Health, Welfare Environment Infrastructure Social	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localised effects <€0.5M Minor localised disruption to community services or infrastructure (<6 hours).
2	Limited	Life, Health, Welfare Environment Infrastructure Social	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Personal support satisfied through local arrangements. Simple contamination, localised effects of short duration €0.5-3M Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare Environment Infrastructure Social	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support. Simple contamination, widespread effects or extended duration €3-10M Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare Environment Infrastructure Social	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated Heavy contamination, localised effects or extended duration €10-25M Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare Environment Infrastructure Social	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated. Very heavy contamination, widespread effects of extended duration. >€25M Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community

Ranking	Consequence	Effect	Description
			unable to function without significant support.

Risk Evaluation

Once classified, the likelihood and consequence ratings have been multiplied to establish a 'risk score' to support the evaluation of risks by means of a risk matrix.

The risk matrix (as outlined in **Table 18.3)** indicates the critical nature of each risk. The risk matrix has been applied to evaluate each of the risks associated with the proposed development. The risk matrix is colour coded to provide a broad indication of the critical nature of each risk:

- The red zone represents 'high risks';
- The amber zone represents 'medium risks'; and
- The green zone represents 'low risks'.

Table 18.3: Risk Matrix

Likelihood							
	Very likely	5					
	Likely	4					
	Unlikely	3					
	Very unlikely	2					
	Extremely Unlikely	1					
			Minor	Limited	Serious	Very Serious	Catastrophic
			1	2	3	4	5
			Consequence Rating				

18.3 Baseline Conditions

18.3.1 Disasters

Ireland's geographic position means natural disasters such as earthquakes or tsunamis, which might pose a risk to developments of this nature and scale in other locations, are less likely to occur and less likely to be of significant magnitude. In recent times there has been an increase in the number of severe weather events in Ireland, particularly those leading to flash flooding, snow, lower than usual temperatures and strong winds. Some of the more recent severe weather events include Storm Ciara January 2020, Storm Denis February 2020 and Storm Jorge March 2020. For the more recent severe weather events (Storm Ophelia, October 2017, Storm Emma February 2018) the Cork City Major Emergency Plan was activated. For Storm Barra in December 2021, and more recently, for Storm Eunice in February 2022, Cork City Council activated its Severe Weather Plan.

With regard to disasters, severe weather conditions pose a plausible potential risk to the proposed development.

18.3.2 Major Accidents

According to Cork City Council Major Emergency Plan[83] there have been incidents in Cork City which necessitated the activation of the Plan. Such incidents included a multi vehicle road traffic collision in the city centre involving a bus and several cars (June 2007) and the plane crash at Cork Airport (2012).

Following the completion of risk assessments by Cork City Council, a number of risks within the functional area were identified which had various implications for the Local Authority. These risk assessments were prepared with regard to other existing emergency plans for facilities within the city e.g. Port of Cork Emergency Plan, Kent Rail Interagency Emergency Plan, Jack Lynch Tunnel Interagency Emergency Plan.

18.3.3 Licensed facilities

Seveso Sites

The European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations, 2015 (SI 209 of 2015) implement the requirements of the Council Directive 2012/18/EU on the control of major accident hazards involving dangerous substances. These Regulations require operators of establishments where dangerous substances are used or stored in large quantities to take all measures necessary to prevent and mitigate the effects of major accidents to man and the environment.

[83] Cork City Council Emergency Response Plan (2020) Available at: https://www.corkcity.ie/en/council-services/services/emergency-management/major-emergency-response/mep-cork-city-section-1-to-15-2021.pdf

Establishments which fall under the remit of the Seveso III Regulations are classified as either "Lower Tier" or "Upper Tier" sites under The Chemical Act ((Control of major Accident Hazards Involving Dangerous Substances Regulations, 2015) which transposed the Seveso III Directive (2012/18/EU) into Irish law).

In accordance with the Regulations, operators of a "Lower Tier" and "Upper Tier" establishments are required to prepare a site-specific Major-Accident Prevention Policy (MAPP) which is implemented by site specific procedures and systems. In addition, operators of Upper-Tier Establishments must prepare a Safety Report and Internal Emergency Plan.

There are six Seveso sites located within Cork City, four of which have been identified within 2.3km of the proposed development site. These include Goulding Chemicals Limited ("Lower Tier"), located on Centre Park Road and three sites located across the River Lee at Tivoli Industrial Estate; Flogas Ireland Limited ("Upper Tier"), Calor Teoranta ("Upper Tier"), and Chemical Bulk Storage Limited ("Lower Tier").

The nearest Seveso site to the proposed development is Goulding Chemicals Ltd, located at Centre Park Road, Cork. This is a "Lower Tier" Seveso site, and is situated over 570m southwest the proposed development site. The activity on site includes production of a wide range of fertilisers as well as Avail technology and Granulated Lime. The proposed development does not lie within the consultation zone for Goulding Chemicals Ltd.

In addition, there are three "Upper Tier" and "Lower Tier" Seveso sites located between 1.8km and 2.3km northwest of the proposed development at Tivoli Industrial Estate, Cork.

Flogas Ireland Limited has been identified as an "Upper Tier" establishment and is located approximately 1.8km northeast of the proposed development site. The site involves the storage and supply of Liquified Petroleum Gas (LPG), Natural Gas and Electricity.

Similarly, Calor Teoranta has been identified as an "Upper Tier" establishment and is located approximately 2.2km northeast of the proposed development site at Tivoli Industrial Estate, Cork. It also supplies and distributes LPG.

Chemical Bulk Storage Limited is located approximately 2.3km northeast of the proposed development site at Unit 19 Tivoli Industrial Estate, Cork. This site is identified as a "Lower Tier" establishment for the storage of chemicals including acetic anhydride, ammonium sulphate and solvents.

The proposed development does not lie within consultation distance from the identified Seveso sites in Cork City.

Industrial Emissions Licenses

The nearest site to the proposed development which has a license issued by the EPA is the Electricity Supply Board (ESB) Marina Generating Station (IE Licence No. P0578-03) which lies adjacent to the site of the proposed development. The main activity at this licensed site relates to power generation.

All other licensed facilities lie outside the 2km buffer zone. These include Heineken Ireland Limited, which is identified as an Integrated Pollution Control (IPC) licensed facility lying more than two kilometres west of the proposed development. Its main activity is classified as Food and Drink.

Refer to **Table 18.4** for further details on licensed facilities identified within proximity to the proposed development.

Table 18.4: Licensed Sites in relation to proposed development

Name	License Ref.	Approx. Distance from Proposed Development Site	Activity
Electricity Supply Board (Marina)	P0578-03	Adjacent	Power Generation Station
Heineken Ireland Limited	P0445-01	>2km – West	Food and Drink

Airport Safety Zone

To safeguard the public and aid safe navigation, Cork Airport has a two-zone protection system in place: Inner and Outer Public Safety Zones. Developments within the “Inner Zones”, which are located closest to the runways and have a greater risk of accident, are not permitted. However, developments are permitted within the Outer Zone, subject to restrictions.

The Cork City Council functional area is not directly impacted by the ‘Inner’ Zone however, as illustrated in Map 19 of the Cork City Development Plan 2015-2021, the ‘Outer’ Zone traverses parts of Cork City.

The proposed development is located well outside of this Outer Public Safety Zone (circa 4.8km) and is circa 6.25km from Cork Airport. The site also lies outside the current Obstacle Limitation Surfaces, Outer Noise Contour and International Civil Aviation Organisation (ICAO) Buildings Restricted Areas. In addition, the peak height of the proposed development, which is Block A at approximately 121.6m, is over 183m below the flight paths at Cork Airport (305mOD).

An Aeronautical Assessment carried out as part of the planning application process for the proposed development, has concluded that the proposed development at the Former Tedcastles Site complies with all aviation and aeronautical requirements affecting the site.

Further information has been included in the Aeronautical Assessment Report which is included in this planning application package.

18.4 Likely Significant Effects

18.4.1 Do-Nothing Scenario

If the proposed development does not proceed, there will be no increase in the likelihood of major accidents occurring, or indeed the consequences should a major accident occur. There will be no change to the likelihood or consequences of a disaster, therefore the site would remain the same as it is currently.

18.4.2 Construction Phase

Nine potential risks specific to the construction phase of the proposed development have been identified. These are outlined in the construction phase risk register in **Table 18.5.**

Table 18.5: Risk Register – Construction Phase

Risk ID	Potential Risk	Possible cause
C1	Contamination of the waterbodies, groundwater and surface water	- Spill or leaks - Electrical fault or faulty equipment - Extreme weather (rain, wind) - Employee negligence
C2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)
C3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	- Spill or leak of flammable or explosive substance - Construction vehicle or machinery collision - Electrical fault or faulty equipment
C4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion
C5	Structural collapse and/or damage to existing structures/ buildings	- Faulty equipment - Vehicle collision / accidental damage to existing structures - Vibration from ground works/ excavations
C6	Unplanned outages/ disruption to site services	- Strike to unmapped services/ utilities during excavation works

Risk ID	Potential Risk	Possible cause
C7	Vehicle collision (involving construction traffic)	- Driver error - Failure of vehicle control systems
C8	Release of asbestos fibres to atmosphere or surface water	- Inadequate handling and removal of un-surveyed Asbestos Containing Materials (ACMs)
C9	Aeronautical collision	- Crane height interfering with flight paths

18.4.3 Operational Phase

Six potential risks specific to the operational phase of the proposed development have been identified. These are outlined in the operational phase risk register in **Table 18.6.**

Table 18.6: Risk Register – Operational Phase

Risk ID	Potential Risk	Possible cause
Op1	Contamination of water courses - surface and ground water	- Equipment failure or power outage leading to uncontrolled discharge
Op2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)
Op3	Fire/ Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	- Sabotage/arson leading to ignition of fuel and/or explosion Electrical faults - Use of flammable/ combustible materials - Formation / ignition of explosive atmosphere
Op4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion
Op5	Vehicle collisions on site	- Failure of vehicular operations. - Increase in traffic movements within the site
Op6	Aeronautical collision	- Building height interfering with flight paths

Risk ID	Potential Risk	Possible cause
		- Absence of Aviation Warning Lighting

18.4.4 Decommissioning Phase

Seven potential risks specific to the decommissioning phase of the proposed development have been identified. These are outlined in the decommissioning phase risk register in **Table 18.7.**

Table 18.7: Risk Register – Decommissioning Phase

Risk ID	Potential Risk	Possible cause
D1	Contamination of waterbodies, groundwater and surface water	- Spill or leaks - Electrical fault or faulty equipment - Extreme weather (rain, wind) - Employee negligence
D2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)
D3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	- Spill or leak of flammable or explosive substance; - Construction vehicle or machinery collision - Electrical fault or faulty equipment;
D4	Incident at Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion
D5	Structural collapse and/or damage to existing structures	- Faulty equipment - Vehicle collision / accidental damage to existing structures
D6	Unplanned outages/ disruption to services	- Damage to services/utilities
D7	Vehicle collision involving decommissioning traffic	- Driver error - Failure of vehicle control systems

18.4.5 Risk Assessment

The potential risks identified in **Sections 18.6.2, 18.6.3** and **18.6.4** have been assessed and the resulting risk analysis is presented in **Table 18.8**.

The risk register is based upon possible risks associated with the proposed development.

The consequence rating assigned to each potential risk assumes that the proposed mitigation measures and safety procedures have failed to prevent the effect on the environment.

Table 18.8: Risk Assessment

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
Construction								
C1	Contamination of the waterbodies, groundwater and surface water	- Spill or leaks - Electrical fault or faulty equipment - Extreme weather (rain, wind) - Employee negligence	- Contamination of water bodies - Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of soils, which would have to be remediated or removed as waste	2	As described in **Chapter 5** *Construction Strategy*, all potential polluting materials such as fuels and oils will be stored in appropriately bunded containment areas designed to retain spillages, in addition a designated bunded refuelling area on an impermeable surface will be provided at the construction compound. The construction phase of the proposed development will be carried out in accordance with construction best-practise and provisions of the CEMP The likelihood of a spill or leak resulting in contamination of water bodies or soil is "very unlikely".	3	Given the location of the proposed development to Cork Harbour SPA contamination of watercourses would have a 'serious' consequence as it could lead to '*simple contamination with widespread effects of extended duration'.*	6
C2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)	- Sedimentation of nearby watercourses - Damage to, or depletion of aquatic habitats and species - Destruction or damage to site services/ infrastructure	2	Taking into consideration existing ground levels and the lack of historic flooding events within the footprint of the proposed development, flooding of working areas caused by an extreme weather event during the construction phase is considered "very unlikely" The existing site drainage network and the employment of good construction management practices will minimise the risk of pollution of nearby watercourses. During the construction phase the contractor will further develop the Construction Environmental Management Plan (CEMP) (**Appendix 5.1**) which ensures that control measures for all extreme weather events will be included in the Plan and associated Method Statements.	3	If extreme weather events caused damage to infrastructure during construction, it could cause injury and/or fatality in an extreme case. Flooding of the working areas (although very unlikely) resulting in high levels of silt and sediment entering the water body would have a "serious" consequence.	6
C3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	- Spill or leak of flammable or explosive substance - Construction vehicle or machinery collision - Electrical fault or faulty equipment	- Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of groundwater resources - Contamination of soils, which would have to be remediated or removed as waste - Injury /illness/loss of life	2	A fire and/or explosion during the construction phase is considered "very unlikely" as the quantities of flammable or explosive materials required, which could ignite or spill, will be minimal and will be confined to the construction compound. In any areas with electrical equipment, or hydrocarbons, water will not be used for firefighting. As part of the CEMP the contractor will ensure that all relevant fire safety	3	In the event of an explosion / fire, the consequence could be "serious" in that there is potential for s*ignificant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), and large number of people displaced.*	6

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
			- Generation of waste, as damaged equipment would have to be disposed of		requirements are in place prior to commencement of works.			
C4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion	- Injury or loss of life - Destruction of property and/or infrastructure - Damage to terrestrial / aquatic life - Impact on air quality associated with emissions	1	Seveso and IE Licenced sites are regularly inspected with operators required to prepare and submit site-specific Major Accident Prevention Policy (MAPP) and Annual Environmental Reports to the relevant regulatory/ enforcement agencies (i.e. the Health and Safety Authority and Environmental Protection Agency). Given the stringent environmental and safety measures associated with such licenced sites the likelihood of such an incident occurring during construction is considered 'extremely unlikely'.	4	According to the HSA website, *"major industrial accidents involving dangerous substances pose a significant threat to humans and the environment; such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident".* On the basis the consequence is deemed to be 'very serious'.	4
C5	Structural collapse and/or damage to existing structures/ buildings	- Faulty equipment - Vehicle collision / accidental damage to existing structures - Vibration from ground works/ excavations	- Injury or loss of life - Destruction of property and /or infrastructure	2	Method statements will be prepared for all construction activities and best practice construction measures will be implemented by the contractor during construction. A Construction Traffic Management Plan (CTMP) will be developed by the Contractor and presented to Cork City Council for approval prior to commencement of the construction works. The CTMP will contain detailed temporary traffic management drawings for each construction stage. The likelihood of such an incident during construction resulting is considered 'very unlikely'.	3	In the event of a structural collapse during the construction phase, due to the number of workers on site at any given time, the consequence is considered to be 'serious' with a significant number of peopled being affected.	6
C6	Unplanned outages/ disruption to site services	- Strike to unmapped services/ utilities during excavation works	- Damage/ disruption to existing facilities, processes and infrastructure on site	2	Prior to the commencement of works the contractor will consult with the services and utilities mapping of the site. While the risk of disruption to services during the construction phase of the proposed development is acknowledged, it is not expected to result in a major accident/disaster. Considering the location of site utilities and infrastructure are well known the likelihood of unplanned outage / disruption to site services is "very unlikely"	2	On the basis that in the event of a power-outage on site, an emergency response plan would be in place and backup systems available. Therefore, the consequence of an unplanned outage is "limited".	4
C7	Vehicle collision (involving construction traffic)	- Driver error - Failure of vehicle control systems	- Injury or loss of life	3	A Construction Traffic Management Plan (CTMP) will be developed by the Contractor and presented to CCC for approval prior to commencement of the construction works. The CTMP will contain detailed temporary	2	In the event of a road accident, or collision with a vehicle, pedestrian, site personnel or cyclist the consequence would be 'limited' in that there is the potential for single fatality or a few serious injuries with	6

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
					traffic management drawings for each construction stage. The likelihood of such an incident occurring during construction is considered 'unlikely'.		hospitalisation and medical treatment required.	
C8	Release of asbestos fibres to atmosphere or surface water	- Inadequate handling and removal of un-surveyed Asbestos Containing Materials (ACMs)	- Contamination of water bodies - Danger of human interaction	3	Given that the site is a brownfield site and has previously been used as a storage site, there is the potential to encounter asbestos containing materials. However prior to the commencement of demolition works an asbestos audit will be undertaken on all structures to be demolished. Any asbestos containing materials will be in accordance with Construction Environmental Management Plan. Therefore, the likelihood of encountering asbestos containing materials is considered "unlikely".	2	Given that if asbestos containing materials are unexpectedly uncovered, it will be disposed of in a suitable fashion, therefore the consequence is considered 'limited'. As in; '*Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Personal support satisfied through local arrangements. Simple contamination, localised effects of short duration'.*	6
C9	Aeronautical collision	- Crane height interfering with flight paths	- Injury or loss of life - Destruction of property and /or infrastructure	1	Climbing cranes used for construction may add 30-40m in height to the highest apartment block, Block A (121.55m) with the topmost point reaching ~160m during construction phase. However, given the 170m height difference between the proposed Block A (121.55m) and Cork Airport's Outer Horizontal Surface limit (292mOD), any potential interference with aviation and flight paths will only occur in exceptional circumstances. With mitigation measures in place, such as prior notification to IAA and use of aviation warning lights on cranes, the likelihood of this is considered "extremely unlikely".	4	In the event of an aeronautical collision with a crane during construction, the consequence is considered to be "very serious" with fatalities, serious injuries and heavy contamination.	4
Operation								
Op1	Contamination of water courses - surface and ground water	- Equipment failure or power outage - Extreme weather/flooding event	- Contamination of water bodies - Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of groundwater and/ or surface water - Contamination of soils, which would have to be remediated or removed as waste	2	Given wastewater and surface water arising from the operation of the proposed development will connect into the existing drainage channels which have sufficient capacity to support the proposed development the likelihood of contamination of watercourses occurring as is considered 'very unlikely'.	3	Given the location of the proposed development to Cork Harbour SPA contamination of watercourses would have a 'serious' consequence as it could lead to '*simple contamination with widespread effects of extended duration'.*	6

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
Op2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)	- Sedimentation of nearby watercourses - Damage to, or depletion of aquatic habitats and species - Destruction or damage to site services/ infrastructure	2	Given the high level design of the proposed development, and taking into consideration existing ground levels and the lack of historic flooding events within the footprint of the proposed development, flooding of working areas caused by an extreme weather event during the construction phase is considered “very unlikely”.	3	If extreme weather events caused flooding of the area or damage to infrastructure the consequence has the potential to be ‘serious’ resulting in simple contamination, widespread effect of extended duration and community only partially functioning.	6
Op3	Fire/ Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	- Sabotage/arson leading to ignition of fuel and/or explosion - Electrical faults - Use of flammable/ combustible materials - Formation / ignition of explosive atmosphere	- Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of groundwater resources - Effects on ambient air quality - Contamination of soils, which would have to be remediated or removed as waste - Injury/illness/loss of life - Generation of waste, as damaged equipment would have to be disposed of	1	A fire and/or explosion during the operational phase is considered “extremely unlikely” as the quantities of flammable or explosive materials required, which could ignite or spill, will be minimal.	4	Should a fire and/or explosion occur, the consequence would be “very serious” resulting in fatalities, serious injuries and heavy contamination. Should contamination of soil occur, the contamination would be localised but of extended duration.	4
Op4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion	- Injury or loss of life - Destruction of property and/or infrastructure - Damage to terrestrial / aquatic life - Impact on air quality associated with emissions	1	Seveso and IE Licenced sites are regularly inspected with operators required to prepare and submit site-specific Major Accident Prevention Policy (MAPP) and Annual Environmental Reports to the relevant regulatory/ enforcement agencies (i.e. the Health and Safety Authority and Environmental Protection Agency). Given the stringent environmental and safety measures associated with such licenced sites the likelihood of such an incident occurring during construction is considered ‘extremely unlikely’.	4	According to the HSA website, *“major industrial accidents involving dangerous substances pose a significant threat to humans and the environment; such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident”.* On the basis the consequence is deemed to be ‘very serious’.	4
Op5	Vehicle collisions on site	- Failure of vehicular operations. - Increase in traffic movements within the site	- Injury or loss of life - Destruction of property and /or infrastructure	2	Given the limited car parking available on site, the designated routes and speed limits for on-site traffic movements and the slight increase in operational traffic i.e. material deliveries and waste removal, the likelihood of a vehicle collision on site is considered ‘very unlikely’.	2	In the event of a vehicle collision on site the consequence would be ‘limited’ in that there is the potential for single fatality or a few serious injuries with hospitalisation and medical treatment required.	4

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
Op 6	Aeronautical collision	- Building height interfering with flight paths - Absence of Aviation Warning Lighting	- Injury or loss of life - Destruction of property and /or infrastructure	1	The proposed development site is well clear of all of Cork Airport's Public Safety Zones and Noise Contours, and beyond all Building Restricted Areas related to its Navaids. In addition, given that Block A's building height (121.55m) is significantly below the 292mOD Cork Airport's Outer Horizontal Surface (~170m difference), and implementation of aviation warning lighting fitted to Block A, the likelihood of an aeronautical collision occurring would be "extremely unlikely" and may only occur in exceptional circumstances.	4	Given that Block A will include 770 bedspaces, there is potential for a significant number of people in the area to be affected by a potential aeronautical collision with Block A including: *5 to 50 fatalities, up to 100 serious injuries, up to 2,000 evacuated.* In the extremely unlikely event of an aeronautical collision, the consequence could be *very serious*.	4
Decommissioning								
D1	Contamination of waterbodies, groundwater and surface water	- Spill or leaks - Electrical fault or faulty equipment - Extreme weather (rain, wind) - Employee negligence	- Contamination of water bodies - Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of groundwater and/ or surface water - Contamination of soils, which would have to be remediated or removed as waste	1	In the unlikely event the proposed development is decommissioned only above ground structures will be removed; all below ground services and structure will remain in-situ; A decommissioning environmental management plan will be prepared for the decommissioning phase, similar to the CEMP. Given no earthworks will be undertaken during the decommissioning phase and the implementation of the decommissioning environmental management plan, the likelihood of a spill or leak resulting in contamination of water bodies or soil is "extremely unlikely".	3	Given the location of the proposed development to Cork Harbour SPA contamination of watercourses would have a 'serious' consequence as it could lead to '*simple contamination with widespread effects of extended duration'.*	3
D2	Extreme weather events affecting infrastructure	- Flooding - High winds/ storms - Extreme temperatures (primarily low giving rise to snow/ ice conditions)	- Contamination/ sedimentation of nearby watercourses; - Damage to, or depletion of aquatic habitats and species. - Destruction or damage to site services/ infrastructure	1	Taking into consideration the existing ground levels, the lack of historic flooding events within the site and no ground works will be carried out as part of the decommissioning phase, flooding of working areas due to extreme weather events resulting in silt run-off entering nearby watercourses is considered "extremely unlikely" Additionally, no earthworks will be associated with the decommissioning phase.	3	If extreme weather events caused flooding or damage to infrastructure the consequence has the potential to be 'serious' resulting in simple contamination, widespread effect of extended duration and community only partially functioning.	3
D3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g.	- Spill or leak of flammable or explosive substance - Construction vehicle or machinery collision	- Damage to, or depletion of habitats and species (incl. aquatic habitats and species) - Contamination of groundwater resources	1	The quantities of flammable or explosive materials on site, which could result in a fire or explosion or leak or spill, during the decommissioning phase will be very limited, and will be confined to the Contractors Compound.	3	In the event of an explosion / fire, the consequence could be "serious" in that there is potential for s*ignificant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive*	3

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
	watercourse, groundwater, soil)	- Electrical fault or faulty equipment	- Contamination of soils, which would have to be remediated or removed as waste - Injury /illness/loss of life - Generation of waste, as damaged equipment would have to be disposed of		Given the nature of the works associated with the decommissioning phase a fire and/or explosion during the decommissioning phase is considered "extremely unlikely".		*injuries (20), and large number of people displaced.*	
D4	Incident at Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	- Equipment or power failure - Vehicle / plant machinery collision - Sabotage/arson leading to ignition of fuel and/or explosion	- Injury or loss of life - Destruction of property and/or infrastructure - Damage to terrestrial / aquatic life - Impact on air quality associated with emissions	1	Seveso and IE Licenced sites are regularly inspected with operators required to prepare and submit site-specific Major Accident Prevention Policy (MAPP) and Annual Environmental Reports to the relevant regulatory/ enforcement agencies (i.e. the Health and Safety Authority and Environmental Protection Agency). Given the stringent environmental and safety measures associated with such licenced sites the likelihood of such an incident occurring during decommissioning is considered 'extremely unlikely'.	4	According to the HSA website, *"major industrial accidents involving dangerous substances pose a significant threat to humans and the environment; such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident".* On the basis the consequence is deemed to be 'very serious'.	4
D5	Structural collapse and/or damage to existing structures	- Faulty equipment - Vehicle collision / accidental damage to existing structures	- Injury or loss of life - Destruction of property and /or infrastructure	2	Prior to the decommissioning phase, detailed method statements and risk assessments will be prepared by the decommissioning contractor. In addition, the contractor will prepare a Traffic Management Plan which will designate traffic routes and timings of works to ensure separation of the works area from the site personnel. Taking into consideration the robust mitigation measures to be implemented the likelihood of such an event occurring was determined to be "very unlikely".	3	In the event of a structural collapse at the site, due to the number of workers on site at any given time, the consequence is considered 'serious', resulting in fatalities, serious or extensive injuries and a number of people being affected.	6
D6	Unplanned outages/ disruption to services	- Damage to services/utilities	- Damage/ disruption to existing facilities, processes and infrastructure on site	1	Given no underground services will be removed as part of the decommissioning phase, the likelihood of damaging or striking existing site services/ utilities is considered 'extremely unlikely'.	2	On the basis that in the event of a power-outage on site, an emergency response plan would be in place and backup systems available. Therefore, the consequence of an unplanned outage is "limited".	2
D7	Vehicle collision involving decommissioning traffic	- Driver error - Failure of vehicle control systems	- Injury or loss of life - Destruction of property and /or infrastructure	2	Prior to the commencement of decommissioning works the contractor will prepare a Traffic Management Plan which will designate traffic routes and timings of works to ensure separation of the works area from on-site personnel.	2	In the event of a road accident, collision with a vehicle, site personnel or cyclist the consequence would be 'Limited' in that there is the potential for *single fatality, limited number of people affected, a few*	4

Risk ID	Potential Risk	Possible cause	Environmental effect	Likelihood Rating (1-5)	Basis of Likelihood	Consequence Rating (1-5)	Basis of Consequence	Risk Score (Consequence x Likelihood)
					Traffic movements within the site during the decommissioning phase are expected to be lower than those during the construction phase. Taking into consideration the robust mitigation measures to be implemented the likelihood of such an event occurring was determined to be “very unlikely”.		*serious injuries with hospitalisation and medical treatment required.*	

18.4.6 Risk Scores and Risk Matrix

The risk assessment in **Table 18.9** categorises each of the potential risks by their 'risk score.'

Table 18.9: Risk scores

Risk ID	Potential Risk	Likelihood Rating (1-5)	Consequence Rating (1-5)	Risk Score (Consequence x Likelihood)
C1	Contamination of the waterbodies, groundwater and surface water	2	3	6
C2	Extreme weather events affecting infrastructure	2	3	6
C3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	2	3	6
C4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere	1	4	4
C5	Structural collapse and/or damage to existing structures/ buildings	2	3	6
C6	Unplanned outages/ disruption to site services	2	2	4
C7	Vehicle collision (involving construction traffic)	3	2	6
C8	Release of asbestos fibres to atmosphere or surface water	3	2	6
C9	Aeronautical collision	1	4	4
Op1	Contamination of–water courses - surface and ground water	2	3	6
Op2	Extreme weather events affecting infrastructure	2	3	6
Op3	Fire/ Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	1	4	4
Op4	Incident at nearby Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	1	4	4
Op5	Vehicle collisions on site	2	2	4

Risk ID	Potential Risk	Likelihood Rating (1-5)	Consequence Rating (1-5)	Risk Score (Consequence x Likelihood)
Op6	Aeronautical collision	1	4	4
D1	Contamination of waterbodies, groundwater and surface water	1	3	3
D2	Extreme weather events affecting infrastructure	1	3	3
D3	Fire / Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil)	1	3	3
D4	Incident at Seveso or IE licenced site leading to fire/explosion or pollution of water courses and/or release of harmful substances into the atmosphere.	1	4	4
D5	Structural collapse and/or damage to existing structures	2	3	6
D6	Unplanned outages/ disruption to services	1	2	2
D7	Vehicle collision involving decommissioning traffic	2	2	4

A corresponding risk matrix is provided in **Table 18.10** which is colour coded to provide an indication of the critical nature of each risk. The red zone represents high risks, the amber zone represents medium risks, and the green zone represents low risks.

As is evident in **Table 18.10**, all the potential risks identified during the construction, operation and decommissioning of the proposed development can be classified as low to medium risk.

Table 18.10: Risk Matrix

Likelihood Rating	Very likely	5					
	Likely	4					
	Unlikely	3		C7, C8			
	Very unlikely	2		C6, Op5, D7	C1, C2, C3, C5, Op1, Op2, D5,		
	Extremely Unlikely	1		D6,	D1, D2, D3,	C4, C9, Op3, Op4, Op6, D4	
			Minor	Limited	Serious	Very Serious	Catastrophic
			1	2	3	4	5
			Consequence Rating				

18.4.7 Conclusion with Respect to Major Accidents and Disasters

No plausible major accidents or disaster hazards were identified, to which the proposed development will be particularly vulnerable. All potential risks identified were determined to be low risk scenarios. No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside of the proposed development.

18.5 Mitigation Measures and Monitoring

18.5.1 Mitigation

18.5.2 Construction Phase

The proposed development will be designed and built in line with best international current practice and, as such, mitigation against the risk of major accidents and disasters will be embedded through the design. All works will be carried out in accordance with the Safety, Health, and Welfare at Work (Construction) Regulations, 2006 (SI No. 504 of 2006).

As outlined in **Table 18.9** and **Table 18.10** all potential risks identified during the construction phase were determined to be ‘low risk scenarios’. Prior to the commencement of works the contractor will prepare a Construction Environmental Management Plan and submit to Cork City Council for approval. The CEMP, which will be a live document and continuously updated as the proposed development progresses, will ensure the potential risks of major accidents and disasters are identified, avoided and mitigated as necessary.

Aeronautical Assessment

While it has been concluded that the proposed development complies with all aviation and aeronautical requirements affecting the site, the following mitigation measures will be required during construction:

- Cranes on site (and in particular for Block A) will be fitted with aviation warning lights, with such lighting on their highest points and on the jibs of any luffing cranes;
- Prior notification of any such crane (i.e. any object of greater than 45m in height above ground within 10km of a licensed aerodrome) must be submitted, at least 30 days in advance, to the Irish Aviation Authority and to the airport operator i.e. to Cork Airport Authority under S.I. 215 of 2005 – '*Irish Aviation Authority (Obstacles to Aircraft in Flight) Order*'; and
- Regarding helicopter operations at CUH, advance notice of cranes on site should also be given to the HSE's Aero-Medical Unit (in Phoenix Park, Dublin). The obligation to provide these crane notifications will be included in the project's Construction Environmental Management Plan.

18.5.3 Operational Phase

The proposed development will be designed and built in line with best international current practices and as such mitigation against the risk of major accidents and/ or disasters will be embedded throughout the design stage.

As outlined in **Table 18.9** and illustrated in **Table 18.10** all potential risks identified during the operational phase were determined to be 'low risk scenarios'.

Fire

The fire risk mitigation measures for the proposed development will comprise all fire safety measures necessary to comply with the requirements of Part B (Fire) of the Second Schedule to the Building Regulations 1997-2017. It is noted that these measures will be validated under the Building Control Act 1990-2007 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2018 from Cork City Council/Cork City Fire Brigade.

Fire risk mitigation measures include the following:

- Emergency Lighting
- Fire Detection & Alarm System (FDAS)
- Disable Refuge Intercoms
- Automatic Sprinklers/ Suppression
- Motorized Smoke/fire dampers
- Smoke Ventilation to firefighting shafts and common lobbies
- Refuse chambers / chute
- Emergency back-up power (life safety)
- Car park Ventilation
- Firefighting lift

- Rising mains
- Evacuation lifts
- Fire Control Centre
- Fire extinguishers
- Fire Hydrants

Aeronautical Assessment

The proposed development complies with all aviation and aeronautical requirements affecting the site. Mitigation measures to be implemented during operation include the fitting of aviation warning lighting on Block A to ICAO specifications.

18.5.4 Monitoring

18.5.4.1 Monitoring During Construction

Aside from the monitoring measures to be carried out by the contractor as outlined in the Construction Environmental Management Plan (e.g., site inspections and audits) and throughout the EIAR, no additional monitoring is considered necessary during the construction phase of the proposed development.

18.5.4.2 Monitoring During Operation

No additional monitoring is considered necessary during the operational phase of the proposed development.

18.6 Cumulative Effects

18.6.1 Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site which will be located south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

The proposed development may be constructed at the same time as the development at the former Cork Warehouse Company site, which may give rise to cumulative effects from both developments. However, given their temporary nature, the implementation of a CEMP for both projects and the capacity within the existing networks, the likelihood of any significant cumulative effects on major accidents and disasters is not significant. Additionally given the same developer is involved in both the Former Cork Warehouse Company Site and the proposed development, it is likely that communication and collaboration between

the appointed contractors during the construction phase on topics such as construction traffic management will be continuous.

18.6.2 Other Developments

18.6.2.1 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20 April 2021.

Due to the minimal environmental effects associated with the proposed development along with the absence of significant environmental effects associated with this permitted development, significant cumulative effects are not envisaged.

18.6.2.2 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and “nature” zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

Due to the minimal environmental effects associated with the proposed development, significant cumulative effects are not envisaged.

18.7 Residual Effects

No plausible major accidents or disaster were identified, to which the proposed development will be particularly vulnerable during the construction or operation phase. No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside the site during construction, operation or decommissioning.

18.8 References

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Cork City Council (2016) Cork City Development Plan 2015-2021 – *Volume 2: Mapped Objectives.* Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/cdp_volume_2_optimised.pdf [Accessed: March 2022].

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Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

Directive 2012/18/EU of the European Parliament and the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (OJ L 197, 24.7.2012, p. 1).

Directive 2014/52/EU of the European Parliament and the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

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S.I. 215 of 2005 – 'Irish Aviation Authority (Obstacles to Aircraft in Flight) Order'

19 Cumulative and Interactive Effects

19.1 Introduction

This chapter presents an assessment of the cumulative and interactive effects between the various environmental factors as a result of the proposed development.

Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

- The interaction between the various effects within the proposed development; and
- The interaction between the other existing and/or permitted projects with this proposed development.

Cumulative effects will consider whether the addition of many minor or significant effects of the proposed development itself or the cumulation of effects of other permitted or planned projects have the potential to result in larger, more significant effects when combined with the effects of the proposed development.

Interactive effects address the interaction between the various environmental aspects, for example the interaction between noise and ecology.

This chapter was prepared by Debbie Flynn. Details of Debbie's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

19.2 Assessment Methodology

19.2.1 Guidance

This chapter has been prepared in accordance with the following guidance:

- Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018.
- EPA (2017) Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Draft, August 2017.
- European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report. (Office for Official Publications of the European Communities 2017).
- EPA (2015) Revised Guidelines on the Information to be contained in Environmental Impact Statements, Draft, 2015.
- EPA (2015) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, Draft, 2015.

- EPA (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, 2003.
- EPA (2002) Guidelines on the Information to be contained in Environmental Impact Statements, 2002.
- European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Effects as well as Impact Interactions, (Office for Official Publications of the European Communities 1999).

19.2.2 Definitions

The following definitions are generally used in the description of cumulative effects or interaction of effects.

It is noted that the terms "*effects*" and "*impacts*" are used interchangeably in this chapter.

The EC guidance (2017) uses the following definition for cumulative effects are defined as:

"Changes to the environment that are caused by activities/projects in combination with other activities/projects".

EC guidance (2017) also states that:

"It is important to consider effects not in isolation, but together, that is cumulatively. [….] Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

- *The interaction between all of the different projects in the same area;*
- *The interaction between various impacts within a single Project (while not expressly required by the EIA Directive this has been clarified by the CJEU [Court of Justice of the European Union] […]".*

Under the EPA draft guidance (2017) cumulative effects are defined as*:*

"The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects".

The EC guidelines (1999) use slightly different definitions as follows:

"Cumulative Impacts: Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project".

The EC guidelines (1999) use definitions as follows:

"Impact Interactions: The reactions between impacts whether between the impacts of just one project or between the impacts of other projects in the area".

The term *'impact interactions'* is equivalent to the term *'inter-relationship of effects'*. The EC guidelines (1999) accept that their definitions overlap to a certain extent. The EC guidelines also refer to '*Cross-Media Impacts'*, in which the

impact in one environmental medium may also have an indirect impact on another medium.

19.2.3 Cumulative Effects Assessment Methodology

Annex IV (5)(e) of the EIA Directive as amended by Directive 2014/52/EU requires that the EIAR shall contain:

"A description of the likely significant effects of the project on the environment resulting from, inter alia:

*(e) the **cumulation of effects** with other **existing and/or approved projects**, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; Furthermore, Annex IV (5) states that the EIAR shall contain:*

*"The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, **cumulative**, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project".*

At the initial stage of preparing the EIAR for the proposed development, the potential for significant cumulative impacts were examined and any potential effects were identified. These potential effects were included in the scope and addressed in the baseline and impact assessment studies for each of the relevant environmental factors.

Likely significant cumulative effects of the proposed development in-combination with other existing and/or approved projects for each of the environmental factors were initially identified, considered and assessed in respective chapters of the EIAR.

19.2.4 Interactive Effects Assessment Methodology

Article 3 (1) of the EIA Directive as amended by Directive 2014/52/EU requires that:

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

The consideration of interactive effects was an integrated process which commenced at the very outset of the project. At the initial stage of preparing the EIAR for the proposed development, the potential for significant interactions between environmental factors were examined and any potential effects were identified. These potential effects were included in the scope and addressed in the

baseline and impact assessment studies for each of the relevant environmental factors. There were numerous discussions and communications between the environmental specialists and the design team throughout the design process which helped to identify and minimise the potential for significant interactions of effects arising in the first instance.

The interaction of effects within the proposed development in respect of each of the environmental factors, listed in Article 3(1) of the EIA Directive, have been identified and addressed in detail in the respective chapters in this EIAR. Thus, no additional mitigation is proposed in this chapter.

Section 19.4 of this chapter presents a summary of each assessment of the interaction (inter-relationship) of effects (from the proposed development) between the various environmental factors. Mitigation measures relative to those interactions are addressed in individual chapters.

The matrix and expert opinion approaches, as outlined in the EC Guidelines (2017), were used in the identification of the potential for significant interactions of effects. Refer to **Table 19.1** for the matrix of potential interactions.

19.3 Cumulative Effects

19.3.1 Overview

This section presents as an assessment of the likely effects of the proposed development on the environment resulting from the cumulation of effects with other existing and/or approved projects. The first stage was to identify the “other existing and/or approved projects to be included in the assessment. The projects that were included in the assessment are presented below.

19.3.2 The Former Cork Warehouse Company Site

Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Cork Warehouse Company Site, Centre Park Road, Cork City which will be located immediately south of the proposed development site.

The main elements of the proposed scheme will include the construction of 190 no. residential units and associated tenant amenity facilities including café/restaurants, retail units and a crèche.

Although it is likely that there will be overlap in the construction durations of the two projects, given their temporary nature, the predicted increased in traffic volumes and the implementation of the Construction Environmental Management Plans for both projects, no significant cumulative negative effects on air quality and climate are predicted.

The proposed development may be constructed at the same time as the development at the former Cork Warehouse Company site, which may give rise to cumulative effects arising from both developments.

Potential impacts are addressed in the individual assessment chapters. A summary of the main potential cumulative impacts is addressed in **Section 19.3.4** and **Section 19.3.5** below.

19.3.3 Other Developments

A review was carried out to identify other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular importance likely to be affected or the use of natural resources. A review was carried out on the planning files for:

- Cork City Council (CCC);
- An Bord Pleanála (ABP); and
- Department of Housing, Planning and Local Government (DHPLG) EIA Portal.

Arising from this review, a number of existing and/or approved projects were identified which could have the potential for likely significant cumulative effects.

The assessment in this chapter considers and assesses whether any of these existing/approved projects will likely have significant cumulative effects in combination with the proposed development. Potential impacts are addressed in the individual assessment chapters and a summary of the main potential cumulative impacts has been included in each **Section 19.3.4** and **Section 19.3.5** below.

19.3.3.1 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

Potential effects are outlined in **Sections 19.3.4** and **19.3.5** below.

19.3.3.2 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

Marina Park Development: Phase 2 (Design stage), which will provide improved public amenities and “nature” zone to the Atlantic Pond area. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Monahan Road Extension (Preliminary design stage), which will provide improved road, pedestrian and cycleway infrastructure to meet the Cork Metropolitan Area Transport Plan. Construction work is due to commence in Q2 of 2022 with an expected completion within 12 months.

Due to the minor nature of air quality and climate impacts associated with the works required for the projects outlined above and the implementation of *Construction Environmental Management Plan* (**Appendix 5.1**) and Construction Traffic Management Plan, no significant negative cumulative effects are predicted.

A summary of the main potential cumulative impacts during construction and operation is addressed in **Section 19.3.4** and **Section 19.3.5** below.

19.3.4 Potential Cumulative Effects During Construction

Potential cumulative effects during construction are outlined in the individual assessment chapters of this EIAR – **Chapter 7** to **Chapter 18**.

Should the construction of any of the developments outlined above occur concurrently, the potential cumulative construction effects are not considered significant, given the implementation of standard construction environmental measures, the Construction Environmental Management Plan (CEMP) or the proposed development and in particular the Construction Traffic Management Plan (CTMP) (due to the nature of the projects identified above). Given their temporary nature, the implementation of the CEMP for the proposed development and the capacity within the existing networks, the likelihood of any significant cumulative effects is slight and short-term.

19.3.5 Potential Cumulative Effects During Operation

Potential cumulative effects that may occur during the operation phase of the proposed development, in combination with other developments in the area, have been addressed under the following headings:

Traffic and Transportation

The proposed development, in cumulation with the two SHD developments identified at the former Cork Warehouse Company site and the former Ford Distribution site, will generate circa. 2,000 additional housing units in the Cork South Docklands area. Cumulatively, these developments will permanently generate additional vehicles on the road network in the local vicinity.

The cumulative impact of the proposed strategic housing development at the former Cork Warehouse Company Site and the former Ford Distribution Site were taken into consideration in the Traffic and Transportation assessment for the proposed development. This impact is not predicted to be significant.

Alternatively, the proposed development is strategically located within Cork City and is close to a large number of employment areas, shopping and community facilities which are within walking and cycling distance.

The proposed development, in cumulation with the Monahan Road Extension Scheme, will have a long-term positive impact on the local road network by promoting active travel in the area. This will be established through improvements in infrastructure and by increasing the viability of existing and planned public transport in the area. The proposed development in combination with the Scheme will also emphasise the use of pedestrian and cycle ways in Cork City and the South Docklands area, promoting activity and mobility

Refer to **Chapter 7** *Traffic and Transportation* for further details.

Air Quality and Climate

Air quality modelling was undertaken at locations where the potential for cumulative air quality effects associated with traffic was identified.

The concentrations of relevant pollutants were modelled for two scenarios:

- Worst Case Scenario for the Proposed Development (at one location)
- Worst Case Scenario for the Proposed Development, The Former Cork Warehouse Company and The Former Ford Distribution (at eight locations).

The results have indicated that the increase in air emissions resulting from the cumulative scenario is not significant (negligible). Further details are included in **Chapter 8** *Air Quality and Climate.*

Noise and Vibration

Noise modelling was undertaken to review the potential cumulative noise impacts relating to the nearby Strategic Housing Developments (SHDs) at the former Ford Distribution Site, and the former Cork Warehouse Company Site. The assessment looked at baseline (without the proposed development) and cumulative (including the two SHDs) scenarios for 2025 and 2030. In all scenarios, the predicted change in cumulative noise levels will be imperceptible, except in 2025 along Centre Park Road (East of Marquee Road) where the predicted 3dB change in noise levels will be perceptible but is rated as not significant. Further details have been included in **Chapter 9** *Noise and Vibration.*

Population and Human Health

The proposed development, in cumulation with the proposed SHD developments at the former Cork Warehouse Company site (190 units) and the former Ford Distribution site (1,002 units) will have a long-term positive effect on population and human health, as both other developments will be providing housing, which will aid in addressing the current housing crisis. Cumulatively, the three developments would provide approximately two thousand additional housing units to address this.

The proposed development will provide additional areas of greenspace within the city, which, in combination with the Marina Park Phase 2 and two other SHD developments, will cumulatively result in a positive impact on population and human health. This will be a direct result of the increased access to public amenities, redevelopment of vacant land uses in the area, and additional

landscaping works proposed as part of the developments, making it a more attractive place to live and work.

Further information on the greenspaces and public amenities provided as a result of the proposed development have been included in **Chapter 4** *The Proposed Development* and **Chapter 12** *Townscape and Visual.*

Material Assets

There is slight and short-term cumulative impact on material assets arising from the proposed development and two SHDs, as a result of an increased use in material assets such as electricity, gas, water supply and site drainage. However, given the sufficient capacity within the local networks this effect will not be significant and will be slight, negative and long-term.

During the operational phase, there will be a long-term positive effect on land-use as a result of the provision of residential units through both projects which will aid in alleviating the current housing crisis.

Townscape and Visual

A significant cumulative effect will occur on townscape and visual as a result of the proposed development in cumulation with the two SHDs at the former Cork Warehouse Company site and former Ford Distribution site. However, these significant effects will be positive in respect of a land use change from former brownfield sites to predominantly residential areas, and an increase in parkland, plazas and ecological areas, improving ecology in the area. These offer a collective opportunity to significantly enhance the use, purpose, townscape character and sense of place in Cork City South Docklands.

For further details, refer to **Chapter 12** *Townscape and Visual*. Photomontages showing the cumulative effects of the proposed SHD at the former Ford Distribution site and the proposed development, along with other consented develoments, are included as **Appendix 12.1.**

19.4 Interactive Effects

19.4.1 Overview

All environmental factors are inter-related to some extent, and the relationships can range from tenuous to inextricable. The interactions between the identified environmental impacts have already been considered and assessed within the individual chapters of this EIAR.

Figure 19.1 presents the potential interactions between the environmental factors assessed in a Sankey Diagram matrix format using Microsoft Power BI Desktop Software ©. The Sankey diagram has been prepared to highlight the potential interactive effects arising as part of the proposed development and the level of significance of these effects. It examines the potential for the environmental factor or issue in the left-hand side to have an impact on the environmental factor listed in the right-hand side, occurring as a result of the proposed development. If an effect exists between the two factors, this has been denoted in the diagram by a

coloured "link" connecting from the environmental factor on the left to the environmental factor on the right.

In addition, a weight has been assigned to each potential interactive effect to determine the severity or significance of the interaction. Using the significance ratings identified in the *Description of Effects* table included as **Table 1.1** in **Chapter 1** *Introduction,* a score of 1 to 7 has been assigned to each identified effect. Using this approach, a score of "1" indicates the lowest significance level (No Interactive Effect or Imperceptible) and "7" indicates the highest (Profound). Refer to **Figure 19.1** and **Table 19.1** for further information.

Each level of significance has been denoted by a separate colour on each "link", as outlined in **Figure 19.1.** In the Sankey Diagram, the "links" coloured grey indicate that no interactive effect takes place. Subsequent levels of severity are denoted by the following colours in order: yellow, orange, green, purple, blue.

Two separate Sankey Diagrams have been produced in **Figure 19.1** to illustrate the potential interactions likely to occur during construction and operational phases of the proposed development. The diagram on the left illustrates the interactive effects likely to occur during the construction phase. The diagram on the right demonstrates those identified during the operational phase.

As discussed above, the potential interactions of impacts were identified throughout the design process and measures addressing these impacts have already been included within the individual chapters of this EIAR. The paragraphs following **Figure 19.1** present an assessment of the potential interactions of impacts, mitigation measures and residual impacts. This assessment is based on information contained within this EIAR and the outcome of discussions and interactions between the environmental specialists and the design team.

Table 19.1: Score ratings assigned to each interactive effect

Level of Significance	Score Assigned	Indicative Colour in Sankey Diagram
No Interactive Effect Note 1	1 Note 2	Grey
Imperceptible	1	Yellow
Not Significant	2	Orange
Slight	3	Green
Moderate	4	Purple
Significant Note 3	5	Blue

Note 1: No Interactive Effect takes place between the environmental factor with any other environmental factor
Note 2: No effect has still been given a score weighting of 1 so that it can be included in the Sankey Diagram
Note 3: 'Very Significant' and 'Profound' interactive effects were not identified and have not been included in this assessment.

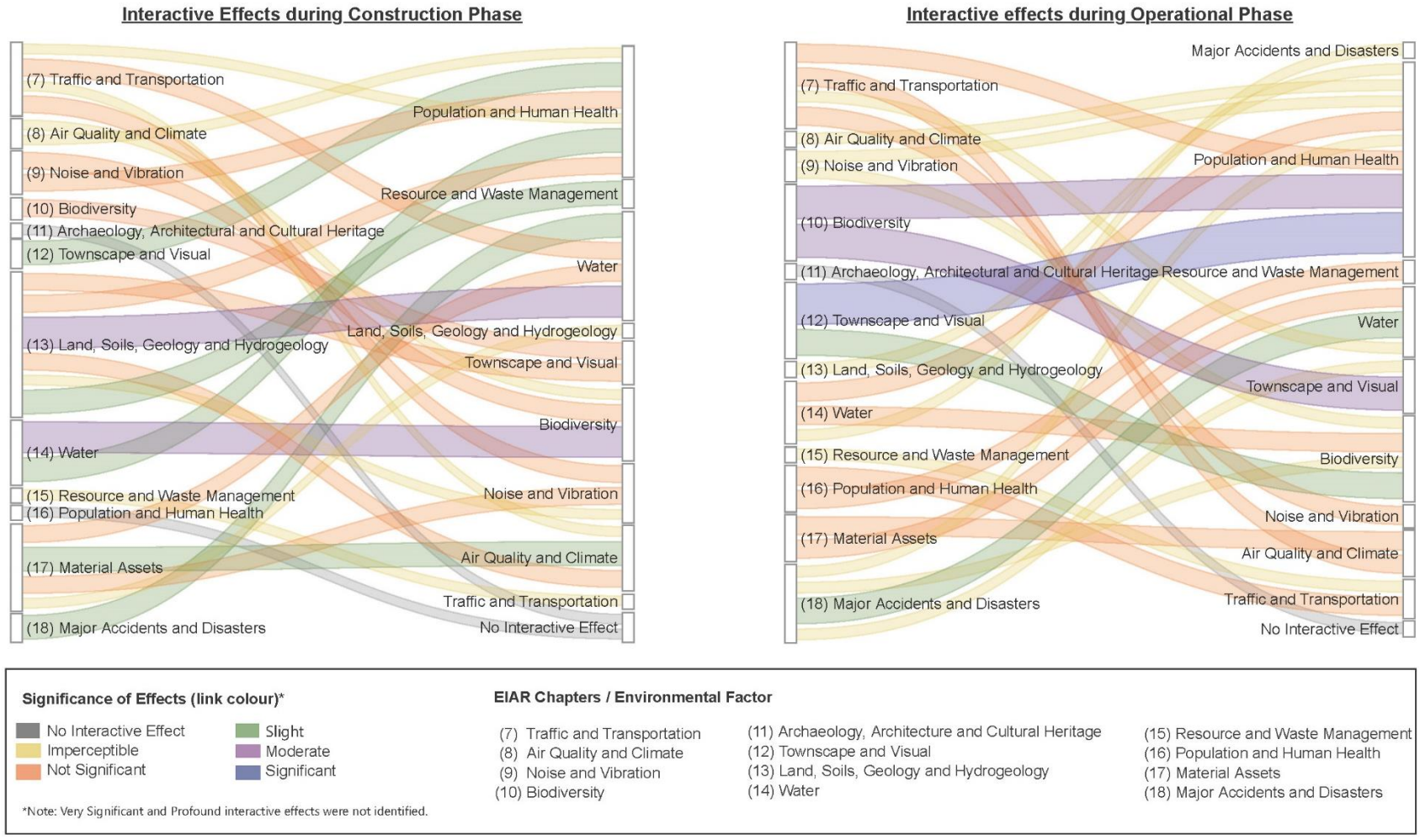

Figure 19.1: Potential Interactions displayed as Sankey Diagrams | Source: Microsoft Power BI

19.4.2 Potential Interactions

19.4.2.1 Traffic and Transportation

Air Quality and Climate

There is a potential interaction between Traffic and Transportation and Air Quality and Climate during construction stage, due to emissions from the use of heavy goods vehicles and construction workers commuting to the site. This is likely to have an imperceptible effect.

During operational phase, an increase in vehicles which is likely to result from the increase in residents will affect Air Quality and Climate, however this effect is not significant.

Refer to **Chapter 8** *Air Quality and Climate* for further details.

Noise and Vibration

A potential moderate effect on Noise and Vibration is expected to occur as a result of Traffic and Transportation during construction phase. This is likely to result from construction vehicles entering the site. There is a potential effect during operational phase due to the subsequent construction phases (3 and 4) occurring following the opening year of 2025 for phases 1 and 2. However, this effect is not significant, short-term and will be minimised through the implementation of appropriate mitigation measures.

Refer to **Chapter 9** *Noise and Vibration* for further information.

Water

Spills/leaks from both construction traffic and from car parks during the construction and operational phase of the proposed development has the potential to affect water. However, these effects are not significant (construction phase) and imperceptible (operational phase). In addition, through the implementation of mitigation measures, no significant negative effects on water are predicted.

Further detail is provided in **Chapter 15** *Water*.

Population and Human Health

Traffic and Transportation is likely to have an impact on Population and Human Health through an increase in air and noise emissions during construction and operational phases. However, as the increase in construction traffic is expected to be less than 10% of the existing road traffic volumes, no significant negative effects on air quality and noise and vibration are predicted

Potential interactive effects are predicted to be imperceptible during both construction and operational phase.

Refer to **Chapter 16** *Population and Human Health* for further details.

Conclusion

Given the moderate scale of the construction activities, the minor impact in construction and operational traffic and the implementation of the mitigation measures as described in the CEMP (**Appendix 5.1**) and Construction Traffic Management Plan (CTMP) no significant adverse residual negative effects are predicted.

19.4.2.2 Air Quality and Climate

Biodiversity

Increased air emissions due to dust during construction phase has the potential to affect biodiversity, however the effect of Air Quality and Climate on Biodiversity will be imperceptible.

No significant interaction is predicted to occur during operational phase, as a result of the proposed development.

Population and Human Health

Dust and emissions generated during the construction works could have the potential to affect the surrounding population. A potential interaction between Air Quality and Climate and Population and Human Health will occur during the construction and operational phase of the proposed development. However, this effect will be imperceptible during construction and operational phases.

Conclusion

Through the implementation of mitigation measures, no significant negative effects on biodiversity and population and human health are predicted. Further details are provided in **Chapter 9** *Air Quality and Climate* and **Chapter 10** *Biodiversity*.

19.4.2.3 Noise and Vibration

Biodiversity

Increased noise emissions have the potential directly affect biodiversity. This effect will be not significant during the construction phase and imperceptible during operational phase.

No significant residual effect on biodiversity is predicted as a result of the proposed development.

Population and Human Health

Construction of the proposed development has the potential to create noise and vibration which could have a moderate effect on Population and Human Health. During operation, and subsequent construction of Phases 3 and 4, there will be a slight but short-term impact resulting from construction noise and vibration.

Conclusion

Through the implementation of appropriate mitigation measures outlined in **Chapter 9** *Noise and Vibration*, no significant long-term effect is predicted to occur.

19.4.2.4 Biodiversity

Townscape and Visual

The planting proposed as part of the development has the potential to improve the local visual amenity. During construction phases this effect is not significant, however, this will have a moderate positive impact on Townscape and Visual during operational phase.

Population and Human Health

Similarly, this will have a moderate positive effect on Population and Human Health, as a result of the increased biodiversity and green spaces within the proposed development design.

19.4.2.5 Archaeology, Architectural and Cultural Heritage

No potential interactive effect is expected to occur as a result of Archaeology, Architectural and Cultural Heritage during construction phase or operational phase.

19.4.2.6 Townscape and Visual

Biodiversity

Due to the height of the ten to 35-storey apartment block buildings associated with the proposed development, there is an increased risk of bird flight collisions during operation. This will have a localised, slight negative long term impact on Biodiversity as a result and will be mitigated with the measures outlined in **Chapter 10** *Biodiversity*.

Townscape and Visual will also have a significant positive long-term impact on local biodiversity during operation as result of landscaping works and the introduction of a new wetland area to the northwest of the proposed development site.

Overall, Townscape and Visual will have a moderate neutral long-term impact on Biodiversity during operation.

Population and Human Health

During construction, there will be a short-term slight negative interactive effect on the general amenity of the local population as a result of the change in landscape due to the presence of temporary hoarding/fencing, parking, deliveries, lighting, piling rigs, cranes etc.

Once operational, there is the potential for permanent or long-term visual impacts on the local community as a result of the new ten to 35-storey apartment block buildings. However, the baseline setting ensures it can be successfully absorbed

into the local area without causing any adverse townscape / landscape effects. Therefore, this effect will be positive, significant and long-term.

Further details are provided in **Chapter 12** *Landscape and Visual*.

19.4.2.7 Land, Soils, Geology and Hydrogeology

Air Quality and Climate

Considering excavation of land and soils will generate dust emissions, there is potential for an interactive effect from soiling, PM_{10} and vegetation effects arising from construction activities. However, this effect is not significant following the implementation of the mitigation measures outlined in **Chapter 9** *Air Quality and Climate* and the CEMP (**Appendix 5.1**).

Noise and Vibration

In addition to Air Quality and Climate, Noise and Vibration has the potential to be affected as a result of excavation works during construction phase. This effect is imperceptible, given the implementation of mitigation measures outlined in **Chapter 9** *Noise and Vibration*.

Townscape and Visual

There is a potential interaction between Land, Soils, Geology and Hydrogeology on Townscape and Visual during construction phase as a result of stockpiles and excavated materials being stored on site. However, with the implementation of hoarding and other mitigation measures outlined in the CEMP, this effect is not significant and will be managed appropriately in line with CEMP.

Water

Excavation works during construction have the potential to cause a direct moderate effect on water quality through siltation as a result of runoff. However, the implementation of suitable mitigation measures as detailed in **Chapter 13** *Land, Soils, Geology and Hydrogeology*, **Chapter 14** *Water* and the CEMP (**Appendix 5.1**), will ensure that there will be no significant negative effects on water quality.

Resource and Waste Management

There is a potential slight negative effect of Land, Soils, Geology and Hydrogeology on Resource and Waste Management during construction due to waste arising from demolition and excavation activities. The quantity of excavated materials is estimated to be circa 73,022m^3. However, re use/recycling/recovery activities will be employed where possible to reduce any potential effects on resource and waste management.

Population and Human Health

Due to the presence of Asbestos Containing Materials (ACMs) in soils on site, there is potential for a negative effect on Population and Human Health during construction phase. However, following remediation and mitigation practices outlined in **Chapter 13** *Land, Soils, Geology and Hydrogeology* and the CEMP,

will not have a significant effect on human health during construction or operational phases. Accordingly, during construction this effect is not significant during and operation this effect is imperceptible.

19.4.2.8 Water

Biodiversity

The potential for adjacent watercourses to become impacted through spillages such as hydrocarbon leaks (fuel/oil/lubricants) from construction machinery or by siltation as a result of run-off during construction could have a direct short term moderate negative effect on biodiversity and surrounding watercourses. However, this effect will be managed by appropriate mitigation measures outlined in **Chapter 10** *Biodiversity,* **Chapter 14** *Water* and the CEMP.

During operation this effect is negative, not significant and short-term.

Population and Human Health

The potential contamination of watercourses during construction will also have a slight negative effect on the surrounding population. During construction phase this will be managed by appropriate mitigation measures. During operational phase, this effect is not significant.

Major Accidents and Disasters

Due to the proposed development's proximity to the River Lee, there is a potential for Major Accidents and Disasters to occur in the form of a flooding event. While the likelihood of this event occurring is minimal, given the implementation of mitigation measures and proposed design, the potential effect of Water on Major Accidents and Disasters during operational phase will be imperceptible.

Conclusion

In addition to design and construction strategies, the primary form of mitigation is the CEMP (**Appendix 5.1**) which sets out the specific mitigation measures to be implemented for the protection of water quality. The employment of good construction management practices will minimise the risk of impacts to soil, storm water run-off or groundwater. The CEMP has been prepared in line with the guidance note issued by CIRIA on the control and management of water pollution from construction sites. It addresses the main causes of impacts to soil, groundwater and surface waters from construction sites and describes the protection measures required to prevent those impacts to groundwater and surface waters and the emergency response procedures to be put in place so that any pollution, which occurs, can be remedied.

19.4.2.9 Resource and Waste Management

Traffic and Transportation

Excavated material that is to be removed off-site along with any material required to be imported for the construction of the proposed development will have a

potential long-term, neutral imperceptible effect on traffic and transportation during construction phase.

During operational phase, the removal of wastes will be required via waste collection vehicles. This effect on Traffic and Transportation is long term, neutral and imperceptible.

19.4.2.10 Population and Human Health

No potential interactive effect is expected to occur as a result of Population and Human Health during construction phase.

Traffic and Transportation

During operational phase, Population and Human Health will have an effect on Traffic and Transportation due to the increase in vehicles owned by future residents. This effect is not significant.

Resource and Waste Management

Similarly, the increase in population as a result of the proposed development will have an impact on Resource and Waste Management during operational phase due to the increase in residential and commercial wastes coming from the site. However, this effect is not significant.

19.4.2.11 Material Assets

Air Quality and Climate

There is potential for interactions between Material Assets and Air Quality and Climate during construction and operational phases, as there will be an increase in the use of utilities, such as electricity, gas and telecoms, which require the use of energy. This is effect is expected to be slight during construction and not significant during operation.

Alternatively, the proposed development will have a positive impact on Air Quality and Climate due to the use of sustainable and energy-saving measures for Material Assets, such as the use of low energy LED lighting and use of fabric energy efficiency to reduce the consumption of fuel and energy efficiency.

Noise and Vibration

Material Assets has the potential to interact with Noise and Vibration during construction phase as a result of the machinery used for construction of foul water and surface water infrastructure. This will have an effect that is not significant with the implementation of mitigation measures employed for noise and vibration.

Land, Soils, Geology and Hydrogeology

Material Assets has the potential to interact with Land, Soils, Geology and Hydrogeology during construction phase of the proposed development. This is likely to occur as a result of the excavation necessary for the construction of foul and surface water infrastructure. However, this effect will be imperceptible.

Water

Excavation works during construction phase has the potential to cause a direct slight effect on water quality through siltation as a result of runoff.

Alternatively, during operational phase, the proposed design of material assets will have a positive impact on water quality as a result of foul water and surface water treatments employed on site.

Conclusion

With the implementation of suitable mitigation measures as detailed in **Chapter 13** *Land and Soils*, **Chapter 15** *Water* and the CEMP (**Appendix 5.1**), there will be no significant negative effects on land and soils or water quality.

Further details are provided in **Chapter 16** *Material Assets.*

19.4.2.12 Major Accidents and Disasters

Townscape and Visual

During operational phase, there is potential for an interaction between Major Accidents and Disasters and Townscape and Visual in the event of an infrastructure collapse caused by a major accident or disaster. This has been accounted for in the proposed development through the use of design guidance and standards, and the effect is considered to be imperceptible.

Water

Major Accidents and Disasters has a potential to contaminate watercourses within and adjacent to the site. This will have a slight negative effect on Water during construction phase and operational phase.

Population and Human Health

During operational phase, there is potential for a major accident or disaster to affect Population and Human Health. This effect will be imperceptible.

Biodiversity

Should a major accident or disaster occur, there is potential for this event to affect the surrounding biodiversity. However, this effect will be imperceptible.

19.4.2.13 Conclusion

No other interactive effects of environmental significance have been identified.

No significant negative interactive effects are predicted during the course of construction or operational phases associated with the proposed development.

Please refer to the relevant chapters outlined above and CEMP (**Appendix 5.1**) for specific mitigation measures and impacts associated with each environmental factor as a result of the proposed development.

Further details are provided in **Chapter 18** *Major Accidents and Disasters.*

19.5 References

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20 Summary of Mitigation, Monitoring and Residual Effects

20.1 Introduction

This chapter provides a summary of the proposed mitigation and monitoring measures as well as an overview of the residual likely significant effects associated with the proposed development (as identified in **Chapters 7** to **18**).

20.2 Summary of Mitigation Measures

A number of safeguards and management measures have been identified in order to mitigate negative environmental effects during construction and operation as described in detail in **Chapters 7** to **18**.

It should be noted that this generally excludes any inherent measures and elements that have been incorporated in the design as these design measures have been documented as part of **Chapter 4** *The Proposed Development*. Further, any environmental management measures during construction that have been identified and are associated with construction activity and methodology are documented in the draft CEMP which is available in **Appendix 5.1.**

The mitigation and monitoring measures that have been established to minimise any likely significant negative effects arising from the proposed development on the surrounding environment are summarised in **Section 20.2** and **20.3.**

20.2.1 Construction Strategy Mitigation Measures

It is the policy of the developer to minimise the environmental effect of the construction activities. The construction planning will be geared towards keeping disruption and nuisance to a minimum on-site and off-site.

The developer will liaise with neighbours and the general community during the construction phase to ensure that any disturbance is kept to a minimum.

The contractor will implement a neighbour information and liaison programme to ensure that all anticipated nuisances will be minimised, and that the construction activity will have the lowest possible effect on neighbours.

The developer will ensure that the appointed construction contractor will implement the construction environmental management plan (CEMP). This will include as a minimum, the implementation of regulatory and best practice requirements as well as all relevant measures outlined in the EIAR. A CEMP is included as **Appendix 5.1** to this EIAR.

20.2.1.1 Dust

The developer shall put in place a regime for monitoring dust levels in the vicinity of the site during works using the Bergerhoff Method (German Standard VDI2119, 1972). The minimum criteria to be maintained shall be the limit

specified by the Environmental Protection Agency (EPA) for licenced facilities in Ireland which is 350mg/m²/day as a 30-day average.

The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time.

The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- Prior to demolition buildings will be soft striped internally initially (walls and windows in the rest of the building to remain where possible, to provide a screen against dust);
- During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction will be used;
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed;
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic;
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads;
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates;
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary;
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; and
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations. These inspections will monitor the effectiveness of dust mitigation measures.

20.2.1.2 Dirt

Given the volumes of traffic generated by aspects of the construction works, particularly during the earthworks, the Main Contractor shall ensure, where appropriate:

- Daily inspections will be undertaken to monitor tidiness;
- A regular program of site tidying will be established to ensure a safe and orderly site;
- If necessary, scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind;
- Food waste will be strictly controlled on all parts of the site;
- Wheel wash facilities will be provided for vehicles exiting the project site. Wheel wash run off will be stored in an onsite storage tank and will be disposed of by a licensed waste haulage company and disposed of off-site at a licensed facility;
- The Main Contractor will endeavour to mitigate the risk of blockage of local gullies and drains due to construction materials and will carry out drain clearing as required;
- In the unlikely event that mud is carried over from the project site to the public roads, they will be cleaned regularly as required and will not be allowed to accumulate;
- Loaded lorries and skips will be covered as appropriate;
- Surrounding roads used by trucks for access to and egress from the site will be inspected regularly and cleaned, using an approved mechanical road sweeper, when required; and
- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the normal manner.

20.2.1.3 Noise and Vibration

The developer will ensure that construction noise will be kept to a minimum in accordance with BS 5228. Construction-phase noise impacts are described in **Chapter 9** *Noise and Vibration* of this EIAR.

A Noise and Vibration Management Plan (NVMP) will be formulated for the demolition and construction phase of the project. Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

Similar to any large construction site, there is potential for noise generation associated with site clearance and construction activities. Currently, there are no works foreseen outside of normal working hours. It is anticipated that no significant vibration will be generated during the construction phases of the project.

Refer to **Section 20.2.2.3** and **Appendix 5.1** for further mitigation measures to be employed.

20.2.1.4 Land, Soils, Geology and Hydrogeology

The following measures will be implemented in relation to land and soils during construction:

- Potential pollutants shall be adequately secured against vandalism and will be provided with proper containment according to the relevant codes of practice. Any spillages will be immediately contained and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility;
- Dust generation shall be kept to a minimum through the wetting down of haul roads as required and other dust suppression measures;
- Any stockpiles of earthworks and site clearance material shall be stored on impermeable surfaces and covered with appropriate materials where necessary;
- Silt traps shall be placed in gullies to capture any excess silt in the run-off from working areas;
- Soil and water pollution will be minimised by the implementation of good housekeeping (daily site clean-ups, use of disposal bins, etc.) and the proper use, storage and disposal of these substances and their containers as well as good construction practices as described the CIRIA guidance; and
- A contingency plan for pollution emergencies will also be developed by the appointed contractor prior to the commencement of works and regularly updated. The contingency plan will identify the actions to be taken in the event of a pollution incident in accordance with the CIRIA guidance which requires the following to be addressed:
    - Containment measures;
    - Emergency discharge routes;
    - List of appropriate equipment and clean-up materials;
    - Maintenance schedule for equipment;
    - Details of trained staff, location and provision for 24-hour cover;
    - Details of staff responsibilities;
    - Notification procedures to inform the relevant environmental protection authority or Cork City Council
    - Audit and review schedule;

- Telephone numbers of statutory water undertakers and local water company; and
- List of specialist pollution clean-up companies and their telephone numbers.

Loss of crushed rock aggregate and granular aggregate potential area

Excavated material will be removed during the construction phase. Where possible, excavated material will be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled located within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications.

Ground movements

Ground movement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations.

Ground movements will be controlled through the selection of a foundation type and method of construction which are suitable for the particular ground conditions.

Pollution from construction activities

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, adjacent watercourses and groundwater. The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures;
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA, and will be fully bunded;
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site;

- Ensure that all areas where liquids are stored or cleaning is carried out are in designated impermeable areas that are isolated from the surrounding area e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Minimise the use of cleaning chemicals; and
- Use trigger-operated spray guns, with automatic water-supply cut-off.

Earthworks haulage

Earthworks haulage will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided.

Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water impacts in outfall areas. Care will be taken to ensure that the bank surfaces are stable to minimise erosion.

Removal of soils

Excavations in made ground will be monitored by an appropriately qualified person to ensure that any spots of contamination encountered are identified, segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure no cross-contamination with clean soils elsewhere throughout the site.

Where possible, excavated material will be retained and reused on site as construction fill or off site as a by-product under an Article 27 notification.

The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled within the working area where possible, using an appropriate method to minimise the impacts of weathering. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications (e.g., Article 27).

Contaminated soil exposure mitigation

Several likely adverse effects which without mitigation could have potentially significant impacts. These include:

- contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- site workers being exposed to contamination in soil; and
- site workers being exposed to ground gas.

Proposed mitigation measures include the following:

- During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

  "*Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed*."

  And

  "*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies*."

- Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

20.2.1.5 Construction Safety

Hoarding/security fencing will be erected along all boundaries adjacent to public areas with the purpose of restricting access to the work area for health and safety reasons.

As required by the Safety, Health and Welfare at Work (Construction) Regulations 2013, a Health and Safety Plan will be prepared which will address health and safety issues from the design stages through to the completion of the construction and maintenance phases. This plan will be reviewed as the development progresses. The contents of the Health and Safety Plan will comply with the requirements of the Regulations.

Safety on site will be of paramount importance. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated. Only contractors with the highest safety standards will be selected.

Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.

Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.

All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.

Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

At any time that a potentially unsafe practice is observed, the site safety manager will have the right as well as the responsibility to halt the work in question, until a safe system of working is again put in place.

20.2.1.6 Construction Waste Management

Construction – General

In addition to the inherent design measures which will be implemented during the construction phase (refer to **Section 20.2.2.9**), the following mitigation measures will be implemented:

- Possibilities for re-use of excess uncontaminated soil and stone only as fill or in landscaping works within the site will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excess excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- Office and food waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual wastes;
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate;
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site;
- Excessive temporary works will be avoided, existing facilities will be reused as appropriate;
- Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations;
- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder;
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility; and
- If asbestos/contaminated material is encountered during construction, a risk assessment will be carried out to determine its suitability for re-use. If re-use within the site is not possible, contaminated material will be removed offsite to an appropriately licenced facility.

20.2.1.7 Construction Traffic

- HGV routes to and from the site will be developed in agreement with Cork City Council and with the objective of minimising the impact in the local area for residents and businesses. HGV trips to and from the site for construction will only be via Centre Park Road from the Victoria Road Roundabout;

- Parking restrictions and management measures on adjacent streets/residential areas will be reviewed and implemented as necessary in agreement with the local residents and CCC to avoid any site parking overspill issues; and
- It is likely that the unused portions of the site will be available as a compound/parking area, but the amount of construction personnel parking available here will be limited. The contractor will be required to promote travel by sustainable modes of transport. Refer to Section 7.1 of the CEMP (**Appendix 5.1**).

Additional construction traffic mitigation measures have been identified in **Chapter 7** *Traffic and Transportation* and are discussed in **Section 20.2.2.1** below.

20.2.2 Construction Mitigation Measures (Assessment Chapters)

20.2.2.1 Traffic and Transportation

Construction Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- During peak hours, ancillary, maintenance and other site vehicular movements will be discouraged;
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues; and
- The contractor will be required to promote travel by sustainable modes of transport. An indicative Construction Mobility Management Plan is outlined later in this section.

Hours of Working

Construction operations on site are proposed to be between the hours of 07:00-19:00, Monday to Friday, and 07:00-16:00 on Saturdays. Similarly, deliveries of materials to site will generally be between the hours of 07:00-19:00, Monday to Friday, and 07:00-16:00 on Saturdays.

The construction shift times will ensure construction traffic will have limited impact on the peak periods of 07:30-08:30 in the morning and 17:15-18:15 in the evening as it is envisaged most construction staff will arrive to work before 07:00 in the morning and leave after 19:00 in the evening.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Cork City Council (CCC).

Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be developed by the contractor and presented to CCC for approval prior to commencement of the construction works. The CTMP will contain detailed temporary traffic management drawings for each construction stage and will include the mitigation measures described in this section, amongst others.

Refer to **Chapter 7** *Traffic and Transportation* for details of the predicted traffic impact of the construction phases of the proposed development.

Construction Mobility Management Plan

The contractor will be required as part of the contract to introduce a Construction Stage Mobility Management Plan for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the measures the contractor will provide as part of the Mobility Management Plan.

The Construction Stage Mobility Management Plan will form part of the overall Construction Traffic Management Plan and will be agreed with Cork City Council prior to works beginning on site.

Walking: The pedestrian environment surrounding the site is considered to be good with footpaths provided along all roads. Good pedestrian routes exist between the site and nearby bus stops on the Monahan Road and on the Blackrock Road.

Cycling: Cycle parking spaces and associated showers and lockers will be provided on the site for construction staff.

Car Sharing: Car sharing among construction staff should be encouraged, especially from areas where construction staff may be clustered. The contractor will aim to organise shifts in accordance to staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to the site car parking facility and will minimise the potential traffic impact on the surrounding road network.

Public Transport: The contractor will issue an information leaflet to all staff as part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site, including bus routes that operate in the vicinity of the site. The Contractor will also offer the “Travel to Work Scheme” to employees.

20.2.2.2 Air Quality and Climate

Emissions to air during earthmoving and construction will occur. The focus of the control procedures will therefore be to reduce the generation of airborne material.

The assessment of construction impacts (contained in **Chapter 8** *Air Quality and Climate*) includes for the implementation of ‘standard mitigation’, as per guidance presented in the TII document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (TII, 2011). This will include the following measures:

- Spraying of exposed earthwork activities and site haul roads during dry weather;
- Provision of wheel washes at exit points;
- Covering of temporary stockpiles;
- Control of vehicle speeds and speed restrictions; and
- Sweeping of hard surface roads.

In addition, the following measures will be implemented. These measures are based on best practice as outlined in the British Research Establishment (BRE) document *Controlling particles, vapour and noise pollution from construction sites* (BRE, 2003) and the Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2016).

- Exhaust emissions from vehicles operating within the working areas, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery;
- During dry periods when dust generation is likely or during windy periods, working areas and vehicles delivering material with dust forming potential will also be sprayed with water, as appropriate;
- Areas where materials will be handled and stockpiled will be designed to minimise their exposure to wind – all temporary stockpiles shall be kept to the minimum practicable height with gentle slopes;
- There shall be no long-term stockpiling within the working areas and storage time will be minimised;
- Material drop heights from plant to plant or from plant to stockpile will be minimised;
- Dust screens will be implemented at locations where there is the potential for air quality effects during the construction phase e.g. mesh netting to be erected around the scaffolding to minimise dust emissions from the site; and
- Truck loads will be covered when carrying material likely to generate dust.

Employee awareness is also a most important way that dust may be controlled on any site. Staff training and the vigilant management of operations ensure that all dust suppression methods are implemented and continuously inspected.

A dust minimisation plan, forming part of the Construction Environmental Management Plan (CEMP) (Refer to **Appendix 5.1**) has been finalised and implemented by the building contractor during the construction phase of the project.

In addition, due to its location and proximity to sensitive receptors, the following measures shall also be implemented to minimise off-site dust impacts:

- Provision of hoarding around the site;

- Covering of all trucks exiting the site with tarpaulin;
- Locating plant likely to generate emissions away from sensitive receptors; and
- Any stockpiled material will be covered/dampened during periods of dry weather to prevent the spreading of dust.

The technique adopted for all works will minimise the release of dust into the atmosphere. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected.

CO_2 emissions will be minimised during the construction phase through the implementation of the following mitigation measures:

- A Construction Traffic Management Plan to be prepared by the contractor in advance of the commencement of the construction will be implemented in full. This will minimise congestion and encourage car sharing and the use of public transport, where practicable;
- Materials will be handled efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions;
- Engines will be turned off when machinery is not in use; and
- The regular maintenance of plant and equipment will be carried out.

Further details on mitigation measures are provided in **Appendix 5.1** *Construction Environmental Management Plan.*

20.2.2.3 Noise and Vibration

The following section describes typical measures which will be employed by the contractor to ensure the construction noise and vibration effects on the surrounding area are minimised both in intensity and duration.

The Contractor will take specific noise abatement measures and comply with the recommendations of *BS 5228 Code of practice for Noise and Vibration Control on Construction and Open Sites (+A2014)* and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001*.

In general, BS5228 advises the following, where necessary:

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials; and
- Start-up plant and vehicles sequentially rather than all together.

The following more specific measures are also advised:

- In accordance with Best Practicable Means, plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Where required, improved sound reduction methods, e.g. enclosures should be used;
- Site equipment should be located away from noise sensitive areas, as much as is feasible;
- Regular and effective maintenance by trained personnel should be carried out to reduce noise and/or vibration from plant and machinery;
- A 2.4 metre high hoarding will be provided around the construction site;
- Limiting the hours during which site activities likely to create high levels of noise or vibration are carried out;
- Establish channels of communication between the contractor/developer, Local Authority and residents;
- Appointing of a site representative responsible for matters relating to noise and vibration; and
- Monitoring typical levels of noise and vibration during critical periods and at sensitive locations for comparison with limits and background levels.

20.2.2.4 Biodiversity

The following mitigation measures will be implemented during construction:

A Construction Environmental Management Plan (CEMP) has been prepared (included as **Appendix 5.1** of this EIAR). The CEMP contains the construction mitigation measures, which are set out in this EIAR, and also the Invasive Species Management Plan for the site.

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority, Dublin (2010).
- *Control of water pollution from construction sites. Guidance for consultants and contractors (*C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the River Lee and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers,

foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding on-site impacts, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the site manager;
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and
- Co-operate as required, with site inspections.

Water Quality

The employment of good construction management practices will minimise the risk of impacts to soil, stormwater run-off, seawater or groundwater. A summary of the measures relevant to hydrology are provided as follows and are in accordance with Construction Industry Research and Information Association (CIRIA) guidance – *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (Masters-Williams *et al*, 2001).

Full details on the mitigation measures which will be implemented to maintain water quality during construction is provided in **Chapter 5** *Construction Strategy*, **Chapter 13** *Land, Soils, Geology and Hydrogeology*, **Chapter 14** *Water,* and in the CEMP included in **Appendix 5.1**.

Noise

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

Specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised. These measures are described in **Chapter 9** *Noise and Vibration* and in the CEMP included as **Appendix 5.1**, will minimise the risk of adverse impacts from the noise and vibration during the construction phase.

Lighting

Site lighting during construction will be directed away from adjoining areas, to minimise light spill outside the proposed development site boundary. Further detail on construction lighting mitigation measures is included in the CEMP (included as **Appendix 5.1)**.

During operation, lighting design will ensure that light spillage outside the site is minimal and there will be no light spillage onto sensitive habitats outside the site boundary i.e., River Lee.

Invasive Species

Management programmes will need to be deployed as soon as practically possible in light of the potential for further dispersal of Japanese knotweed vector material, within overall masterplan boundary, which could impact on the success of the selected management programme.

It is recommended that any growth of other invasive species are treated, where required, with chemical herbicide during the optimum treatment period to avoid any future encroachment by these species and to minimise long-term landscape maintenance requirements. Full details on the proposed management plans are included as an appendix to the **Appendix 5.1** *Construction Environmental Management Plan*.

Protection of Habitats

The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1 March to the 31 August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. If works are carried out during the breeding season, a pre-construction survey will be carried out by the project ecologist and if birds are detected appropriate mitigation measures will be implemented.

The Landscape Design Plan for the proposed development site includes the following:

- Tree planting
- Small multi-stem trees
- Tree planting in wetland area
- Native woodland planting
- Shrub planting
- Swale planting
- Wildlife buffer planting
- Meadow and bulb planting
- Riparian woodland planting
- Ecological Park also includes the following:
    - Five log piles using native logs for hedgehogs
    - Five insect hotels

- Six bat boxes

Bats

During the site works, general mitigation measures for bats will follow the National Road Authority's '*Guidelines for the Treatment of Bats during the Construction of National Road Schemes'* NRA (2005c) and *'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 2*5' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats or prevent avoidable effects resulting from significant alterations to the immediate landscape.

A number of buildings within the site will be demolished. No signs of bats were recorded within these buildings and they have a low potential as roosting habitat. However, as a precautionary measure, the following measures will be implemented prior to and/or during demolition.

Mitigation measures will be agreed with the NPWS prior to any demolition works.

- Ideally work on buildings will take place outside the summer season between and October March inclusive when bats will be hibernating as the buildings to be removed have negligible potential as winter hibernation sites;
- In all cases immediately in advance of demolition a bat specialist will undertake an examination of the building. Emergence surveys will be carried out if buildings are affected during the April to September period. If bats are present at the time of examination it is essential to determine the nature of the roost (i.e. number, species, whether it is a breeding population) as well as its exact location;
- If bats are recorded in buildings earmarked for demolition, special mitigation measures to protect bats will be put in place and a license to derogate from the conservation legislation will be sought from the NPWS;
- The contractor will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary; and
- If roosting habitat for bats is removed, replacement habitat will be provided.

No significant mature trees will be removed during site clearance. Although mature trees with the potential of be of significant value as bat roosts are absent from the site, the following precautionary measures will be implemented.

- Tree-felling will ideally be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken;
- Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled

trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted;

- No 'tidying up' of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety;
- Treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage;
- During construction directional lighting will be employed to minimise light spill onto adjacent areas. Where practicable during night-time works, there will be no directional lighting focused towards the River Lee or boundary habitats and focusing lights downwards will be utilised to minimise light spillage; and
- It is proposed that six bat boxes will be located within the proposed development site (https://www.wildcare.co.uk/vincent-pro-bat-box-10651.html for box proposed or similar). The boxes will be erected by an ecologist taking into account landscape plans, vehicle movements and lighting.

As noted above, lighting mitigation measures will follow *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010).

All mitigation measures including detailed method statements will be agreed with the NPWS prior to commencement of works, which could affect any bat populations on site.

Birds

As noted above where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the study area boundary.

As a biodiversity enhancement measure ten bird nesting boxes (various types including open fronted and entrance hole) will be located within the site boundary, if practicable, at locations specified by an ecologist.

It is intended that ten Swift boxes will be incorporated into buildings, if practicable. These will be located on the northern side of the buildings in areas free from overhanging vegetation, ledges and/or glazing. These will be built into the walls of the structure using Schwegler 17A (or similar see https://www.nhbs.com/no-17a- schwegler-swift-nest-box-triple-cavity). The location of these nest boxes will be specified by an ecologist.

It is noted that provision of woodland planting and the use of more diverse grassland planting will provide additional nesting and feeding sites for birds, particularly as these habitats mature.

20.2.2.5 Archaeology, Architectural and Cultural Heritage

The proposed development will not result in any predicted construction phase direct impacts, or significant indirect impacts, on the architectural heritage resource which will require mitigation.

20.2.2.6 Townscape and Visual

Due to the nature of construction, it is inevitable that adverse effects will occur to the townscape and visual amenity in the immediate area. The significance of these temporary effects will be limited by implementing the following measures:

- All activities will be subject to planned method statements in accordance with appropriate legislation;
- Temporary hoarding will be erected around construction areas to clearly delineate working areas and protect the public from the works. This will also reduce visual effects to areas on Centre Park Road and Marina Park for the initial stages of the demolition and construction period. Hoardings will be maintained in good condition throughout this stage;
- Publicity material may be displayed on the hoardings to inform the public and passers-by about the proposed development;
- Lighting will be maintained in good order and provided where necessary to ensure sufficient illumination. Precautions will be taken to ensure no shadows are cast by hoardings or building works onto pavement or road areas. Internal construction lighting will be angled so that it does not cause nuisance to adjacent properties or carriageways;
- Centre Park Road, Marquee Road and other roads providing access to the work will be maintained free of dust and mud as far as possible and damaged surfaces will be made good; and
- An effective site and litter management systems will be established from the outset to ensure a clean, tidy and presentable image.

20.2.2.7 Land, Soils, Geology and Hydrogeology

Several likely potentially adverse significant effects were identified in **Chapter 13** *Land, Soils, Geology and Hydrogeology*, which without mitigation could have potentially significant impacts. These include:

- Mobilisation of contamination in the soil into the northern open channels;
- Contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- Dredging the open channel mobilising PFAS into the local watercourse; and
- Temporary storage of hazardous substances associated with the operation of plant.

Mitigation measures and their consequence on the significance of the effect are highlighted are assessed below.

Mobilisation of contamination in the soil into the northern open channel

The removal of surfacing (hardcore /concrete/topsoil) could allow contaminants held in the unsaturated zone to percolate down into the groundwater in the made ground. In turn this could increase the concentration of contaminants in the perched groundwater in the made ground and/or increase the flow of contaminated groundwater out of the made ground into the open channels. This has the potential to have temporary reversible small to moderate adverse impact on the water quality of the northern open channels.

During the construction phase, the appointed contractor will ensure that excavations shall be kept to a minimum. In the excavation dewatering shall be used to maintain dry working. In addition, the excavation will be design to focus rainwater and seepage into discreet areas from where they will be pumped. This dewatering shall reduce infiltration during the excavation and will capture some of the groundwater in the made ground, thus reducing the flow into the open channels. The effect of the dewatering will reduce the potential adverse effect to negligible hance the significance of the impact will be imperceptible.

Asbestos Contamination

During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

"*Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed."*

And

"*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies."*

Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

As a consequence of these mitigation measures, the risk of exposure to site users, construction worker and residents in the nearby houses will comprise a negligible effect hence the significance will be imperceptible.

In addition to contaminated dust, there are risks to site workers from handling contaminated soils. Only suitably experienced contractors shall be used to carry out the remediation work. During construction, they shall employ standard practices to manage risk form contaminated soils. These will be designed by the contractor dependent on his construction practices and are likely to include the use of gloves, dust masks and potentially disposable overalls. These and other appropriate measures will minimise the exposure of the site workers. Hence following mitigation the risk associated with the potential permanent adverse

effect of exposures will be negligible, and the significance will reduce to imperceptible.

Mobilisation of PFAS

During the construction phase there is a risk of mobilising PFAS from the channel sediment. A risk assessment will be carried out to assess the impact of the presence of PFAS on the gravels and the surrounding water courses, and to account for any seepage from the gravels into the base of the open channel. The risk assessment will determine a minimal concentration that can be left in place and will recommend an area and depth to be dug up and disposed of off-site.

During the remediation of the sediments, measures will need to be put in place to stop the sediments and PFAS contamination from being mobilised and to allow access for an excavator to remove the sediment. Reuse of the sediments in the open channel, onsite or offsite, will not be possible.

Following the implementation of these mitigation measures potential adverse effect of mobilization of PFAS into the open channels will be negligible, and the significance will reduce to imperceptible.

20.2.2.8 Water

The employment of good construction management practices will minimise the risk of pollution of surface water. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al 2001).

The guide is written for project promoters, design engineers and site and construction managers. It addresses the main causes of pollution of soil, groundwater and surface waters from construction sites and describes the protection measures required to prevent pollution of groundwater and surface waters and the emergency response procedures to be put in place so that any pollution, which occurs, can be remedied. The guide addresses developments on green field and potentially contaminated brownfield sites. The construction management of the site will take account of the recommendations of the CIRIA guidance to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Site activities considered in the guidance note include the following:

- excavation
- earthmoving
- concreting operations.

Additional specific guidance is provided in the CIRIA technical guidance on Control of Water Pollution from Linear Construction Projects (Murnane et al 2006).

Surface run-off from wheel washing areas can contain pollutants such as:

- detergents
- oil and fuel
- suspended solids
- grease.

The following best practice water management measures will be implemented during the construction phase:

- A filter drain and silt pits will be located at the base of all embankments, settled solids will be removed from the silt pits regularly;
- Temporary stockpiles will be surrounded by silt fencing;
- Where at all possible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together. Excavation and earthworks will be suspended during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage;
- Oil, petrol and other fuel containers will be double-skinned and bunded to be able to contain 110% volume to guard against potential accidental spills or leakages entering local watercourses;
- A spill kit including an oil containment boom and absorbent pads will be on site at all time;
- No vehicles will be left unattended when refuelling;
- Dedicated fuel storage areas will be introduced on-site;
- All vehicles and plant will be regularly maintained, washed and inspected for fuel, oil and hydraulic fluid leaks;
- Machinery including hand-tools will never be washed in watercourses or drainage ditches or within 15m of watercourses or drainage ditches;
- Concrete pouring will not take place during heavy rain when run off is likely due to excess water. Shuttering will be designed to accommodate small increases in the volume of material contained within the shuttered area due to rainfall. Pre-cast concrete will be used if possible; otherwise all cast-in-place concrete will be isolated from flowing water for a minimum of 48 hours to allow pH to reach neutral levels;
- Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at an appropriate facility offsite or at the location where concrete was sourced;
- Ensure that all areas where liquids are stored, or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Minimise the use of cleaning chemicals;

- Use trigger-operated spray guns, with automatic water-supply cut-off;
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference;
- Fuel, oil and chemical storage on site will be secure;
- Site storage will be on an impervious base within a secondary containment system such as a bund;
- A spill kit with sand, earth or commercial products that are approved for the stored materials will be kept close to the storage area. Staff will be trained on how to use spill kits correctly;
- Damaged, leaking or empty drums will be removed from site immediately and disposed of via a registered waste disposal contractor;
- Mobile plant will be refuelled in a designated area;
- A wheel-wash will be installed for use by all construction vehicles leaving site;
- A road-sweeper will be used to remove dirt and debris from roads; and
- A bypass petrol interceptor will be installed in the car park drainage network prior to connection to the existing drainage network to prevent any hydrocarbon spills from entering the surrounding drainage network.

A summary of the best practice measures relevant to hydrology are provided as follows and are in accordance with CIRIA guidance:

- Construction compound will be located in areas that are at minimal risk of flooding (outside 1:100-year flood zone);
- A monitoring regime/programme for water quality will be put in place;
- There will be no tracking of machinery within watercourses;
- Silt fences/swales shall be provided at all locations where surface water run-off may enter/leave the working areas, and adjacent to the haul roads;
- All works undertaken will be fully consolidated to prevent run-off of silt; and
- Access/haul roads shall be set back from watercourses by at least 10m where possible.

Flooding

During the construction phase, the following control measures will be adhered to:

- No construction materials or temporary stockpiles will be stored in flood plains or in areas which would impede flood flow paths; and
- In relation to effects of extreme weather events and related conditions the contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

Foul Drainage

The foul drainage associated with the welfare facilities at the construction compound includes a canteen, toilets, showers and hand wash basin only. Wastewater will be disposed of by connection to the existing foul drainage system or by removal from site to an appropriately licensed treatment facility.

20.2.2.9 Resource and Waste Management

During the demolition and construction phases, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Completion of the undercroft car park and construction of new foundations and the installation of any underground services will require the excavation of approximately 73,022m^3 of soil and hardstanding.

Should the removal of any of this material be necessary, it will be removed offsite for appropriate reuse, recovery, recycling and/or disposal. A planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (included with this planning application) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible. Circular economy principles will be implemented wherever possible.

In addition to the inherent design measures which will be implemented during construction, the following mitigation measures will also be implemented:

- Waste disposal will be minimised so far as is reasonably practicable;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- Waste from the proposed development will be transported by authorised waste collectors in accordance with the relevant Irish waste legislation (Waste Management (Collection Permit) Regulations, 2007 as amended);
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the relevant Irish waste legislation (Waste Management Acts 1996-2016 as amended);
- Source segregation: Where possible metal, timber, glass and other recyclable material will be segregated on site in a designated area within the construction compound during construction works and will be removed off site to a permitted/licensed facility for recycling. Where required, waste stream colour coding, and photographs of wastes will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and

quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;

- Material management: 'Just-in-time' delivery will be used so far as is reasonably practicable to minimise material wastage;
- Supply chain partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;
- Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a contractor who holds the appropriate waste collection permit;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered, and which is disposed of; and
- The Contractor(s) will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place.

20.2.2.10 Population and Human Health

There will be dust, noise and vibration emissions as well as traffic effects during the construction of the proposed development. The selected construction methodologies will minimise these short-term effects. Mitigation measures as discussed below, will also help to avoid/minimise effects during the construction phase of the proposed development.

Measures which will be implemented to minimise effects on the general amenity of residents will include:

- The erection of directional and information signage for members of the public to indicate alternative routes and paths to be taken and convey "Business As Usual" for adjoining businesses;
- The provision of information to local householders and businesses during the construction phase;
- The provision of community liaison and nomination of personnel to manage community relations;
- The implementation of a Construction Environmental Management Plan (CEMP) to minimise effects of construction works on local amenity and on traffic flow (refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** for further details);

- The implementation of a dust minimisation plan during the construction phase of the development as part of the CEMP;
- The preparation of an emergency response plan to cover foreseeable risks;
- Building design specifications which will take into account sustainable building practices;
- Building design which is of high quality, which will minimise the visual effect of the proposed tower development;
- The implementation of a Traffic Management Plan during the construction phase of development. A Construction Waste Management Plan will also be prepared by the Contractor; and
- Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility.

Mitigation measures in relation to contaminated material are outlined in **Chapter 13** *Land, Soils, Geology and Hydrogeology*.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions. Refer to **Chapter 7** *Traffic and Transportation* for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Chapter 8** *Air Quality and Climate* and above for details of dust mitigation measures.

Noise and vibration disturbance will also be minimised. Best practice measures for noise control on construction sites will be adhered to during construction. Refer to **Chapter 9** *Noise and Vibration* for further details of noise and vibration mitigation measures.

As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses. Further details are provided in **Chapter 5** *Construction Strategy*.

The overall design of the proposed development will be in accordance with the provisions of all relevant technical guidance and regulations.

20.2.2.11 Material Assets

Utilities

The Contractor will be required to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained throughout construction unless this has been agreed in advance with the relevant service provider and local authority.

All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

Land use

No mitigation measures for land-use are required.

20.2.2.12 Major Accidents and Disasters

The proposed development will be designed and built in line with best international current practice and, as such, mitigation against the risk of major accidents and disasters will be embedded through the design. All works will be carried out in accordance with the Safety, Health, and Welfare at Work (Construction) Regulations, 2006 (SI No. 504 of 2006).

As outlined in **Chapter 18** *Major Accidents and Disasters*, all potential risks identified during the construction phase were determined to be 'low risk scenarios'. Prior to the commencement of works the contractor will prepare a Construction Environmental Management Plan and submit to Cork City Council for approval. The CEMP, which will be a live document and continuously updated as the proposed development progresses, will ensure the potential risks of major accidents and disasters are identified, avoided and mitigated as necessary.

Aeronautical Assessment

While it has been concluded that the proposed development complies with all aviation and aeronautical requirements affecting the site, the following mitigation measures will be required during construction:

- Cranes on site (and in particular for Block A) will be fitted with aviation warning lights, with such lighting on their highest points and on the jibs of any luffing cranes;
- Prior notification of any such crane (i.e. any object of greater than 45m in height above ground within 10km of a licensed aerodrome) must be submitted, at least 30 days in advance, to the Irish Aviation Authority and to the airport operator i.e. to Cork Airport Authority under S.I. 215 of 2005 – '*Irish Aviation Authority (Obstacles to Aircraft in Flight) Order*'; and
- Regarding helicopter operations at CUH, advance notice of cranes on site should also be given to the HSE's Aero-Medical Unit (in Phoenix Park, Dublin). The obligation to provide these crane notifications will be included in the project's Construction Environmental Management Plan.

20.2.3 Operational Mitigation Measures

20.2.3.1 Traffic and Transportation

An Outline Mobility Management Plan for the residents of the proposed development has been prepared and is attached as **Appendix 7.1**. This document sets mode split targets for residents at the proposed development and sets out initiatives proposed in order to encourage travel by sustainable modes and meet the targets set.

20.2.3.2 Air Quality and Climate

Traffic Emissions

The proposed development promotes the use of public transport, pedestrian walkways and cycle lanes to reduce the number of private vehicles on the road. In addition, E-car charging facilities will be provided to encourage the use of electric cars, as well as bike storage. These measures will contribute towards reducing potential traffic emissions as a result of the operation of the proposed development.

Carbon Emissions

The following energy and carbon emission reduction measures will be implemented in the proposed development to reduce fuel consumption and associated carbon emissions and promote sustainability:

- A Building Energy Rating (BER) Certificate will be provided for each apartment and will detail energy performance and carbon emissions associated with each of the dwellings;
- Fabric Energy Efficiency will be implemented to reduce the consumption of fuel and associated carbon emissions and operating costs;
- Energy Labelled White Goods will be supplied to all units to reduce the amount of electricity required for occupants;
- The external lighting for the development has been designed and specified with high-end, high efficiency LED light fittings throughout with required colour temperatures, automatic daylight lighting control and combined PIR detection (where appropriate). This will minimise energy consumption and associated carbon emissions;
- Electric Car Charging Points will be specified within the carpark, to offer an opportunity to reduce the carbon output of the transport sector, as they emit zero exhaust pipe emissions;
- Energy performance strategy commercial units will be used across commercial areas;
- Exhaust Air Heat Pumps will be used to provide low emission heating systems;

- Low Energy LED Lighting will be used to allow for significant electrical energy savings, and increasing the occupant's exposure to natural daylight;
- Biodiversity & Planting will be used throughout the development to promote ecological enhancement, improved air quality and sensory environment;
- Sustainably sourced materials will be used where feasible, with low-carbon products preferred; and
- Maintenance and Management operations will follow sustainable practices, encouraging natural growth habits, and minimizing chemical inputs.

20.2.3.3 Noise and Vibration

With the implementation of the necessary screening and attenuation as required to meet CIBSE guidelines, no further mitigation of operational noise and vibration impacts are required.

20.2.3.4 Biodiversity

No additional mitigation measures to those presented in **Section 20.2.2.4** are required for the operational aspects for Biodiversity.

20.2.3.5 Archaeology, Architectural and Cultural Heritage

The proposed development will not result in any predicted construction phase direct impacts, or significant indirect impacts, on the architectural heritage resource which will require mitigation.

20.2.3.6 Townscape and Visual

External Landscape and Open Spaces Mitigation

The planning application is accompanied by a *Landscape Design and Access Statement (Park Hood 2022).* Green infrastructure and external open spaces include broad streetscapes with green infrastructure (including bioswales), pocket parks, urban furniture, shared spaces and designated play areas for resident and local visitor use. The site layout will ensure properties face areas of open space (and streets) to provide passive supervision / ownership ensuring no hidden corners. The different spaces are unified through materiality and provide places for people to sit, gather, socialise and reflect.

As part of the design process, existing environmental and technical constraints and assets were reviewed with the design team and the landscape design considerations focused on provision of public realm areas, open spaces, playgrounds, and major pedestrian routes across the site that would be accessible to all members of the community. The objectives include creation of different landscape treatments including avenue tree types and building types to create identifiable character zones. In essence, the external landscape comprises distinct areas that will have different character and treatments namely:

- Communal Open Spaces;

- Public realm, plaza & streetscapes;
- Public Park; and
- the Open Channel to the north.

Communal Landscapes

Communal open space is provided at podium level and roof gardens including areas of hard landscape, tree planting, lawns, ornamental planting including seating / passive amenity areas, and areas for communal garden and outdoor working. The space also includes designated play area. The objective of the collective podium parks and communal spaces is to allow residents at all levels ready access to exterior garden spaces.

Public Realm

Block A will be located aside the Neighbourhood Centre and these will collectively act as a nodal point to the site set off a major public plaza that is envisaged to be a landmark location and meeting point. This area will include a major public realm area including a paved plaza which will be designed to create a strong identity and distinctiveness to this area.

The main link street through the site, is designed to provide a strong "green" boulevard character that is aligned with avenue trees, landscape areas and broad walking routes and cycleways. Off this, there is the creation of a network of dedicated movement corridors free of motor vehicles through interconnected open spaces and parklands that provide a safe environment for walkers, runners and cyclists. These will provide green links between Centre Park Road, the internal open spaces leading towards the key nodal point and public realm plaza / park and on to Marina Park. Allowance is also made for a future connection from the park to the west of the site into an anticipated riverside connection from this area to the city centre.

Public Park

The proposed layout includes significant open space and multi-functional parkland development to the west of the site that will have both a functional and aesthetic purpose. The design is for a mix of informal and formal landscape character with recreational and amenity spaces including fitness circuits with equipment. This will include provision of playgrounds to cater for the recreational and educational requirements of children of residents. These will be designed to be both secure and overlooked in line with RoSPA safety advice and European Standard (EN 1176). All age groups will be catered for with the layout based on best practice in terms of safe and aesthetic design proposals that will complement interaction between varied groups.

The site layout has been designed in a manner that allows for natural surveillance of all open spaces with the space being overlooked by adjacent properties giving a feeling of security and encourage positive social behaviour.

Open spaces are designed with consideration given to their long-term management ensuring this is not onerous with heavy resource requirements. On-going management plans will identify areas that can be managed to encourage habitats creation as the designed landscape measures mature and evolve.

Open Channel

Landscape areas will be retained and enhanced aside the waterway towards the site boundary to allow for connected habitat creation and wildlife corridors. This will include areas managed for biodiversity and ecosystems that will see a net gain of biodiversity on the site.

Bio-diversity measures including bat and bird boxes, relocation of potentially effected ground flora into the open space and laying out of a lowland meadow are also part of the proposed development and will be undertaken under direction from site ecologists.

Green Roofs

The flat roof areas include sedum green roofs designed, in part to assist in drainage patterns by intercepting rainfall, building insulation and but also to enhance biodiversity. These areas are not accessible to residents but will contribute to the general character and environmental integrity of the development.

20.2.3.7 Land, Soils, Geology and Hydrogeology

No mitigation is required as no significant impacts were identified for the operational phase of the works.

20.2.3.8 Water

The mitigation measures which will be implemented during the operational phase are outlined below.

- Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to prevent any hydrocarbons from entering the surrounding drainage network and to ensure safe discharge into the receiving waters;
- Non-return valves will be fitted on the downstream end of the car park drainage to prevent water backing up into the carpark areas during conditions where the receiving drainage network is surcharged;
- Grease traps will be installed where required within the wastewater drainage system to prevent water contamination from fats, oils and greases (FOGs);
- The flood risk assessment (**Appendix 14.1** of this EIAR) outlines any flood risk defences measures being implemented as part of the proposed development;
- Sustainable Urban Drainage (SUDS) features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to reducing the extent of grey infrastructure requirements. Examples of SUDS features that will be incorporated where practicable are permeable paving, under-drained planters/ tree pits, and an attenuation pond; and

- It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

20.2.3.9 Resource and Waste Management

A dedicated communal waste storage area will be allocated for the residents at ground level. The waste storage area will be appropriately sized to accommodate the estimated waste arisings. The commercial tenants will also have a dedicated waste storage area. These waste storage areas will be allocated to ensure a convenient and efficient management strategy with source segregation as a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan (**Appendix 15.1**) has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture. The Plan will comply with all legal requirements, waste policies and best practice guidelines and will demonstrate that the required storage areas have been incorporated into the design of the development.

20.2.3.10 Population and Human Health

Due to the construction phasing of the proposed development, construction mitigation measures will be required during operation (as outlined in **Section 20.2.2.10**).

Mitigation is only proposed for the operational phase when subsequent construction phases are being carried out or when maintenance works are required. Routine maintenance activity will include landscaping, cleaning of buildings, maintenance of hydrocarbon interceptors and grease traps, and picking of litter.

20.2.3.11 Material Assets

Utilities

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained throughout operation unless this has been agreed in advance with the relevant service provider and local authority.

Land Use

No mitigation measures are required as it is expected that the proposed development will have a positive effect on land use and property.

20.2.3.12 Major Accidents and Disasters

The proposed development will be designed and built in line with best international current practices and as such mitigation against the risk of major accidents and/ or disasters will be embedded throughout the design stage.

As outlined in **Chapter 18** *Major Accidents and Disasters,* all potential risks identified during the operational phase were determined to be 'low risk scenarios'.

Fire

The fire risk mitigation measures for the proposed development will comprise all fire safety measures necessary to comply with the requirements of Part B (Fire) of the Second Schedule to the Building Regulations 1997-2017. It is noted that these measures will be validated under the Building Control Act 1990-2007 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2018 from Cork City Council/Cork City Fire Brigade.

Fire risk mitigation measures include the following:

- Emergency Lighting
- Fire Detection & Alarm System (FDAS)
- Disable Refuge Intercoms
- Automatic Sprinklers/ Suppression
- Motorized Smoke/fire dampers
- Smoke Ventilation to firefighting shafts and common lobbies
- Refuse chambers / chute
- Emergency back-up power (life safety)
- Car park Ventilation
- Firefighting lift
- Rising mains
- Evacuation lifts
- Fire Control Centre
- Fire extinguishers
- Fire Hydrants

Aeronautical Assessment

The proposed development complies with all aviation and aeronautical requirements affecting the site. Mitigation measures to be implemented during operation include the fitting of aviation warning lighting on Block A to ICAO specifications.

20.3 Summary of Monitoring (Construction and Operation)

20.3.1.1 Traffic and Transportation

No construction or operational monitoring measures are required for traffic and transportation.

20.3.1.2 Air Quality and Climate

No construction or operational monitoring measures are required for air quality and climate.

20.3.1.3 Noise and Vibration

No construction or operational monitoring measures are required for noise and vibration.

20.3.1.4 Biodiversity

Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR and associated ecological reports so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented, and assessed.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The contractor will be required to inform the Employer's Representative of any continuous exceedances of criteria.

Further detail on-site inspections and audits is included in the CEMP (included as **Appendix 5.1)**.

20.3.1.5 Archaeology, Architectural and Cultural Heritage

Archaeological monitoring of ground excavation works during the construction phase will be carried out by a suitably qualified archaeologist, licensed by the National Monument Service, in accordance with Section 4.7.2.3 (Archaeological Monitoring) of the *South Docks Local Area Plan 2008*.

In the event that any archaeological remains, or other buried features of cultural heritage interest, are identified they will be recorded and left to remain securely in

situ while the National Monuments Service and the Cork City Council Archaeologist are consulted to determine further appropriate mitigation measures, which may entail preservation *in situ* by avoidance or preservation in record by archaeological excavation.

There are a number of mandatory processes to be completed as part of applications to the National Monuments Service (NMS) for archaeological licences, and these will allow for monitoring of the successful implementation of the archaeological mitigation measures.

A method statement detailing the proposed strategy for the archaeological supervision of the construction phase will accompany the licence application and will clearly detail the extent of ground works and outline the consultation process to be enacted to determine further required mitigation measures in the event that any sub-surface archaeological remains are identified.

Reports on all archaeological site investigations will be submitted to the NMS and the planning authority and will detail the results in written, drawn and photographic formats.

20.3.1.6 Townscape and Visual

The management of landscape areas will initially be undertaken by an ACLI approved landscape contractor. After 12 months the maintenance will be handed over to the long-term Management Company who will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exists and has been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

20.3.1.7 Land, Soils, Geology and Hydrogeology

Construction Phase

During construction, the contractor will further develop the CEMP as included in **Appendix 5.1**. This will outline the methods of monitoring and frequency. In relation to the reuse of soil the appointed contractor will ensure acceptability of the soil and stone for reuse for the proposed development with appropriate handling, processing and segregation of the material. This will be achieved by testing and monitoring of the excavation work. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled within the working area where possible, using an appropriate

method to minimise the impacts of weathering. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications (e.g., Article 27 notification to the EPA).

As stated in **Chapter 13** *Land, Soils, Geology and Hydrogeology*, it is a mandatory requirement by the HSA to implement an air monitoring program by an independent analyst for the removal of the asbestos in soil. The contractor who carries this out will be required to demonstrate through the monitoring that the control measures do not release airborne asbestos fibres.

Operation Phase

No monitoring is specified as no significant impacts were identified for the operational phase of the works.

20.3.1.8 Water

Construction

There are no monitoring measures proposed during the construction phase of the proposed development.

Operation

As part of the emergency response plan, staff at the buildings of the proposed development will maintain awareness of flood and weather forecasts on an ongoing basis as well as receive warnings from Cork City Council and Met Éireann.

20.3.1.9 Resource and Waste Management

No construction or operational monitoring measures are required for resource and waste management.

20.3.1.10 Population and Human Health

No monitoring is required during the construction or operation of the proposed development in relation to population and human health.

Any monitoring necessary for air quality and noise have been specifically outlined in **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration*, with respect to effects from the construction and/or operation and/or decommissioning of the proposed development.

20.3.1.11 Material Assets

During both construction and operational phases, services will continue to be consulted throughout the design and construction processes.

20.3.1.12 Major Accidents and Disasters

Construction Phase

Aside from the monitoring measures to be carried out by the contractor as outlined in the Construction Environmental Management Plan (e.g., site inspections and audits) and throughout the EIAR, no additional monitoring is considered necessary during the construction phase of the proposed development.

Operation Phase

No additional monitoring is considered necessary during the operational phase of the proposed development.

20.4 Residual Effects

20.4.1.1 Traffic and Transportation

Taking into account the analyses presented in the traffic and transport assessment and the progressive approach taken to car parking provision on site and promotion of alternative, sustainable modes of travel, the impact of the proposed development on the transport network in the site vicinity has been minimised. Whilst the development traffic impact on the junctions in the immediate site vicinity range from not significant to slight (and in some instances moderate), this is a consequence of these junctions being lightly trafficked at present (with significant residual capacity even after the introduction of the proposed development), and the impact of the proposed development on the junctions in closer proximity to Cork City Centre is seen to be slight. Collectively, therefore the residual impact associated with the proposed development will be a moderate increase in traffic flows in the immediate site vicinity and a slight impact in the vicinity of Cork City Centre.

Therefore, it is concluded that the proposed development as a whole will have a **not significant** residual impact on the traffic and transport network in the vicinity of the proposed development site.

20.4.1.2 Air Quality and Climate

Construction Phase

Following the implementation of the mitigation measures outlined in **Chapter 8** *Air Quality and Climate*, no significant impacts on air quality or climate are envisaged during the construction phase.

Operation Phase

No significant impacts on air quality or climate are envisaged during the operational phase.

20.4.1.3 Noise and Vibration

Following the implementation of the mitigation measures outlined above and compliance with limit values, no significant effect on the environment in terms of noise and vibration at construction, operation or decommissioning stages is predicted.

20.4.1.4 Biodiversity

Habitats

The habitats to be directly affected by the proposed development consist primarily of modified habitats with limited ecological value and are classified as Local importance (Lower to Higher value). No impacts on habitats within the Cork Harbour SPA or other designed sites e.g., Douglas River Estuary pNHA or any other NHA/pNHA will occur. No rare or uncommon plant species were recorded within the proposed development site.

The existing habitats onsite include a large component of non-native and/or invasive species. To mitigate the loss of existing site vegetation, the proposed development includes a comprehensive tree and shrub planting strategy aimed at using a range of native and high-value non-native species throughout the development. While the existing habitats have some value for local bird and bat species, the higher proportion of native species including in the landscape plan means that there will be neutral impact on habitats at the site during operation.

Non-native Invasive Species

Any potential risks from these species will be managed during the construction phase and therefore no residual effect from the spread of invasive species will occur.

Water Quality

No significant direct or indirect residual effects on water are predicted as a result of the proposed development.

Fauna

To mitigate the loss of existing site vegetation, the proposed development includes a comprehensive tree and shrub planting strategy aimed enhancing the biodiversity potential of the site in line with the All- Ireland Pollinator Plan using a range native and high-value non-native species. Following the implementation of the landscape plan, impacts on bats, birds and invertebrate species will be slight, negative in the short-term and negative, not significant in the long-term as new planting matures.

Based on the above, removal of trees, which will incorporate specific mitigation measures, will not have a significant impact on local bat populations It is also noted that bat boxes will be provided which will provide bat roosting habitat which is likely to be of higher value for bats than that provided by the trees to be removed. Detailed mitigation will be put in place prior to and during construction to prevent any potential impacts on bats.

Levels of disturbance and lighting will increase during the construction and operation phases, but it is noted that the existing site and the area in proximity to the proposed development are subject to high levels of disturbance and that, to a degree, any local fauna which utilise this area will be habituated to high levels of disturbance. No light spillage will occur on the River Lee. No significant effect due to habitat fragmentation or significant effects on commuting routes for fauna will occur. Impacts on fauna will be negative in the short-term and negative, not significant in the long-term as new planting matures.

The final height of the buildings at the proposed development will be up to 35 storeys in height. While the buildings are likely to increase rates of collision for common local bird species, the impact on birds due to collision during operation will be localised negative, slight and long-term at a local level.

Other plans and projects relevant to the proposed development and potential cumulative impacts were assessed and no significant cumulative impacts were identified. No significant residual cumulative effects will occur.

The NIS, which is included as part of the planning application documentation, concluded the proposed development will not pose a significant risk to SCI species within the Cork Harbour SPA.

20.4.1.5 Archaeology, Architectural and Cultural Heritage

There are no recorded archaeological sites located within the proposed development site or its environs. All potential impacts on any unrecorded, sub-surface archaeological remains encountered during monitoring of ground excavations during the construction phase will be addressed in consultation with the National Monuments Service and the Cork City Council Archaeologist. There are no designated structures of architectural heritage significance located within the proposed development site. The proposed development will result in not significant to moderate indirect residual impacts on the setting of the elements of the architectural and cultural heritage assets as detailed in **Chapter 11** *Archaeology, Architectural and Cultural Heritage***.** No significant residual impacts on the archaeological, architectural and cultural heritage resources are predicted.

20.4.1.6 Townscape and Visual

The proposed development is regarded as being permanent or long term in landscape and visual terms. The most appreciable effects relate to the scale and nature of the proposed built development footprint although much of the land is to be set out as public open space and part of a wider landscape development proposal. While substantial, the new facades, architecture, building form, usage and enhanced public realm, ecology zones and parklands will be positive and significant contributions to the townscape character of this area. Further the active frontages at ground level will equate to a significantly improved architectural relationship with both Centre Park Road and Marina Park, reinvigorating use and activity on giving it a more productive and appropriate land-use for this nodal and gateway point.

The proposed development will be significantly taller than the existing buildings on the site and have landmark status in this area and in views from the north along the River Lee. The broad width of river corridor in conjunction with the generally large scale of adjacent landscape and built environment including the ESB Marina Station and Páirc Uí Chaoimh ensure that this development, while higher, can be accommodated and absorbed without detriment or adverse character effects. This proposal will add to the emerging architectural trends in the South Docks area having a high level of design and façade detail which will mark it out in architectural terms as locally distinct. Such an introduction will enhance the existing non-descript townscape character and have positive effects on this part of the city.

The proposal will be a prominent and a significant addition to the local skyline and townscape that is likely to influence and instigate further (cumulative) changes that will have substantial and positive contribution to character of this part of Cork. While effects are categorised as significant to areas on and close to the proposed development site, the baseline setting ensures it can be successfully absorbed into this area without causing any adverse townscape / landscape effects and it will serve this part of the city in a positive way as a building with landmark and notable architectural status.

The site currently comprises a former industrial (and now brownfield) site that contributes adversely to the character and visual quality of this part of Cork. The proposed development, while substantial, would result in a positive contribution to the townscape character and urban fabric of this part of the South Docklands. While recognising there are some significant local impacts, this proposal, on balance, has no unacceptable townscape / landscape or visual effects and can be successfully absorbed into the character and views of this part of the city.

20.4.1.7 Land, Soils, Geology and Hydrogeology

Construction Phase

With the implementation of the mitigation measures proposed in **Section 20.2.2.7**, during construction, the potential adverse effects on human health, groundwater quality beneath the proposed scheme and Lee Estuary Lower will be negligible and imperceptible significance. Hence no significant residual effects are anticipated.

Operation Phase

No residual effects of significance on land soil geology and hydrogeology were identified during the operational phase.

20.4.1.8 Water

Construction Phase

With the employment of the above mitigation measures (see **Section 20.2.2.8** and standard good construction practices, it is considered that overall, there will be no

significant effects on surface water as a result of the construction of the proposed development.

Operation Phase

With the employment of the above mitigation measures (See **Section 20.2.3.8**) and standard good construction practices, it is considered that overall, there will be no significant effects on surface water as a result of the construction of the proposed development.

20.4.1.9 Resource and Waste Management

Following the implementation of the mitigation measures described in **Section 20.2.2.9** and **20.2.3.9,** the residual effects are expected to be as follows:

- The effect of excavation waste is expected to be slight, negative and short-term;
- The effect of construction waste is expected to be slight, negative and short-term; and
- The effect of operational waste is expected to be negligible and long-term.

There is expected to be adequate capacity in the region to receive the wastes likely to be generated by the construction and operation of the proposed development.

With the implementation of the Construction and Demolition Waste Management Plan (CDWMP), and the Operational Waste Management Plan (OWMP), the residual impact of the proposed development on resources and waste management will be direct, slight, negative and long-term.

20.4.1.10 Population and Human Health

Construction Phase

There will be short term adverse effects on population and human health during construction of the proposed development, from increased dust, noise and traffic. These are discussed in the relevant chapters of this EIAR, with suitable mitigation measures identified to avoid or minimise effects. As such, no significant negative residual effects are predicted.

Operational Phase

Operation of the proposed development will generate a long-term positive impact on the population of Cork City through provision of housing in response to the current housing crisis and contribution to meeting population demand. The operation of the proposed development will also result in a significant positive long-term effect on the local economy through direct employment, local trade, business opportunities and tourism.

The proposed development will permanently generate additional vehicles on the road network within the local vicinity, however this impact is considered to be non-significant.

20.4.1.11 Material Assets

No significant negative effects on land-use or utility services are predicted.

The effect of the proposed development on land use will be significant, positive and permanent as the proposed development will create a new residential asset for the Cork City docklands area. The proposed development will provide additional housing for the growing City population, as well as amenity areas for retail and childcare. The proposed development will result in a boost for the local economy in the area.

20.4.1.12 Major Accidents and Disasters

No plausible major accidents or disaster were identified, to which the proposed development will be particularly vulnerable during the construction or operation phase. No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside the site during construction, operation or decommissioning.