ARUP

Creamfields Residential Development

Environmental Impact Assessment Report

Part 1 of 2

Non-technical Summary and Main Chapters

February 2022

Watfore Limited

Creamfields Residential Development

Environmental Impact Assessment Report

EIAR

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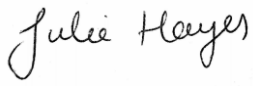
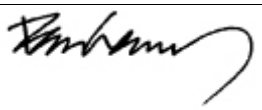
		Signature			
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Glossary

AA – Appropriate Assessment

AADT – Annual Average Daily Traffic

ABP – An Bord Pleanála

ACA – Architectural Conservation Areas

ACM – Asbestos Containing Materials

AER – Annual Environmental Report

AGS – Association of Geotechnical and Geo-Environmental Specialists

AHLV – Areas of High Landscape Value

AiS – Asbestos in Soil AiS

AOD – Above Ordinance Datum

AOV – Automatic Opening Vent

AQS – Air Quality Standards

AST – Above ground Storage Tank

BCI – Bat Conservation Ireland

BER – Building Energy Report

bgl – below ground level

BH – Borehole

BOCCI – Birds of Conservation Concern in Ireland

BOD – Biological Oxygen Demand

Bq/m^3 – Becquerel per cubic metre

BRE – Building Research Establishment

BSI – British Standard Institution

BTO – British Trust for Ornithology

C&D – Construction and Demolition

c. – circa

CAFE Directive – Cleaner Air for Europe

CAP – Climate Action Plan

CCC – Cork City Council

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

CMP – Cork Milk Producers

CNP – Cycle Network Plan

CO – Carbon Monoxide

CO_2 – Carbon Dioxide

COD – Chemical Oxygen Demand

COMAH – Control of Major-Accident Hazards

CoR – Certificate of Registration

cSAC – candidate Special Areas of Conservation

CSM – Conceptual Site Model

CSO – Central Statistics Office

CSO – Combined Sewer Overflows

CTMP – Construction Traffic Management Plan

CUH – Cork University Hospital

DART – Dublin Area Rapid Transit

DaS – Dumping at Sea

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

DRO – Diesel Range Organics

EAHP – Exhaust Air Heat Pumps

EC – European Commission

EEC – European Economic Community

EIA – Environmental Impact Assessment

EIAR – Environmental Impact Assessment Report

ELC – European Landscape Convention

ELV – Emission Limit Value

EMS – Environmental Management Systems

EPA – Environmental Protection Agency

EQS – Environmental Quality Standards

ER – Employers Representative

ERT – Electrical Resistivity Tomography

ESB – Electricity Supply Board

ESRI – The Economic and Social Research Institute

ETA – Emissions Trading Accounting

EU – European Union

EV – Electric Vehicle

EWC – European Waste Catalogue

FRA – Flood Risk Assessment

GAC – Generic Acceptance Criteria

GDSDS – Greater Dublin Strategic Drainage Study

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

HCV – Heavy Construction Vehicle

HEFS – High-End Future Scenario

HFA – Housing for All

HGV – Heavy Goods Vehicle

HSA – Health and Safety Authority

HSE – Health Service Executive

HWO – Haz-Waste Online

IAA – Irish Aviation Authority

IAQM – Institute of Air Quality Management

IBA – Important Bird and Biodiversity Areas

ICE – Inventory of Carbon and Energy

ICPSS – Irish Coastal Protection Strategy Study

IED – Industrial Emissions Directive

IFI – Inland Fisheries Ireland

IGI – Institute of Geologists Ireland

IGV – Interim Guideline Values

IPPC – Integrated Pollution Prevention and Control

IRFU – Irish Rugby Football Union

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

LCV – Light Construction Vehicle

LGV – Light Goods Vehicle

LoW – List of Wastes

LPHW – Low Pressure Hot Water

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

MASP – Metropolitan Area Strategic Plan

MMP – Mobility Management Plan

MNR – Mixed Non-Recyclable

mOD – metres above/below Ordinance Datum

MRFS – Mid-Range Future Scenario

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

NDC – Nationwide Data Collection

NGOs – Non-Governmental Organisations

NHA – Natural Heritage Area

NIAH – National Inventory of Architectural Heritage

NIS – Natura Impact Statement

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

NRMM – non-road mobile machinery

NSO – National Strategy Outcomes

NTA – National Transport Authority

NTS – Non-Technical Summary

OCM – O'Callaghan Moran Limited

OCSO – O'Connor Sutton and Cronin Limited

OLS – Obstacle Limitation Surfaces

OPW – Office of Public Works

OSI – Ordinance Survey of Ireland

PAHs – Poly-Aromatic Hydrocarbons

PCC – Primary Care Centre

PCU – Passenger Car Units

PDA – Planning and Development Act 2000

PE – Population Equivalent

PFRA – Preliminary Flood Risk Assessment

PGL – Priority Geotechnical Limited

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

PS – Protected Structures

PS – Pumping Station

PV – Photovoltaic

QBAR – Queue Base Address Register

QI – Qualifying Interests

RBMP – River Basin Management Plan

RC – Rotary Core

RFC – Ratio of Flow to Capacity

RFI – Request for Information

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

SCR – Solid Core Recovery

SHD – Strategic Housing Development

SI – Site Investigation

SIR – Site Infrastructure Report

SMR – Site and Monuments Record

SO_2 – Sodium Dioxide

Source Protection Zones

SPA – Special Protection Area

SPPR – Specific Planning Policy Requirements

SPT – Standard Penetration Testing

SPZ – Source Protection Zone

sqm – square metres (m^2)

SRF – Soil Recovery Facility

SuDS – Sustainable Drainage Systems

SUDS – Sustainable Urban Drainage Systems

TCR – Total Core Recovery

TII – Transport Infrastructure Ireland

TN – Total Nitrogen

TP – Total Phosphorous

TP – Trial Pit

TSS – Total Suspended Solids

TTA – Traffic and Transport Assessment

UCC – University College Cork

UWWTD – Urban Wastewater Treatment Directive

WAC – Waste Acceptance Criteria

WCP – Waste Collector Permit

WEEE – Waste electrical and electronic equipment

WFD – Water Framework Directive

WFP – Waste Facility Permit

WFS – Water Fowl Sanctuary

WHO – World Health Organisation

WWDA – Wastewater Discharge Authorisations

WWTP – Wastewater Treatment Plant

ZoI – Zone of Influence

Non-technical Summary

This is the non-technical summary of the environmental impact assessment report (EIAR) for the 'Creamfields Residential Development', 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 Red Line Boundary of the Proposed Development | not to scale [source: Google Earth © 2022]

Watfore 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. 3.39 ha, on lands located at the former "CMP Dairies" site, Kinsale Road / Tramore Road, Cork.

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

Planning Process

A proposed infrastructure project, which would exceed any one of the following specified thresholds, 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

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

Construction of more than 500 dwelling units.

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

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

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).

The proposed development involves the construction of 609 no. dwelling units, which is above the threshold of 500 dwelling units mentioned above. Therefore, a mandatory Environmental Impact Assessment Report under this category is required to accompany the planning application for construction of these dwelling units.

The site of the proposed development is 3.39 hectares, in a location which is zoned as "Residential, Local Services, and Institutional Uses" in the Cork City Development Plan 2015-2021[1] under Variation No. 6 (Tramore Road / Kinsale Road Site)[2]. It is therefore considered to be a built-up area. On the basis that the site area is below the 10-hectare threshold for EIA, a mandatory Environmental Impact Assessment Report is not required under that class.

[1] 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]
[2] Cork City Council (2019) Cork City Council Development Plan 2015-2021 – *Variation No. 6 (Tramore Road/Kinsale Road Site)*. https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-6-tramore-road_kinsale-road-site-rezoning-copy-1.pdf [Accessed: December 2021]

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:

An Taisce

Birdwatch Ireland

IAA

Cork Airport

Geological Society of Ireland

Health and Safety Authority

Health Service Executive

Transport Infrastructure Ireland

National Transport Authority

Heritage Council

Inland Fisheries Ireland

Irish Raptor Study Group

The responses received from these parties have been incorporated 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 precinct 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 key attributes of the proposed development site 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;

Positive planning history for town centre development; and

The location of the site on an existing public transport corridor (Black Ash Park and Ride), which will allow the proposed development to maximise the potential of this currently underutilised public transport service.

The proposed development addresses a long-standing need for the appropriate redevelopment of this site (the former CMP Dairy site) to provide new housing and amenities by proposing a new town square which will increase housing, employment and amenities and contribute to the sustainable growth of Cork City. The proposed development will play a significant role in addressing national, Southern-Regional and Cork City-based plans, strategies and policies.

Alternatives Considered

Alternative Site Locations

No alternative site locations were studied by the developer. The site is owned by the developer, and the nature of the proposed development constitutes a regeneration and revitalisation 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 a Primary Care Centre (PCC) (the subject of a separate planning application for the site). The location of the Primary Care Centre affected the layout of the proposed Creamfields Residential Development and is therefore included in the alternative layouts and designs considered.

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

Option 1: Considered 826 apartments with blocks ranging from eight to ten storeys in height, alternative site access points and the Primary Care Centre at the southern end of the site with its own surface carpark

Option 2: Considered 807 apartments with blocks ranging from eight to nine storeys in height and the Primary Care Centre to be located on the Tramore Road with a new vehicle access point.

Option 3: Following an initial meeting with the Cork City Architect, Option 3 considered 780 apartments with blocks ranging from four to 13 storeys in height, with space allocated for the proposed Cork BusConnects Scheme and a reduction in the car park deck to the north of the site.

Option 4: Considered 768 apartments with blocks ranging from four to 15 storeys in height and repositioning of the central pavilion.

Option 5: Considered 753 apartments with blocks ranging from four to 15 storeys in height and a further development of the architectural design and materials proposed for the scheme.

Option 6: Considered 753 apartments with blocks ranging from four to 15 storeys in height and a further development of Option 5 to become the Section 247 submission to the Planning Authority and included further architectural details.

Option 7: Considered 706 apartments with the building height ranging from three to 15 storeys in three different typologies.

Option 8 (Proposed Development): The final design included a reduction from 706 to 609 apartments, the removal of two eight-storey apartment buildings (A and K) and replacement with three to four storey duplex typologies buildings, a

new residential square, alteration of building heights, and alteration of the building profiles along Kinsale Road.

Comparison of Environmental Effects

The selection of the final design was primarily driven by the objective to create an attractive and commercially viable development, which made optimum use of the surrounding environment (proximity to the city centre, existing infrastructure etc.). This selection was also driven by the objective to provide a wide range of typology and tenure type to allow for all dwelling types (including age friendly units) and consistency with the provision of life cycle homes. This will support quality community and place making on site.

Potential environmental effects considered included impacts on townscape and visual, air quality and climate, traffic and transportation and architecture. Table 1 provides a comparative summary of the alternatives studied by the developer, using a traffic-light coding.

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
Do-Nothing	Neutral	Neutral	Neutral	Neutral
Option 1				
Option 2				
Option 3				
Option 4				
Option 5				
Option 6				
Option 7				
Option 8 (Preferred Development)				

Proposed Development

Site Description

The Creamfields Strategic Housing Development (SHD) site is located in Cork City and lies on the grounds of the former Cork Milk Producers (CMP Dairy) site. The area is classified as Industrial, commercial and transport units under the EPA Corine 2018 data and is located in an area zoned as Residential, Local Services, and Institutional Uses2 in the Cork City Development Plan 2015-20211.

The site is a brownfield site and is currently undeveloped. All buildings associated with this previous use have since been demolished and the site is currently vacant.

The site itself is bordered by Kinsale Road to the east and Tramore Road to the north. Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities adjoining and close to the proposed development including Musgrave Retail Partners Ireland to the west of the subject site.

Main Features of the Proposed Development

Watfore 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. 3.39 ha, on lands located at the former "CMP Dairies" site, Kinsale Road / Tramore Road, Cork. The proposed development will provide 609 no. residential dwellings, as follows:

- The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.
- All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments, and a 289sqm crèche with ancillary outdoor play area, a 547.5sqm community hub facility, a 550sqm gym, a 218sqm retail unit, and a 272sqm café at ground floor level.
- The proposed development will also include: 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; 1,145 no. bicycle parking spaces provided in dedicated external and internal cycle stores/shelters; and 21no. motorcycle spaces.
- The proposed total gross floor area above ground is 60,833.7sqm.
- The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces; internal roads and pathways; pedestrian access points; hard and soft landscaping and boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and

cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction to facilitate improved pedestrian access to the Black Ash Park and Ride; an upgrade to the existing access from Tramore Road; a cycle lane on Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

A new Primary Care Centre located on the Tramore Road side of the development is also planned but is not included in the proposed SHD application. This development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork. The provision of this Primary Care Centre will bring people to the town square.

While not part of the proposed development for the purposes of the consent application, the potential effects of the proposed Primary Care Centre, in cumulation with the proposed development, is fully addressed in the EIAR.

Construction Strategy

Construction

The proposed development is anticipated to be constructed in five sequential phases; a site enabling works phase followed by four main construction phases. It is intended that the construction of the proposed development will be completed together with a Primary Care Centre development (subject to a separate planning application), located in the north-western part of the site. Should the Primary Care Centre not be granted permission, the following construction activities will be simplified and shortened in duration accordingly.

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.

In summary, the proposed development consists of the following components and is described further on the relevant drawings and architectural reports that accompany this application:

Site Enabling Works (2 to 4 months)

Phase 1 Construction (circa. 2.5 to 3.5 years):

Primary Care Centre including Retail – Pharmacy (this is the subject of a separate planning application)

Retail (Gym, Crèche, and Café)

Town Square

Court Garden

Coffee Kiosk

Residential Blocks E & F

New entrance from Kinsale Road

Ancillary Site Development Works (including underground services, pavement upgrade works, central avenue site works, surface car parking, landscape works etc.)

Phase 2 Construction (circa. 2 to 2.5 years):

Residential Blocks G and C

Ancillary site works

Phase 3 Construction (circa. 2.5 to 3.5 years):

Residential Blocks J, H and B

Ancillary Site Development Works (including underground services, pavement upgrade works, landscape works – Meadow 2 etc.)

Phase 4 Construction (circa. 1.5 to 2.5 years):

Residential Blocks I, L, M and N

Ancillary Site Development Works (including underground services, pavement upgrade works, landscape works – Meadow 1 etc.)

Project Completions (circa. 3 to 6 months).

Site Preparation and Enabling Works

The site preparation and enabling works 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

The proposed development includes the demolition and removal of the existing concrete ground floor slabs and foundations along with carpark surfacing. The approximate area of hardstanding to be removed is 18,308m2.

A pre-demolition survey and formal asbestos audit will be undertaken prior to any demolition or excavation works.

Construction of New Buildings

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

Podium structure works

Earthworks

Foundations

Ground Floor Slab and Superstructure

Podium Slab and Transfer Structures

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) has been 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 200-250 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:

- 8am – 6pm: Monday to Friday;
- 8am – 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:

- Project Ireland 2040 - National Planning Framework (2018)
- Housing for All (2021)
- Climate Action Plan (2019)
- Urban Development and Building Height Guidelines (2018)
- Sustainable Urban Housing Design Standards for New Apartments (2020)
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)
- Urban Design Manual – A Best Practice Guide
- Design Manual for Urban Roads and Streets (2015)
- Guidelines for Planning Authorities on Childcare Facilities (2001)
- Smarter Travel – A New Transport Policy for Ireland (2009)
- The Planning System and Flood Risk Management (2009)
- The EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC)
- Regional Spatial and Economic Strategy for the Southern Region (2020)
- Cork Metropolitan Area Transport Strategy (2020)
- Cork Metropolitan Cycle Network Plan (2017)
- Cork City Development Plan 2015-2021
- Draft Cork City Development Plan 2022-2028.

Cork City Development Plan 2015-2021

The Cork City Development Plan 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.

Of significance for the proposed development is adopted Variation No. 6 of the Cork City Development Plan 2015-2021, which changes the zoning of the proposed development site from “Light Industry and Related Uses” to “Residential, Local Services, and Institutional Uses”, with the corresponding zoning objective being as follows:

“To protect and provide for residential uses, local services, institutional uses, and civic uses, having regard to employment policies outlined in Chapter 3.”

Having regard to this objective, the proposed development will:

- Support the provision of residential uses in Cork City;
- Deliver a sustainable neighbourhood in an area identified as having potential for intensification of development;
- Deliver an inclusive neighbourhood that has accessible, appropriately sized accommodation with community, childcare and healthcare facilities, supports, amenities and recreational public open space on site in a development that has passive surveillance and permeability designed into it;
- Support the urban regeneration of the Tramore Road/Kinsale Road area; and
- Enhance the landscape assets of this gateway location in a key area along a key approach road by delivering a landmark tall building as part of a high-quality, distinctive development.

Draft Cork City Development Plan 2022-2028

The proposed development clearly aligns with and supports the following key strategic principles of the Strategic Vision of the Draft Cork City Development Plan 2022-2028:

- Compact growth
- A city of neighbourhoods and communities
- Sustainable and active travel
- A resilient city
- A healthy, inclusive and diverse city
- A connected city.

The tip of the city centre island and Docklands areas of the city are identified in the draft Plan as being appropriate locations in Cork city for tall buildings. The rationale is that these areas are suitable for the highest forms of high-density development and that the areas inherently lack sensitivities.

On this basis, the same can be said for the location of the proposed development – it is a large, vacant brownfield site located along a strategic public transport corridor unencumbered by environmental or other sensitivities, such as protected views.

Conclusion

In conclusion, having regard to:

- the provisions of the National Planning Framework, which support the escalation of population growth in the existing built-up area of Cork City;
- the provisions of the Urban Development and Building Height Guidelines 2018, which advocate a presumption in favour of tall buildings in cities, subject to assessment against specific performance criteria;

- the provisions of the Regional Spatial and Economic Strategy for the Southern Region, which recognises the need to densify Cork City;
- the Design Manual for Urban Roads and Streets 2019;
- the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, and the accompanying Urban Design Manual – A Best Practice Guide 2009;
- the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2020;
- the site's strategic position in a prominent gateway location along a key approach to the city;
- the site's proximity to public transport;
- the significant potential of the proposed development, owing to its scale and nature, to initiate regeneration of the wider Tramore Road/Kinsale Road area;
- the nature, scale and design of the proposed development; and
- the pattern of existing and permitted development in the area;

it is considered that the proposed development would not seriously injure the residential or visual amenities of the area or of property in the vicinity, would respect and enhance the existing character of the area and would be acceptable in terms of pedestrian and traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Traffic and Transport

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 08:00-18:00; 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 250 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 156 vehicles will be travelling to site on a daily basis. Allowing a 10% increase to account for miscellaneous trips increases this to 172 vehicles per day at the site.

Approximately 250 HGV and LGV vehicles are expected to travel to the site per week (i.e. a total of 500 two-way vehicle movements). This would be equivalent to 92 two-way vehicle movements each 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 demonstrates generally low percentage increases in flows. As expected, the greatest impact is on the Tramore Road, from which the site will be accessed. The results of the traffic assessment indicate that the proposed development would result in only small increases in traffic on the local road network. A junction assessment was carried out for the proposed development and concluded that the proposed development would have an insignificant impact on the capacity of the following junctions –
Kinsale Road / Mick Barry Road
Kinsale Road / Tramore Road
Tramore Road Access

The effects of the development on the traffic network are considered slight, taking account of the conservative modelling approach and the mitigation measures to be implemented including a Construction Environmental Management Plan.

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. There are a number of properties within 100m of the proposed development which could be considered as sensitive receptors including Musgrave Park and Sunday's Well RFC. There are no hospitals, schools or places of worship within 100m of the proposed development site. Cork Mosque and Coláiste Stiofáin Naofa (CSN) College of Further Education are located approximately 570m and 630m, respectively, southwest of the proposed development. However, due to their distance from the site and the implementation of standard mitigation measures, no significant negative effects are predicted on these receptors.

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 containing materials (ACM) have been identified on site. However, all ACMs will be bagged, stored and removed from site by licenced contractors. In addition, 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 population.

The predicted increase in traffic was calculated to identify the potential for adverse effects on air quality. 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 and include heat pumps, condensing gas boilers, mechanical ventilation heat recovery, photovoltaic (PV) panels 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.

The baseline noise environment at the proposed development site is characterised by noise generated by vehicles on the surrounding roads, as well as operations at the nearby commercial properties such as the Musgrave warehouse and logistics facility that adjoins the subject site, to the west. A baseline noise survey was carried out at two locations within the subject site, and one location immediately south of the subject site on 04 and 05 October 2021. The results indicate that noise levels on the subject site are generally relatively high across the site, which is to be expected at an urban location, adjacent to busy roads.

The key noise and vibration sensitive receptors that could be affected by the proposed development are –

Residences and commercial establishments in the surrounding areas; and

The new residences within the site during later phases of construction, and in the vicinity of the vehicular access to the neighbouring Musgrave facility.

Noise and vibration will be generated during the construction phase as a result of the following activities – site preparation and enabling works, demolition and removal of existing concrete, 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. At the closest commercial receptors, the criterion will be exceeded intermittently for a period of up to a month during the initial concrete breaking activity. This will be a temporary slight to moderate impact at these locations, associated with activity that is typical for large-scale urban development of this type.

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.

During the operational phase, noise sources include additional traffic accessing and egressing the site, plant and equipment operating on the site, existing noise associated with the adjacent Musgrave facility. Plant and equipment to be used during the operation of the proposed development has not yet been specified but will be located within the proposed buildings and will be designed to meet the relevant standards.

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

The predicted increase in in annual average daily traffic (AADT) on the nearby public roads will be less than 25%. There will therefore not be any significant adverse effects on noise from traffic associated with the construction or operation of the proposed development.

Following the implementation of mitigation measures and compliance with limit values, no significant residual effects on the environment in terms of noise and vibration are envisaged.

Biodiversity

The potential 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, general bird survey, general mammal survey and bat survey.

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 2.3km north and 9km northeast of the site. The AA screening and NIS concluded 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.

The site surveys undertaken indicate that habitats within the proposed development area have been significantly modified from their original state and are of low ecological value. No rare plant species were recorded during site surveys in 2020 and 2021 and given the highly disturbed nature of habitats onsite, they are unlikely to occur.

The following invasive species were recorded within the development boundary:

- Japanese Knotweed (Fallopia japonica), which dominates an area of scrub within the proposed development site, located to the south. This is a high-risk invasive plant species.
- Buddleia (Buddleja davidii) and Himalayan Honeysuckle (Leycesteria Formosa) were recorded with a scattered distribution throughout the site. These species are considered medium risk invasive species by the National Biodiversity Data Center (NBDC).

No potential roosting habitat was recorded within the proposed development site or in immediate proximity to it during bat surveys carried out in September 2020 and 2021. However, bat activity was recorded within the site and was concentrated in the southeast corner of the proposed development site, where vegetation is denser and provides better foraging habitat.

Overall, the proposed development site is of a local importance (lower value) for terrestrial bird species that are relatively common in the Irish countryside. No

species of high conservation status were recorded within 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. The proposed development site is of negligible value for Otter.

Similarly, there are no watercourses or wetland habitats within the proposed development site and this site is of negligible value for amphibian species.

Effects During the Construction Phase

The following impacts were identified during the construction phase of the proposed development:

- There will be removal of habitats during the construction of the proposed development. However, the habitats within the proposed development area have been significantly modified from their original state and are of low ecological value. As such, no significant negative effects are predicted.
- Some displacement of feeding birds may occur during construction due to increased noise and disturbance. Overall, the effect on birds during the construction phase of the proposed development is predicted to be slight, negative and short-term.
- The likely effect on Otter during the construction phase is predicted to be a slight to not significant, negative and short-term. Overall, the construction phase of the proposed development is predicted to have a slight, negative, short-term effect on mammal populations in the absence of mitigation measures.

Effects During Operational Phase

Residual biodiversity impacts during the operational phase are as follows:

- No habitats of significant ecological value will be affected and the habitat value of new habitats created by landscaping of the site will improve over time. Levels of surface water discharging from the site will not significantly increase post construction and will be restricted to Greenfield Runoff rates. Overall, no significant impact on habitats will occur during operation.
- 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.
- Impacts on mammals during operation are predicted to be negative, slight and long-term.
- Surface water design measures will ensure there is no significant impact on local water quality in the Tramore River or on aquatic receptors downstream of the discharge (including attenuation and hydrocarbon interceptors).
- Foul water from the proposed development will pass through a Wastewater Treatment Plant, in which there is sufficient capacity and as such, given the

limited scale of the proposed development and the ability of the WWTP to cater for the additional loading, no impact is expected.

- Following habitat removal during construction common bird species will be displaced and are no longer likely to use the site. No birds of conservation concern will be impacted by the proposed development. Given the availability of similar habitat in the immediate vicinity, birds are likely to readily breed and/or forage in nearby habitats.
- The landscaping and new buildings (which will range from 1 to 15 storeys in height) at the site will increase collision mortality for common bird species and this will have a slight, negative effect on local bird populations. Landscape planting will largely replace nesting and foraging habitat for common bird species. The increase in mortality rates will not be significant in context of an urban setting where bird collisions with structures are very common.

Given the low ecological value of the site, the design of the proposed development and the implementation of appropriate mitigation measures, no significant negative residual effects on biodiversity are predicted.

Archaeology, Architectural and Cultural Heritage

Archaeological and Cultural Heritage

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

There are no recorded archaeological monuments listed in the Records of Monuments and Places (RMP) or the Site and Monuments Record (SMR) within the proposed development area. There are 31 recorded archaeological sites listed in the RMP and SMR located within 2km of the proposed development site, while only three of these are located within 1km of the proposed development site.

Prior to the development of the CMP Dairy facility, a section of the Cork to Macroom railway line ran through the southern end of the site. The southern end of the site is under hard standing. However, it is possible that some remnant remains of railway infrastructure may exist beneath the surface.

Given the extensive ground disturbance that has taken place, no in situ archaeological deposits will have survived. No likely significant effects on the archaeological environment are, therefore, foreseen.

No direct significant impacts on archaeology are predicted.

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made.

Architectural Heritage

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

The proposed development site was visited on the 4th of August 2021 to assess current land use, local topography and environmental conditions.

The proposed development site (3.37 hectares) lies within the former CMP Dairy facility, which was established in the 1950s and closed in 2006. All buildings associated with this previous use have since been demolished and the site is currently vacant and categorised as a Brownfield site.

Within the proposed development site there are no protected structures (PS) listed in the Cork City Development Plan 2015-2021 (CCDP) and no structures listed in the NIAH. Within one kilometre of the proposed development site there are four PS and a total of 54 structures listed in the NIAH, of which two are also PS.

The CCDP (2015-2021) and NIAH do not list any protected structures or features of architectural merit within the proposed development site.
There are two ACAs within 1km of the proposed development site.

The proposed development site has already been subjected to extensive ground reduction thereby negating the presence of any features on the site.

No direct significant operational impacts on architectural heritage is predicted.

There will be no likely significant residual effects on the archaeological, architectural or cultural heritage arising from the construction and operation of the proposed development.

Townscape and Visual

This 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 in July 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 landscape sensitivity of the site is considered to be Medium. The susceptibility of the site to a development of this type is considered Medium given the established mixed-use character of the locality.

The construction phase will involve earthworks and the movement of machinery on site, with cranes located at various locations across the site on an intermittent basis. The construction activities will introduce noise and potentially, dust into the landscape. These will be localised to the site and the immediate vicinity and will result in short term, moderate landscape effects which will be adverse in quality. Once operation, internally and externally, the proposed development will constitute a significant intervention in the local suburban landscape which will change the character of the site and influence the character of the locality. The subject site will be transformed from its redundant condition to a residential neighbourhood with and town square. Planting and landscaping will also be provided. The landscape effect is considered to be significant, on the landscape of the site and its immediate vicinity. The proposed development will deliver a sense of neighbourhood and community with a hierarchy public and private spaces. The town square will be identifiable destinations at the heart of the new neighbourhood. The tallest building within the new development, located at the Kinsale Road/Tramore Road junction will be a landmark in the local landscape and will assist legibility as one negotiates the local road network. These attributes are beneficial aspects of effect on the suburban landscape.

Visual Effects

A series of viewpoints (22) were chosen in order to represent a variety of viewers from a range of locations.

Construction Phase

The construction phase will involve excavation, some local stockpiling of material and the movement of machinery on site. Construction compounds will be located within the site and material stockpiles are not likely to be visible from outside the site. Cranes will be visible intermittently across the site during the construction phase.

The magnitude of change on areas external to the site is considered Medium. These effects are short-term during the construction phase.

The construction phase is likely to give rise to temporary to short term, Slight to Moderate visual effects which will be adverse in quality. Visual effects are likely to be most pronounced in views from areas to the north of the site.

Operational Phase

The removal of trees and site vegetation, some walls, and the construction of large-scale buildings and surface car parks are all proposed as part of the development and have the potential to have operational impacts.
The visual effects at the 22 viewpoints range from very significant to no effect. Visual effects are most pronounced in close proximity to the site, along Kinsale Road and Tramore Road. Beneficial results reflect those views in which positive aspects of the proposed development are evident, such as distinctiveness, legibility, contribution towards sense of place, quality of materials and finishes and improvements to local streets/public realm.
The development will be prominent in many of the views but not necessarily intrusive.
Beneficial outcomes associated with the development relate to the delivery distinctiveness, sense of place, quality of materials and finishes and green infrastructure in the form of specimen tree planting along adjoining roads.
There are no protected views or prospects affected by the proposed development and there are no overshadowing or overlooking issues arising in respect of residential properties in the vicinity of the site (the nearest residential property to the site is approx. 170m to the west along Tramore Road).

Land, Soil and Hydrogeology

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

During the construction phase of the proposed development, the following activities have the potential to result in negative effects –

- Removal of hardstanding and temporary stockpiling of contaminated soils which could result in –
- Mobilisation of contamination in the soil into local watercourses;
- Mobilisation of contamination in the soil into the regionally important aquifer; and
- Exposure of site workers and future residents to soil contamination, vapours and airborne contamination.
- 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 operation phase of the proposed development, the following items have been highlighted that could have potential impacts on the environment:

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

Following the implementation of appropriate mitigation and monitoring measures, the effect of the proposed development on land, soils and hydrogeology is considered to be of negligible magnitude and imperceptible significance during the construction phase.

No residual effects of significance on land, soils and hydrogeology were identified during the operational phase.

Water and Hydrology

This 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 no watercourses within the proposed development site, however, the Tramore River runs approximately 30m south of the site boundary and flows eastwards to the the Douglas River Estuary pNHA (001046) which subsequently flows to Lough Mahon in Cork Harbour.

The site of the proposed development is potentially at risk from flooding due to its proximity to the Tramore River. A flood event was recorded in the area during December 2009, however there are no historic flood events recorded within the proposed development site (floodinfo.ie). 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 Tramore River's River Waterbodies Risk Status to be "under review" and the River Waterbody WFD Status 2013 -2018 as "unassigned". Moreover, the functional value of the Tramore River in Togher is considered 'very low' as the watercourse is culverted for the majority of its length in this area. The WFD ecological status of Lough Mahon (the water body to which the Tramore River discharges) has been classified as 'moderate' with a WFD Risk Score of 'at risk of not achieving good status'.

The following potential effects during the construction of the proposed development were assessed and 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 washing of construction vehicles and equipment and spillages of fuel and oil and concrete / cement run-off; and

Silt laden run-off from the storage of excavated material.

In addition, the proposed development is not likely to have an impact on floodplain storage and conveyance and will not increase flood risk off site during the construction phase.

Potential 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

[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]

(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, the proposed development will not have any significant negative residual effects on water.

Resources and Waste

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 and removal of the existing concrete ground floor slabs and foundations along with carpark surfacing. 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 45,920m3 of material will be excavated during the construction works for the proposed development. The vast majority of this material will be comprised of made ground and 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, crèche, café 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 impact of the proposed development on resources and waste management will be direct, slight, negative and long-term.

Population and Human Health

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

Initially, the site had been developed as a creamery in the 1950s and operated as such until 2006, when CMP Dairies closed the facility. The proposed development site is a brownfield site and is currently undeveloped. All buildings associated with this previous use have since been demolished and the site is currently vacant.

The site is bordered by Kinsale Road to the east and Tramore Road to the north. Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities adjoining and close to the proposed development including Musgrave Retail Partners Ireland to the west of the subject site.

Potential effects on population were considered under the following headings -

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.
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 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 2-4 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 250 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.
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.

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

Electricity

There is an existing 38kV line on the proposed development site but the ESB have approved 38kV relocation works and will be rerouted.

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

Gas

There is capped gas supply partially located on the site. However, it is understood that this will be made redundant and potentially removed.

The existing gas supply runs along Tramore Road and Kinsale Road. There will be no effect on gas services as a result of the construction of the proposed development.

There will be limited use of gas during the operation of the proposed development as it is proposed to use heat pumps. However, there is potential for metered supply to be provided for the crèche, gym and community hub area.

Water Supply

There are existing potable watermain infrastructure located adjacent to the site within Kinsale Road (150mm diameter) and Tramore Road. During construction a temporary water and sewer connection will be made to facilitate the works, in which there is sufficient capacity.

During the operational phase, it is proposed to provide a new connection from the existing watermain in Kinsale Road to serve the site. Irish Water have confirmed there is sufficient capacity within the network to serve the proposed development.

Surface Water Drainage

It is understood there are two no. surface water outfalls into the Tramore River to the south of the site. These are understood to take surface water runoff from the roads and buildings located immediately north of the outfalls.

It is proposed to construct a new dedicated surface water system to serve the proposed development. The intention is to discharge surface water off site to an existing surface water pipework located within Kinsale Road to the south of the site. This surface water pipe ultimately outfalls to the Tramore River nearby.

Foul Water Drainage

There is an existing Irish Water 600mm diameter combined sewer which enters the site from the west and exits to the east before ultimately draining away from the site in a north-easterly direction. The existing sewer will be diverted in order to accommodate the proposed building/site layout.

It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer. The remaining buildings to the south cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul runoff from the majority of the site to a centrally located Pumping Station (PS). A rising main from the PS will discharge to the combined sewer.

With the implementation of appropriate mitigation measures and the capacity within the existing network,

Land Use

The construction of the proposed development will require temporary use of lands, 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 destination for the Cork City South 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.

No significant negative effects on land-use or utility services are predicted.

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 of the proposed development can be classified as low risk, apart from one – Fire/ Explosion with a secondary effect of fire suppressant water/ foam/ powder reaching nearby receptors (e.g. watercourse, groundwater, soil), which was classed as a medium risk.

Apart from the risk of a fire/explosion, scenarios with the next highest risk score were in relation to 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.

Primary Care Centre

Planning permission for a Primary Care Centre which will be located in the north-western part of the wider development site has been sought by Watfore Ltd from Cork City Council. It is anticipated that the provision of this Primary Care Centre will bring people to the town square.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

The main potential cumulative impacts were identified under the following environmental topics –

Traffic and Transportation

Townscape and Visual

Site Infrastructure and Water Quality

However, with the implementation of the Construction Environmental Management Plan, Construction Traffic Management Plan, the location and design of the proposed development and the current capacity within the existing network, no significant negative cumulative effects are predicted.

Other Cumulative Developments

Several road/ transport infrastructure schemes have been identified within the surrounding area of the proposed development site, which are currently at either planning/design or construction phase. These include:

Lehenaghmore Road Improvement Scheme: This scheme will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in Q3 2022.

Grange Road to Tramore Valley Park Pedestrian and Cycle Link: This will include the construction of a new cycle and pedestrian route connecting the Grange Road to Tramore Valley Park. Site clearance works have commenced and is expected for completion by early 2023.

It is concluded that 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 or the proposed development and in particular the Construction Traffic Management Plan (due to the nature of the projects identified above).

The proposed development along with the road improvement schemes mentioned above will have a positive impact on the local road network by promoting active travel in the area by improving the infrastructure and by increasing the viability of existing and planned public transport in the area.

Interactive Effects

While potential interactive effects were identified, no significant negative interactive effects are predicted.

1 Introduction

1.1 Introduction

Watfore Developments Limited intend to apply to An Bord Pleanála for planning permission for a strategic housing development (SHD) at the Creamfields Site (former CMP Dairy site) on the Kinsale Road, in Cork City (hereafter referred to as '*the proposed development*').

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; crèche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

The site is located in Cork City. The site itself is bordered by Kinsale Road to the east and Tramore Road to the north. The site is a brownfield site and is currently undeveloped.

Black Ash Park and Ride is located to the east of the proposed development, while there are several commercial facilities in the wider area, including Musgrave Retail Partners Ireland directly to the west of the site.

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

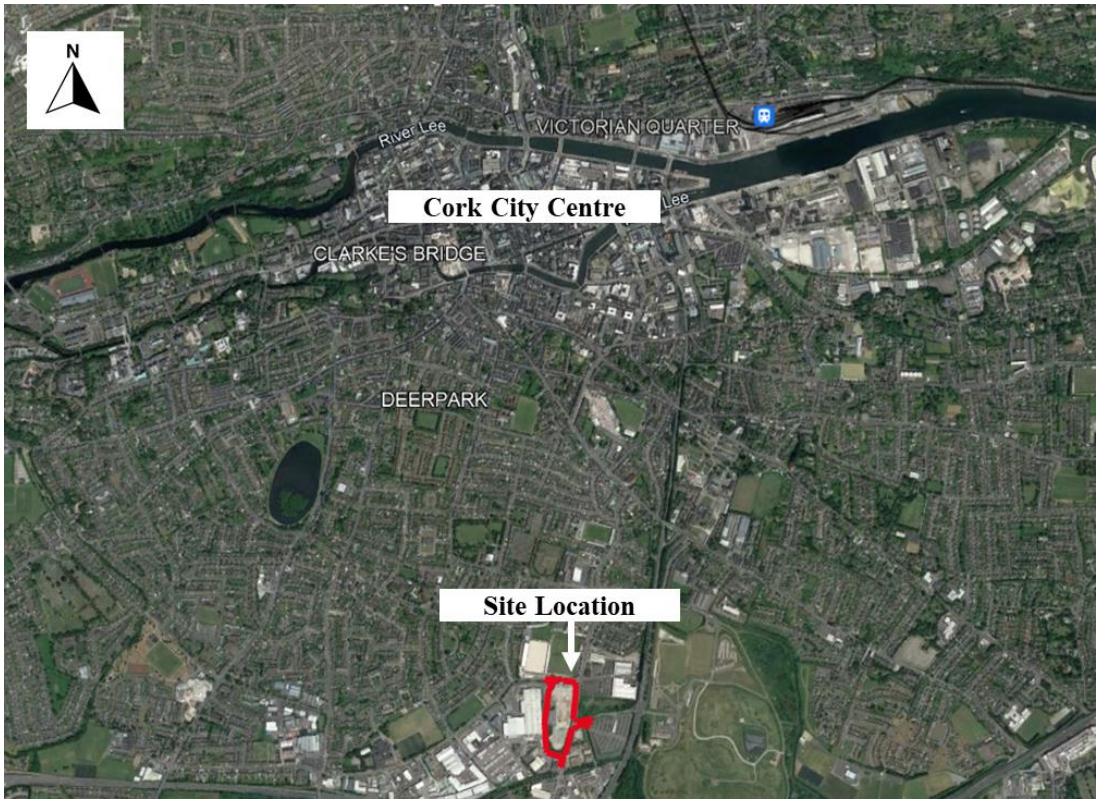

Figure 1.1: **Location of the proposed development site in relation to Cork City Centre** | Not to scale [Source: Google Earth © 2022]

Figure 1.2: Indicative Red Line Boundary of the Proposed Development | not to scale [source: Google Earth © 2022]

1.2 Overview of the Proposed Development

Watfore Limited 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. 3.39 ha. The proposed development will consist of the following:

- The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground. All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments;
- a 289sqm crèche with ancillary outdoor play area;
- 547.5sqm community hub facility;
- a 550sqm gym;
- a 218sqm retail unit;
- a 272sqm café at ground floor level;
- The proposed development will also include: 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; 1,145 no. bicycle parking spaces provided in dedicated external and internal cycle stores/shelters; and 21no. motorcycle spaces;
- The proposed total gross floor area above ground is 60,833.7sqm;
- The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces; internal roads and pathways; pedestrian access points; hard and soft landscaping and boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction to facilitate improved pedestrian access to the Black Ash Park and Ride; an upgrade to the existing access from Tramore Road; a cycle lane on Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

A new Primary Care Centre located on the Tramore Road side of the development is also planned but is not included in the proposed SHD application. This separate proposed development (although within the same overall site) will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; town square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping

works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

While not part of the proposed development for the purposes of the consent application, the potential effects of the proposed Primary Care Centre, in cumulation with the proposed development, are fully addressed in this Environmental Impact Assessment Report (EIAR). Planning permission for the Primary Care Centre will be sought from Cork City Council and that development will be subject to its own environmental assessments.

A detailed description of the proposed development is provided in **Chapter 4** *The Proposed Development.*

1.3 Overview of the Planning Process

1.3.1 Overview of the Planning Process

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 form and 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 1.6** 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 a 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.**

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

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 –

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

(b) 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

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

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 *Residential, Local Services, and Institutional Uses* the proposal constitutes a strategic housing development.

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,

(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, Watfore Limited is 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 17 of the *PDA 2000*[8] sets out the requirement for an EIA as follows:

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

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

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

> *(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or*
>
> *(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,*

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

or

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

> *(I)such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or*
>
> *(II)no quantity, area or other limit is specified in that Part in respect of the development concerned,*

or

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

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

The Fifth Schedule of the Regulations[8] specifies classes of development 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 detailed therein, the proposed development will provide for some 609no. residential units.

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 Environmental Impact Assessment Report (EIAR) will be prepared 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*[9]*;*

[9] European Commission (2017) *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;*

- Department of the Environment, Community and Local Government (2013) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*[10];
- Government of Ireland (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (August 2018)[11];
- Department of the Environment, Heritage and Local Government (2003) *Environmental Effect Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development*[12];
- 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*[13];
- 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*[14];
- 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*[15]; and
- Environmental Protection Agency (2017) *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (Draft August 2017)[16].

[10] 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.
[11] Government of Ireland (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*. Stationery Office, Dublin.
[12] Department of the Environment, Heritage and Local Government (2003) *Environmental Effect Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development*. Stationery Office, Dublin.
[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 Licencing Systems*. Stationery Office, Dublin.
[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.* Stationery Office, Dublin.
[15] 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
[16] Environmental Protection Agency (2017) *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports*. Dublin

Additional topic-specific guidance used to undertake assessments is identified in **Chapters 7** to **19**, 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.

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] describe an impact as "*Change resulting from the implementation of the 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

This section provides an overview of the project team that has been appointed by the developer and who has contributed to the design of the proposed development to date as well as the preparation of the SHD consent application.

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	Watfore Limited
Architect	Reddy Architecture + Urbanism
Civil & Structural Engineers	Arup
Mechanical and Electrical Engineers	Engineering Design Consultants (EDC Engineers)
Project Manager	Kerrigan Sheanon Newman (KSN-PM)
Quantity Surveyor	Kerrigan Sheanon Newman (KSN-QS)
PSDP	Kerrigan Sheanon Newman (KSN-PM)
Fire Consultant	Daire Byrne & Associates
Landscape Architect	Cunnane Stratton Reynolds (CSR Landscape)
Planning Consultant	Coakley O'Neill Town Planning Limited
Property Consultants	Savills
Traffic & Transport Engineers	Arup
Environmental Consultants	Arup
Daylight & Sunlight Assessment	Arup
Wind Microclimate Assessment	B Fluid

1.5.2 EIAR Team

An EIAR for the proposed Creamfields Residential Development has been prepared on behalf of Watfore Developments Limited 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 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)
Chapter 6 Planning and Policy	Aiden O'Neill	Coakley O'Neill Town Planning Ltd	24	Aiden is a Director of Coakley O'Neill Town Planning Ltd, BSc (Hons), PGDip, MIPI who has over 24 years professional experience in the public and private sector, which has included providing consultancy services in respect of several urban development and infrastructural developments including EIA. Aiden is also a member of the Public Affairs Council of Cork Chamber and a member of the Cork County Council Planning SPC.	Member of the Irish Planning Institute

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
	Naomi Dowds	Coakley O'Neill Town Planning Ltd	2	Naomi holds the qualifications of BA(Hons), MPlan, and is a Corporate Member of the Irish Planning Institute. Naomi has 2 years' experience assisting with strategic infrastructure and strategic housing developments, large residential and town centre developments and water services infrastructure.	Member of the Irish Planning Institute
• Chapter 7 Traffic and Transportation	Simon Van Jaarsveld	Arup	25 years	BSc (Hons) Town and Regional Planning, University of Pretoria, 1996 BSc (Hons) Transportation Planning, University of Pretoria, 1999 Simon has 25 years of traffic and transportation planning and engineering. He has completed a variety of traffic and transportation assessments ranging from small scale to large scale. Simon has also completed many transportation planning frameworks for local and regional areas, setting the development requirements for planning applications. Simon have carried out this type of work in various towns and cities in Ireland.	
	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	
	Cian Gill	DixonBrosnan Environmental Consultants	10 years	Cian Gill MSc (Ecology) is a qualified ecologist with ten years' experience working with wildlife and ecology-based NGOs and public bodies in Ireland, the UK and the US. Past projects include invasive species planning for the city of Rosemount, Minnesota, and the Under The Sea project for Essex Wildlife Trust. Recent projects include ecological reports for Cork-based housing and private developments.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
• Chapter 11 Archaeology, Architecture and Cultural Heritage	Musetta O' Leary	Lane Purcell Archaeology	15 years	BA Archaeology and Geography, NUI Cork, 1998. MA Archaeology, NUI Cork, 2000. Musetta has over 15 years of experience in all aspects of archaeological consultancy. Musetta primarily manages the archaeological and cultural heritage components of projects at the pre-planning consultancy stage and has co-ordinated and written the Cultural Heritage section of a large number of diverse EIAR/EIS projects for road construction, industrial, residential and sporting developments, energy delivery and quarrying. Musetta has presented expert witness evidence at the An Bord Pleanála oral hearings. Some of the various projects include the M20 Cork to Limerick Motorway; Belvelly Port Facility, Marino Point, Co. Cork; Horizon Mall, Parkway, Co. Limerick; Horgan's Quay, Mixed Use Development, Cork City, Shannon LNG Terminal, Co. Kerry, Shronagree Windfarm, Ballydehob and Coolbane Quarry, Co. Cork.	

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
• Chapter 12 Townscape and Visual	Jim Kelly	Cunnane Stratton Reynolds	35 years	1985 B.Agr.Sc. Landscape Horticulture, (University College, Dublin 2005 - Post Graduate Diploma Landscape Architecture (University of Central England) Jim Kelly has over 30 years of experience in the field of landscape planning, design and management. He has prepared landscape proposals for a wide range of public and private sector projects including town centre and village regeneration projects, public park design, road improvement schemes, residential development, tourism and heritage projects, business parks, schools, university campus development, health care facilities, the management of sensitive landscapes and private garden design projects. Jim is experienced in working closely with local authorities, developers, community organisations and statutory agencies in the delivery of these projects. He has also prepared visual impact assessments for a range of high-profile development projects in the Munster region. Jim has worked professionally in Ireland and the UK and is a member of the Irish and UK Landscape Institutes.	1994 - Member of the Irish Landscape Institute MILI 2007 - Chartered Landscape Architect, CMLI (UK)
• 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

Role and EIAR Chapter	Responsible	Company	No. years of experience	Professional Qualifications and Relevant Expertise	Professional Affiliations
	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.	

1.6 Consultation

1.6.1 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.

1.6.2 Cork City Council – Pre-Application Consultation

Numerous meetings were held with Cork City Council Planners, Traffic and Transport Engineers and the City Architect since September 2020.

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

- The proposal has reduced from 807 apartments to 706 (as it was at the time of this consultation);
- The integration of the BusConnects corridor and pedestrian and cycling infrastructure and upgrade proposals with the junction of Mick Barry and Kinsale Road Junctions;
- Development is proposed with limited parking but connected to active modes of public transport infrastructure;
- Emphasis on creating character areas to establish a sense of place and street scape in a hierarchy that transits from a public town square through residential courtyard gardens to meadow park;
- In terms of massing, the introduction of a variety of heights in the scheme, including the inclusion of a landmark tall building to designate the site;
- The Kinsale Road buildings were staggered in order to provide variety to the vista of the scheme; and

- Brick was considered to be a very appropriate material for large scale residential development and therefore the majority of the facades of the proposed development are brick clad.

1.6.3 An Bord Pleanála – Pre-Application Consultation

Following the Tripartite meeting held on 7th October 2021, An Board Pleanála recommended that the developer enter into further dialogue with Cork City Council with respect to the architecture and urban design proposals for the proposed development.

A review of the scheme was carried out and the following changes were made:

- The total number of dwellings was reduced from 706 units to 609 units;
- The two 8 storey apartment buildings (A and K) were removed and replaced with three to four storey duplex typologies buildings arranged around a new residential square;
- The height of Building J on Kinsale Road was reduced by one storey reducing it from seven floors to six floors;
- A greater variety of scale, density and typology was introduced throughout the scheme to provide a greater mix of tenure, architecture and scale;
- The profile of the buildings along Kinsale Road was stepped and varied so that the elevations rise from four storeys to a 15-storey landmark building in a sequential and legible manner;
- The Kinsale Road massing was broken up and the visual clues to the character areas within are more apparent with five clearly defined access points from Kinsale Road and Tramore Road;
- The permeability and the potential for integration into adjoining schemes was improved to allow for any potential future developments;
- The density was reduced from 240 units/Ha to 180 units/Ha , which is consistent with the density proposed in support of the Variation no.6 of the Cork City Development Plan 2015-2021; and
- A wide range of typology and tenure type was addressed in the revised scheme to allow for all dwelling types (including age friendly units) and consistency with the provision of life cycle homes. The scheme will now include:
    - one, two, three and four-bed apartments,
    - one, two, three-bed own door townhouses,
    - two-bed ground floor own door duplex apartments with four-bed own door townhouse duplex units above, and
    - the introduction of one-bed deck access apartments for more elderly residents on the new Kinsale Road duplex building.

In summary, the resultant scheme reduced the number of dwelling units by 14% from 706 to 609 and increased the number of homes with own door direct access by 54%.

1.6.4 Consultation with Relevant Stakeholders

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

- An Taisce
- Birdwatch Ireland
- IAA
- Cork Airport
- Geological Survey of Ireland
- Health and Safety Authority
- Heritage Council
- Health Service Executive
- Transport Infrastructure Ireland
- National Transport Authority
- Inland Fisheries Ireland
- Irish Raptor Study Group.

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

1.7 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.

1.8 References

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

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.

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 the Environment, Community and Local Government (2013) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*. Stationery Office, Dublin.

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

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

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

European Union (2018) (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*. Stationery Office, Dublin.

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

2 Background and Need for the 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 Watfore Limited

Watfore Limited is the developer of the Creamfields Residential Development and is a wholly owned subsidiary of Dairygold Co Operative Society Limited. Watfore Limited's strategy is to maximise the value of its commercial property portfolio. The is being achieved by optimising zoning and planning for development opportunities, commercialising sales opportunities and increasing rental income as appropriate. The future activities of the Company are dependent on property market conditions. The Directors are actively seeking opportunities for the Company to pursue and if opportunities do arise for the Company, the Directors are confident that the Company will be in a firm position to take advantage of these.

2.3 Need and Objectives of 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.

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 precinct 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 national, regional and county objectives. Further details have been included in **Chapter 6** *Planning and Policy.*

2.3.1 National Planning Framework Project Ireland 2040

The objectives of the proposed development are to respond to the following national policies:

- National Policy Objectives 1b and 1c of the NPF sets a target of 340,000-380,000 people and c. 225,000 people in employment in the Southern Region by 2020. The focus is on growing the regions, and delivering compact, sustainable growth;
- 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, well-designed, high quality urban places;
- National Policy Objective 5 of the NPF seeks to develop cities and towns of sufficient scale and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity;
- National Policy Objective 6 of the NPF seeks to regenerate and rejuvenate cities, towns and villages of all types and scale as environmental assets, that can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area; and
- National Policy Objective 54 of the NPF seeks to reduce our carbon footprint.

The NPF states that one of the greatest challenges in achieving significant growth that will move the Cork metropolitan region to the next level is addressing the long-term decline of the City's urban population. There is positive evidence of this in the 2016 Census and it will continue to be important to attract additional people and jobs to existing, established parts of the city.

Section 3.8 of the NPF also states that "*Ireland 2040 targets a significant proportion of future urban development on infill/brownfield development sites within the built envelope of existing urban areas. This is applicable to all scales of settlement*".

The site of the proposed development is a brownfield site which is currently not in use. This is in keeping with the recommendation in the NPF to avoid the development of greenfield and unused sites and instead develop an existing underutilised brownfield/infill site.

The proposed development will assist in meeting the objectives of the NPF, as:

- It will contribute to the wider growth of the Southern Region;
- It will deliver a new well-designed town square for this area;

- It will regenerate this area of the city combat unsustainable urban sprawl;
- The sustainable development of the brownfield site will contribute to a reduced carbon footprint;
- It is located along a planned strategic public transport corridor;
- It is located on the existing public transport corridor of Black Ash Park and Ride, and will maximise the potential of this currently underutilised public transport service;
- It is in close proximity to high-quality public amenities;
- It will contribute positively to the public realm along Kinsale Road and Tramore Road;
- It will provide high-quality public open space on site; and
- It will provide good access to a quality childcare facility on site.

2.3.2 Housing for All (2021)

The "*Housing for All – A new Housing Plan for Ireland*" (HFA) was launched on 2nd September 2021 to replace the 2016 "*Rebuilding Ireland: Action Plan for Housing and Homelessness*") in addressing the housing crisis affecting Ireland since 2014. To address this crisis, the HFA states that 300,000 new homes are needed by 2030.

The proposed development, in delivering an additional 609no. residential units, including 122no. social housing units, will contribute towards the housing target of the HFA.

2.3.3 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 included the Cork Metropolitan Area Strategic Plan (MASP).

The proposed development addresses Regional Planning Objectives (RPOs) 6-10 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 6 through assisting in counterbalancing the excessive growth and sprawl of Dublin;
- RPO 7a by generating 609 new residential units, contributing to "*sustainable mobility*" and providing a crèche facility onsite.
- RPO 8 in that it is an urban regeneration project that will facilitate the delivery of a compact, high-density vibrant community on an underutilised, large brownfield site within a disadvantaged inner suburban neighbourhood in close proximity to existing public transport corridors;

- RPO 9 in that it will involve considerable upgrade of the public realm; and
- RPO 10 in that it is an unused, vacant brownfield site within the existing footprint of the southern inner suburbs of Cork City that will deliver 609 new homes within the Cork MASP area.

2.3.4 Cork Metropolitan Area Strategic Plan (MASP)

The ambition of the Cork Metropolitan Area Strategic Plan (MASP) is based on the principles of the RSES Sustainable Place Framework. It includes 14 guiding principles for investment and sustainable development in the Cork Metropolitan area. The proposed development complements and supports 11 of these 14 guiding principles, as outlined in **Table 2.1.**

Table 2.1: Design Response to MASP Guiding Principles

Cork MASP Guiding Principle		The Proposed Development
A Living City and Suburbs	✓	The density, site layout and mix of uses will facilitate the realisation of a vibrant residential neighbourhood hub with a distinct and unique sense of place, that is open, welcoming and useful to the surrounding local population of Ballyphehane and may stimulate knock-on regeneration projects within the area.
Metropolitan Engine	✓	The proposed development will provide residential and health functions along a public transport corridor (BusConnects), contributing to Cork City operating as a well-functioning, socially inclusive and energising place. As the site is not adjacent to any sensitive wildlife sites of particular conservation interest, the proposed development will also ensure the natural asset that is Cork Harbour continues to be protected.
Compact Sustainable Growth	✓	609no. residential units in conjunction with a crèche, gym, retail unit, coffee kiosk and café on this 3.39ha brownfield site will contribute in a significant way to the consolidation of the south-central suburbs of Cork City and therefore towards achieving the target of providing at least 50% of new homes within the city's existing footprint.
Integrated Transport and Land Use	✓	The Land Use and Transportation guiding principle of the Cork MASP states that "[*s]ustainable higher densities must be delivered, especially at public transport nodal points*." (RSES, p.40). The Cork MASP also states, *"[t]he distribution of growth must follow a spatial hierarchy that underpins delivery of the CMATS."* (RSES, p.40). The proposed development will deliver targeted residential growth of Cork City along the BusConnects corridor which is identified in the Cork Metropolitan Area Transport Strategy 2040. The subject site of the proposed development is also located on the existing route of the Black Ash Park and Ride bus service and within walking distance of Cork City Bus Routes 203, 206 and 219. The subject site is also located on a primary urban cycling route as identified in the Cork Cycle Network Plan (2017). An on-street cycle lane currently runs along the site's eastern boundary. This cycle lane will undergo improvements as part of the landscaped buffer that is proposed between the scheme and the Kinsale Road.
Accelerate Housing Delivery	✓	The predominantly residential nature of the proposed development, along with its scale, height, high-density and siting at this particular location, amounts to the activation of a strategic residential development within the existing footprint and suburbs of Cork City.

Employment Density in the Right Places	✓	The crèche, retail, gym, coffee kiosk and café uses, as well as the tenancy management aspect of the proposed development, will re-intensify employment in this inner suburban location of Cork City.
Better Alignment of Growth	✓	In facilitating a significant increase in the local residential population, the proposed development constitutes a 'catch up' investment that will complement the existing employment, infrastructure, amenity provision and sustainable transport uses and facilities in the local area, as well as supporting the further development and improving of these uses and facilities.
Social Regeneration	✓	The subject site is located within the Togher/Mahon/Ballyphehane area that has been identified by Cork City Council as being disadvantaged and requiring intervention through the Revitalising Areas through Planning, Investment and Development (RAPID) initiative. Improving the physical environment and increasing the provision of healthcare and childcare facilities are all considered principles of the Cork City's RAPID initiative and the proposed development supports the realisation of all three - the proposed development involves the regeneration of a significant large vacant brownfield site, currently surrounded by security fencing and mature hedging, at a prominent location on a crossroads at the brow of a hill. It is expected that, subject to a separate application, the subject site will also provide the new and existing local residential population with a Primary Care Centre, a healthcare facility that has been identified by the HSE as being required in the local area.
Future Development Areas		n/a
Metropolitan Scale Amenities	✓	"*Tramore Valley Park looks magnificent today and is a continuing work in progress*" - Lord Mayor, Cllr Mick Finn on the opening day, May 2019. The scale and residential nature of the proposed development will support the realisation of further improvements to the public realm required at Tramore Valley Park by facilitating a critical mass of frequent visitors to the park, which is likely to elevate the priority of carrying out the improvements.
Enabling Infrastructure	✓	The proposed development improves sustainability in terms of energy, waste management, resource efficiency and water conservation in the following ways: • Dedicated waste storage facilities are provided via two no. large, ventilated storage rooms on the ground floor level of Building F. The approach taken in the design has been to reduce bin quantities and increase number of collections with increased recycling facilities provided. Space is provided for future compost bins. • SUDS (including surface water attenuation tanks) have been incorporated into the landscaping approach to ensure water quality and local biodiversity is safeguarded. • The high residential density comprises smaller units than traditional lower density housing, and therefore will require less energy to heat. As detailed in ECD's Energy Statement, which accompanies the consent application, Exhaust Air Heat Pumps will be used throughout the scheme to heat spaces as well as domestic water. • Best practice fabric U-values and air tightness standards will be implemented in order to minimise heat flow/loss through the building envelope. • Passive solar principles have informed the design and external shading – in the form of window reveals and overhangs, and solar performance glazing – will be incorporated into the façade design to assist in the reduction of overheating. Meanwhile, passive solar heat gain will be harnessed by allowing sunlight to enter the buildings at areas with high thermal mass such as exposed concrete.

		• The close proximity of the multi-storey buildings to each other also makes renewables-based systems of energy distribution, such as district heating, or area-wide technology upgrades, more feasible in the future. • The landscaped buffer zone between Buildings E, F, J and N along Kinsale Road and Buildings D (subject to a separate planning application) and E along Tramore Road will amount to a great improvement on what is currently the case along the boundaries of the site with Tramore Road and Kinsale Road and this will encourage and support increased pedestrian activity in the area.
Co-ordination and Active Land Management	✓	The proposed development should be recognised for the fact that it amounts to the active urban development of a strategically located, large, vacant, under-utilised brownfield site in an immediate context that is zoned primarily for light industrial and retail warehousing uses but which is, in reality, a mixed-use environment bounded by extensive established residential neighbourhoods.
Re-intensify Employment		n/a
Future Strategic Growth Areas to Complement Cork MASP		n/a

The Cork MASP is a constituent part of the RSES and aligns with current national planning policy and objectives, including those contained in the NPF. It contains population growth targets for 2031 that are consistent with those in the NPF for 2040. According to Section 5 of the Cork MASP, Cork City and Suburbs are expected to grow by 75,000 by 2031, with a target population of 283,669 for that year. This would require the provision of approximately 27,270 additional homes[17]. If granted permission, the proposed development would account for the provision of just over 4.6% of that target.

In addition, the proposed development supports the following strategic goals of the Cork MASP:

- Goal 1: Sustainable Place Framework
- Goal 2: Excellent Connectivity and Sustainable Mobility
- Goal 4: High Quality Environment and Quality of Life

The proposed development will also contribute to the delivery of 5 of the 11 key points sought in the Cork MASP Policy Objective 2:

> *c. Seek investment to achieve regeneration and consolidation in the city suburbs and high quality architectural and urban design responses to enhance the uses of this waterfront and all urban quarters.*
>
> *f. Seek to achieve High Quality Design to reflect a high-quality architectural building stock in all urban quarters.*
>
> *g. Seek delivery of a network of large city parks and smaller green areas throughout the metropolitan area and inner-city areas.*

[17] Based on CSO Census 2016 average household size of 2.75 people. Refer to **Chapter 6** *Planning and Policy* for further details.

h. Strengthen Social and Community Development

i. Support active regeneration initiatives that are ongoing, especially driven through the Local Economic Community Plan, Local Community Development Committee and RAPID initiatives.

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

2.3.5 Cork City Development Plan 2015-2021

The Cork City Development Plan 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.

Of significance for the proposed development is adopted Variation No. 6 of the *Cork City Development Plan 2015-2021*, which changes the zoning of the proposed development site from "*Light Industry and Related Uses*" to "*Residential, Local Services, and Institutional Uses*", with the corresponding zoning objective being as follows:

"To protect and provide for residential uses, local services, institutional uses, and civic uses, having regard to employment policies outlined in Chapter 3."

Having regard to this objective, the proposed development will:

- Support the provision of residential uses in Cork City;
- Deliver a sustainable neighbourhood in an area identified as having potential for intensification of development;
- Deliver an inclusive neighbourhood that has accessible, appropriately sized accommodation with community, childcare and healthcare facilities, supports, amenities and recreational public open space on site in a development that has passive surveillance and permeability designed into it;
- Support the urban regeneration of the Tramore Road/Kinsale Road area; and
- Enhance the landscape assets of this gateway location in a key area along a key approach road by delivering a landmark tall building as part of a high-quality, distinctive development.

2.3.6 Draft Cork City Development Plan 2022-2028

The proposed development clearly aligns with and supports the following key strategic principles of the Strategic Vision of the Draft Cork City Development Plan 2022-2028:

- Compact growth
- A city of neighbourhoods and communities
- Sustainable and active travel

- A resilient city
- A healthy, inclusive and diverse city
- A connected city

The tip of the City Centre island and Docklands areas of the city are identified in the draft Plan as being appropriate locations in Cork city for tall buildings. The rationale is that these areas are suitable for the highest forms of high-density development and that the areas inherently lack sensitivities.

On this basis, the same can be said for the location of the proposed development – it is a large, vacant brownfield site located along a strategic public transport corridor unencumbered by environmental or other sensitivities, such as protected views.

2.4 History of Site

The site of the proposed development was previously in use as the former CMP dairy site. The CMP site closed in 2006 and all buildings were subsequently cleared.

There are three previous planning applications which have been made on the site of the proposed development on record–

- **0327881 (Granted) –** Outline permission for the development of a single office building over 4 storeys on the southern portion of the site at the junction of Tramore Road and Kinsale Road;
- **0630717 (Granted) –** To demolish and remove existing buildings, divert the municipal sewer around the site and carry out ground remediation; and
- **1737528 (Withdrawn) –** Permission for development at the former "CMP Dairies" site at Kinsale Road/Tramore Road. Cork. The development will comprise of retail warehousing/retail showroom units for bulky goods and of medical services to include a Primary Care Centre and associated uses.

2.5 Site Selection

Watfore Limited 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;
- Positive planning history for city development; and
- The location of the site on an existing public transport corridor (Black Ash Park and Ride), which will allow the proposed development to maximise the potential of this currently underutilised public transport service.

2.6 Conclusion

There is a long-standing need for the appropriate redevelopment of this Creamfields Site (former CMP Dairy 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 609no. new residential units.

In addition, the location of the proposed development in proximity to Cork City Centre is suitable for such a development, as it allows for increased access to public transport 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

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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 and expansion of the subject site. No alternative sites were considered that met the developer's objectives.

3.3 Design Objectives

The design proposal 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:

- The regeneration of the Kinsale Road area with a range of active residential/retail ground and first floor units;
- The provision of a significantly enhanced urban edge onto Kinsale and Tramore roads, including a new landscaped buffer zone, reconfigured site entrance at Tramore Road and a new singular vehicular site entrance at the existing signalised junction;
- 15 storey landmark building to designate the location;
- The provision of a number of significant new south facing landscaped courtyard spaces at the heart of the development, plus additional landscaped pedestrian and cycle green links; and
- The provision of community facilities such as a crèche, gym, community hub facility, retail unit, café and coffee kiosk.

It is intended that the proposed development will be an exemplar for all future large scale housing schemes in Cork City and that it will be the catalyst to begin the regeneration of the Kinsale Road area as a vibrant centre for creating residential accommodation, restaurants, bars and other commercial uses in addition to the existing services and employment, all in line with national, regional and local policies.

The vision for the project is to:

- Deliver a ‘best-in-class’ residential apartment scheme for the Kinsale Road;
- Provide attractive, modern living accommodation;
- Provide sustainability best practice in terms of design and construction. The sustainability vision is to create spaces that deliver net positive impacts economically, socially and environmentally;
- Provide an appropriately scaled urban development to act as the basis of a new architectural idiom for urban regeneration of the Kinsale and Tramore Road areas; and
- To meet with the requirements of National Planning Policy as envisaged in the National Planning Framework 2040.

3.4 Alternative Site Layouts and Designs Considered

The proposed development forms part of an overall masterplan for the site, which includes a Primary Care Centre (PCC) (the subject of a separate planning application for the site). The location of the Primary Care Centre affected the layout of the proposed Creamfields Residential Development and is therefore included in the alternative layouts and designs considered.

3.4.1 Option 1

The initial design feasibility considered the Primary Care Centre to be at the southern end of the site with its own surface carpark with access from the Kinsale Road at the Mick Barry Road junction.

The apartment blocks on Kinsale Road were to be set back by 10 metres and the private open space would have been provided over podium car park decks. The residential buildings were “L” shapes blocks with eight storeys to Kinsale Road and the western boundary with the returns lower at four storeys and linked to form gateways between courtyards. There was no vehicular access from Tramore Road which was pedestrianised as a plaza entrance to the scheme.

The heights of the buildings ranged from eight to 10 storeys, providing 826 apartments.

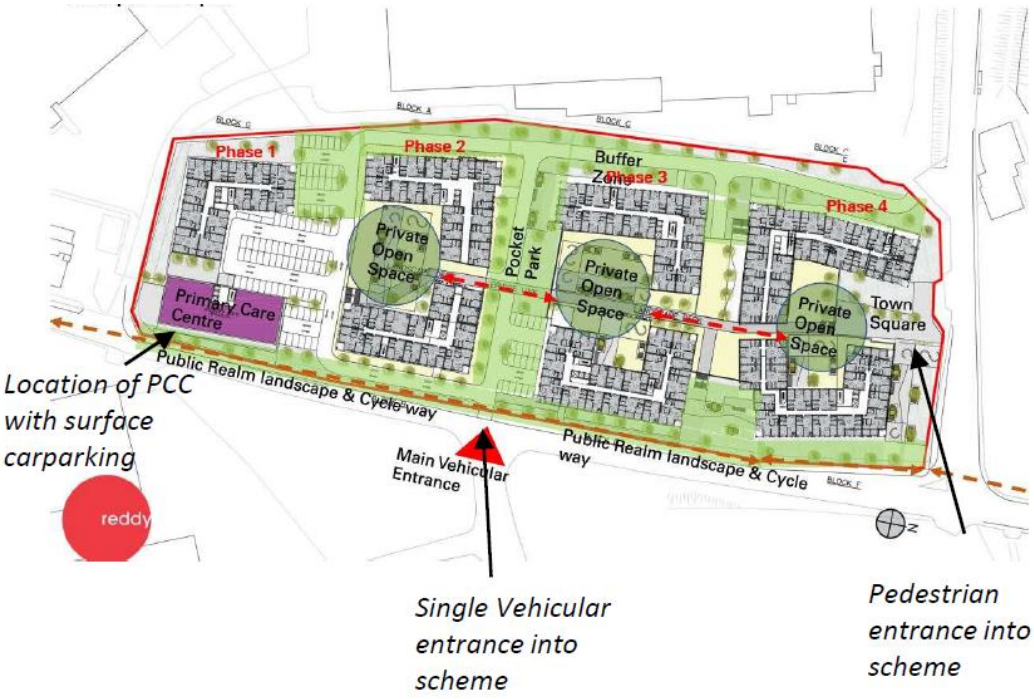


Figure 3.1: Option 1 | Not to Scale | Source: Reddy Architecture + Urbanism

3.4.2 Option 2

Option 2 considered the Primacy Care Centre to be moved to Tramore Road with the creation of a new dedicated vehicular entrance for the PCC. The new location of the PCC then formed the Townscape with pedestrian access to the scheme from Tramore Road.

The apartment blocks on Kinsale Road were again set back by 10 metres and the private open space was provided over a single large, unified podium car park deck. The residential buildings were now linear with eight storeys to Kinsale Road and the western boundary with central pavilions lower at four storeys.

The building heights now ranged from eight to nine storeys providing 807 apartments.

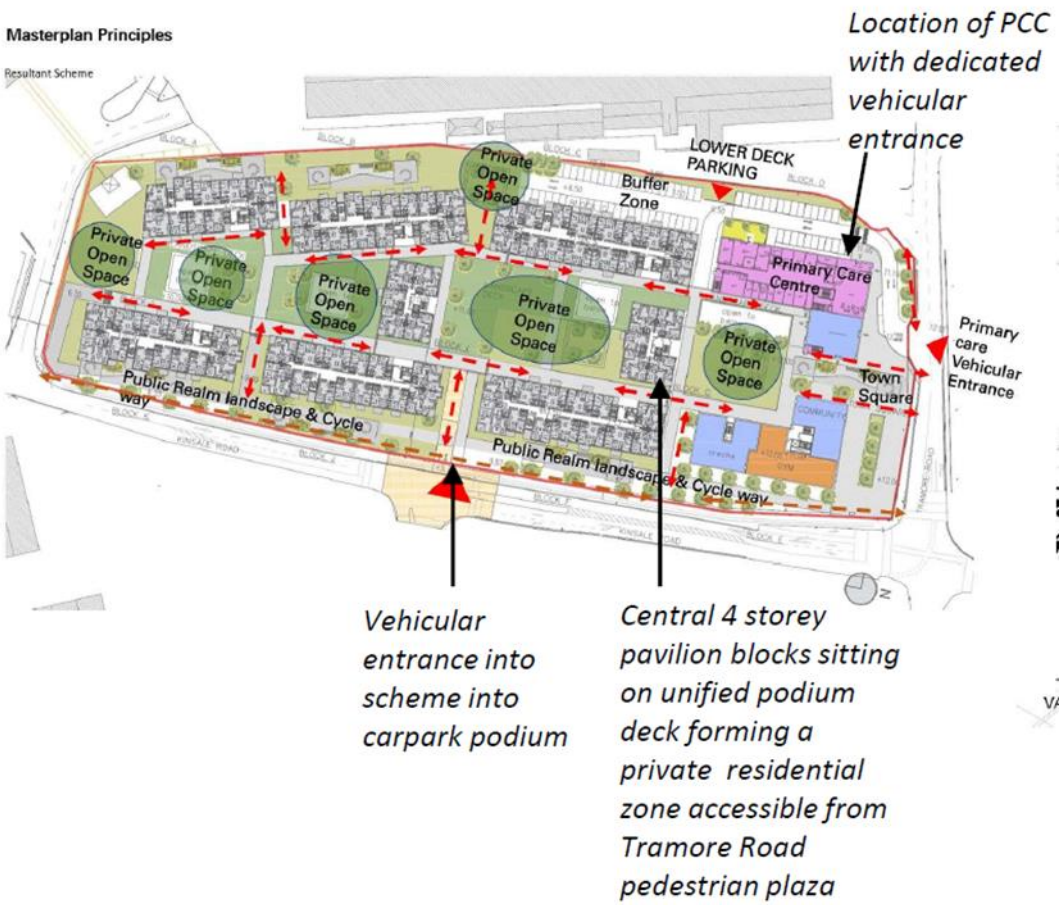


Figure 3.2: Option 2 | not to scale | Source: Reddy Architecture + Urbanism

3.4.3 Option 3

Option 3 was developed after an initial meeting with the Cork City Architect. The podium car park deck was reduced to the north of the site and a central street was introduced along with north-south and east-west pedestrian permeability.

The Kinsale Road buildings were staggered and space was allocated for the BusConnects corridor and cycle paths.

The heights of the buildings were generally reduced to seven storeys to Kinsale Road and a landmark building of 13 storeys was proposed to denote the key junction of Kinsale Road and Tramore Road.

The heights of the buildings ranged from four to 13 storeys to provided 780 apartments.

Figure 3.3: Option 3 | not to scale | Source: Reddy Architecture + Urbanism

3.4.4 Option 4

Option 4 was developed in further detail in terms of architectural articulation and proposed that the central pavilion building be attached to the perimeter blocks to ensure privacy and avoid direct overlooking within the development. This revised proposed allowed for greater permeability throughout the scheme and started the development of the character areas of the Town Square, Garden Court and Meadow Park.

The building heights ranged from four to 15 storeys and provided 768 apartments.

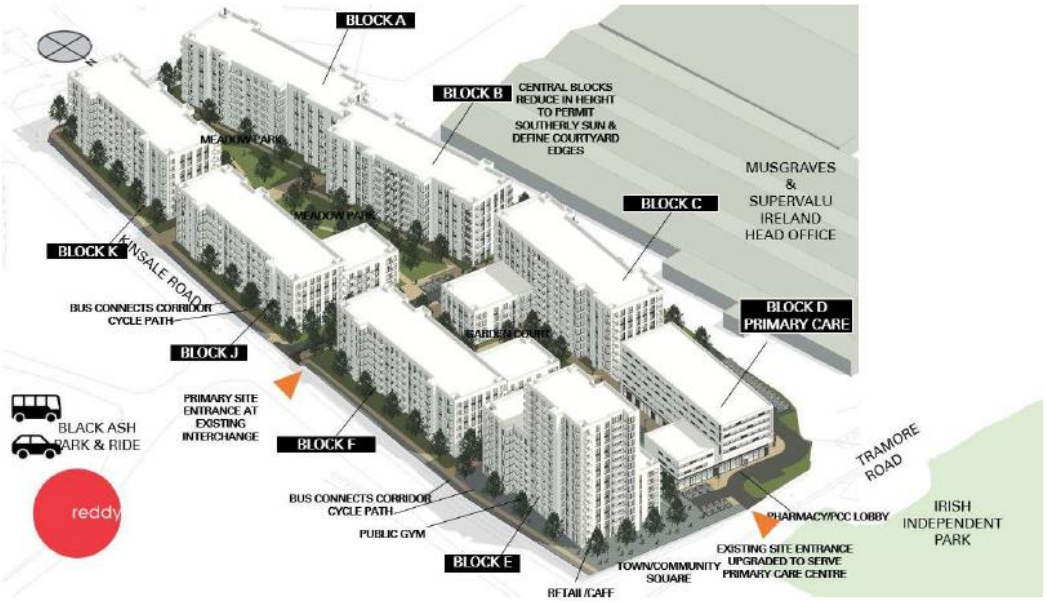


Figure 3.4: Option 4 | not to scale | Source: Reddy Architecture + Urbanism

3.4.5 Option 5

Option 5 was a further development of Option 4 to establish the relative heights of the proposed buildings and to further develop the architectural design and materials proposed for the scheme.

The building heights ranged from four to 15 storeys providing 753 apartments.

Figure 3.5: Option 5 | not to scale | Source: Reddy Architecture + Urbanism

3.4.6 Option 6

Option 6 was a further development of Option 5 to become the Section 247 submission to the Local Planning Authority. Further detail was provided including strategies for dual aspect, further architectural detail and expression, traffic and transport, planning, landscape design, daylight and sunlight analysis and further development of character areas within the development.

An urban design rationale was also included in the provision of a precinct for the Tramore Valley area centred on a new town square for the community.

The building heights ranged from four to 15 storeys providing 753 apartments.

Figure 3.6: Option 6 | not to scale | Source: Reddy Architecture + Urbanism

3.4.7 Option 7

Option 7 is 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.

Amendments made in response to Cork City Council's commentary include the introduction of different typologies, such as own-door townhouse apartments and duplex units and the provision of a greater sense of enclosure to the residential courtyards.

These interventions strengthened the scheme in terms of providing an active edge to Kinsale Road and internal courtyards as well as providing a sense of place to the central street which is now flanked by own-door duplex units.

The building heights ranged from three to 15 storeys providing 706 dwellings in three different typologies.

Figure 3.7(a): Option 7 brickwork | not to scale | Source: Reddy Architecture + Urbanism

Figure 3.7(b): Option 7 building types | not to scale | Source: Reddy Architecture + Urbanism

View of Landmark Building from the Townsquare

Figure 3.7(c): Option 7 Landmark Building | not to scale | Source: Reddy Architecture + Urbanism

Townhouse typology provides active edge to Kinsale Road

Figure 3.7(d): Option 8 Townhouse typologies along Kinsale Road | not to scale | Source: Reddy Architecture + Urbanism

Figure 3.7(e): Option 8 View of Residential Garden Court from Roof Terrace | not to scale | Source: Reddy Architecture + Urbanism

3.4.8 Option 8 (Proposed Development)

Following on from the Tripartite meeting, the design team entered into further dialogue with Cork City Council (following a suggestion from An Bord Pleanála) regarding the architecture and urban design proposals.

The changes made focussed on the southern half of the site by the removal of two apartment buildings and their replacement by duplex typologies, as well as reducing heights of other apartment buildings in this location.

The end result of these changes reduced the total number of dwellings from 706 units to 609 units.

The changes included:

- The removal of two eight-storey apartment buildings (A and K) and replaced them with three to four storey duplex typologies buildings arranged around a new residential squares:
- The height of Building J on Kinsale Road was reduced by one-storey from seven floors to six;
- A greater variety of scale, density and typology throughout the scheme to provide a great mix of tenure, architecture and scale was introduced;

- The profile of buildings was stepped out and varied along Kinsale Road so that the elevations rise from four storeys to a 15-storey landmark building in a sequential and legible manner;
- The Kinsale Road massing has been broken up and the visual clues to the character areas within are more apparent with five clearly defined access points from Kinsale Road and Tramore Road.

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, various sizes of units have been considered through the design process. A key driver for this is the commercial viability of the unit types, in the context of 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 the final design was primarily driven by the objective to create an attractive and commercially viable development, which made optimum use of the surrounding environment (proximity to the city centre, existing infrastructure etc.). This selection was also driven by the objective to provide a wide range of typology and tenure type to allow for all dwelling types (including age friendly units) and consistency with the provision of life cycle homes. This will support quality community and place making on site.

Table 3.1 provides a comparative summary of the alternatives studied by the developer, using a traffic-light coding.

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
Do-Nothing	Neutral	Neutral	Neutral	Neutral
Option 1				
Option 2				
Option 3				
Option 4				
Option 5				
Option 6				
Option 7				
Option 8 (Preferred Development)				

3.6.1 Townscape and Visual

During the design of the proposed development, the building heights varied from eight to ten storeys for Option 1 to a maximum height of 15-storeys from Option 4 onwards. This allowed for a landmark building to denote the key junction of Kinsale Road and Tramore Road.

As the design evolved, the relative heights of the building were established to allow for a greater variety of unit typologies and the landscape design was progressed. This allowed for a proposed development with distinct character areas which will transform the site from its disused condition to a residential neighbourhood and town square. The overall quality effect on landscape will be beneficial reflecting the delivery of an attractive and vibrant neighbourhood. Significant refinements were made to the architectural and urban design between Option 7 and the proposed development, Option 8.

3.6.2 Air Quality and Climate

The number of residential units decreased as the design developed. As such, the quantity of emissions associated with heating and traffic movements for Option 1 would be higher than those for Option 8, with Option 8 having significantly fewer units than Option 7.

3.6.3 Traffic and Transportation

Due to the reduction of residential units between Option 1 and Option 8, there would be a decrease in associated traffic movements. Option 8 also provides for better pedestrian connections to the public transport service at Black Ash Park and Ride, which will decrease traffic movements. As a result, there would be a reduction in traffic related emissions.

However, while the reduction in traffic related emissions is a positive, a higher density of residential units could also be seen as a positive as it would mean there would be more people utilising public transport and switching to active mobility due to the proximity of the proposed development to the City Centre and existing and proposed infrastructure.

3.6.4 Population and Human Health

As the proposed development provides a significant number of residential units, this will result in a positive effect by addressing the current housing crisis, even though the numbers of units decreased as the design developed.

The reduction in the number of units as the design evolved is mitigated by the provision of a greater variety of unit typologies which will cater for a wide range of tenant types.

The provision of improved pedestrian access to public transport services as a result of the proposed development will have a positive impact on population and human health.

Finally, the change in scale and massing of the proposed development allowed for interventions to strengthen the scheme in terms of providing internal courtyards and amenity areas for the residents and passers-by.

3.7 Conclusion

The developer considered eight 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.

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 Existing Site

4.2.1 Existing Site Description

The Creamfields Strategic Housing Development (SHD) site is located in Cork City. It lies on the grounds of the former Cork Milk Producers (CMP Dairy) site which is classified as *Industrial, commercial and transport units* under the EPA Corine 2018 data. Initially, the site had been developed as a creamery in the 1950s and operated as such until 2006, when CMP Dairies closed the facility.

The site is a brownfield site and is currently undeveloped. All buildings associated with this previous use have since been demolished and the site is currently vacant.

The site itself is bordered by Kinsale Road to the east and Tramore Road to the north. Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities adjoining and close to the proposed development including Musgrave Retail Partners Ireland to the west of the subject site.

This site lies within the area covered by the Cork City Development Plan 2015-2021, and is zoned as *Residential, Local Services, and Institutional Uses* in the Cork City Development Plan 2015-2021[18] under Variation No. 6 (Tramore Road / Kinsale Road Site)[19]. In addition, the mixed industrial / commercial area centred on the Tramore Road and Kinsale Road has been identified as *an area with potential for intensification of development, linked to the development of a high quality public transport route linking the northside to the City Centre and the Airport*.

A Draft Cork City Development Plan 2022-2028 is currently under preparation and this indicates the site as being zoned *ZO 02 New Res Neighbourhoods*. The

[18] 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]
[19] Cork City Council (2019) Cork City Council Development Plan 2015-2021 – *Variation No. 6 (Tramore Road/Kinsale Road Site)*. https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-6-tramore-road_kinsale-road-site-rezoning-copy-1.pdf [Accessed: December 2021]

objective of this land zone is: "*To provide for new residential development in tandem with the provision of the necessary social and physical infrastructure.*"

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

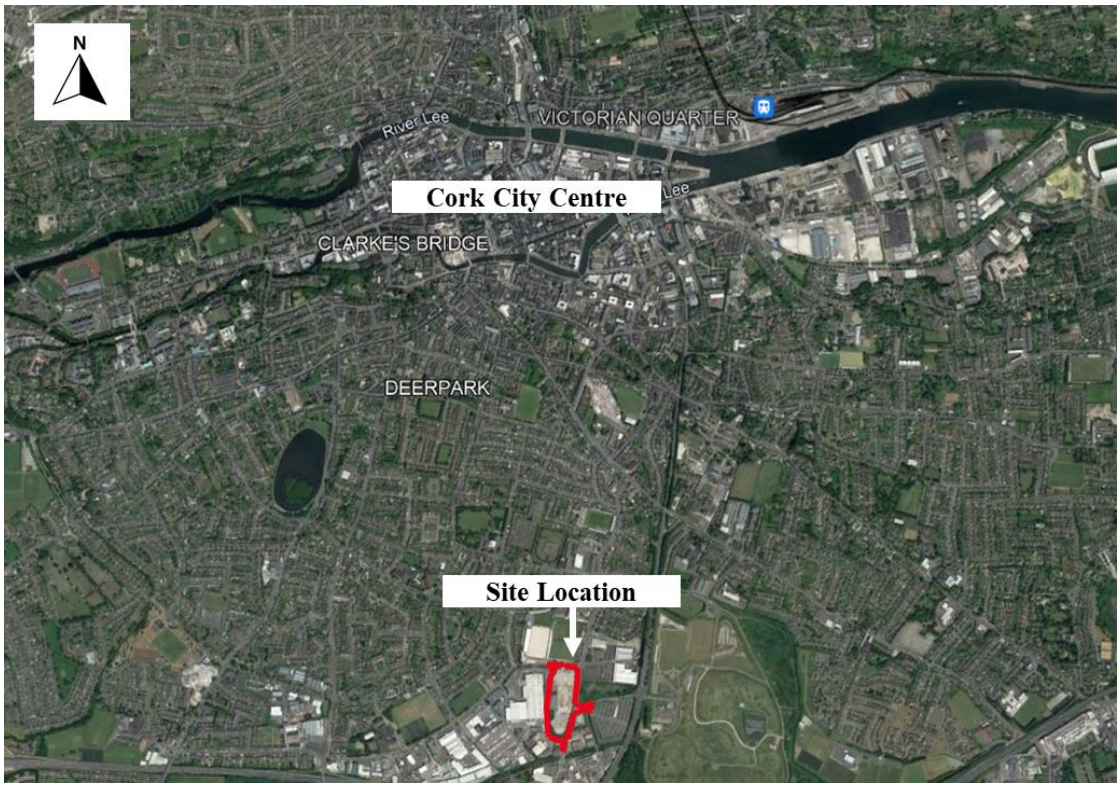


Figure 4.1: **Location of the proposed development site |** not to scale [Source: Google Earth © 2022]

4.3 Neighbouring Land Uses

The EPA Corine (2018) data has classified the area surrounding the site as *Industrial, commercial and transport units* (southwest) and *Discontinuous urban fabric* with *Artificial Surfaces* (north).

Black Ash Park and Ride is located to the east of the proposed development, while there are several commercial facilities in the area surrounding the proposed development, including Musgrave Retail Partners Ireland to the west of the subject site.

Cork City's Civic Amenity Site is located approximately 300m east of the proposed development. This area encompasses the former Kinsale Road Landfill site and current Tramore Valley Park Civic Amenity area classified as *Sport and leisure facilities* (EPA Corine, 2018).

The site is bordered by Kinsale Road to the east and Tramore Road to the north. The N27 South Link Road lies approximately 200m east and 300 south of the site and the N40 South Ring Road is located approximately 400m south of the site.

4.4 Main Features of the Proposed Development

4.4.1 Overview of the Proposed Development

Watfore 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. 3.39 ha, on lands located at the former "CMP Dairies" site, Kinsale Road / Tramore Road, Cork. The proposed development will provide 609 no. residential dwellings, as follows:

- The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.
- All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments, and a 289sqm crèche with ancillary outdoor play area, a 547.5sqm community hub facility, a 550sqm gym, a 218sqm retail unit, and a 272sqm café at ground floor level.
- The proposed development will also include: 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; 1,145 no. bicycle parking spaces provided in dedicated external and internal cycle stores/shelters; and 21no. motorcycle spaces.
- The proposed total gross floor area above ground is 60,833.7sqm.
- The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces; internal roads and pathways; pedestrian access points; hard and soft landscaping and boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction to facilitate improved pedestrian access to the Black Ash Park and Ride; an upgrade to the existing access from Tramore Road; a cycle lane on Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

A new Primary Care Centre located on the Tramore Road side of the development is also planned but is not included in the proposed SHD application. This development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; town square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

While not part of the proposed development for the purposes of the consent application, the potential effects of the proposed Primary Care Centre, in cumulation with the proposed development, is fully addressed in the EIAR.

Extracts of the site plan for Level 0 and Level 1 of the proposed development are presented in **Figure 4.2** and **Figure 4.3.** 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 B	90	7790
Block C	116	10575
Block E	115	13045
Block F	142	13885
Block J	69	6960
Duplex Building G	10	1094
Duplex Building H	8	874
Block I	8	874
Block L	18	2062
Duplex Building M	6	679
Duplex Building N	27	2843
Total	609	60681

Figure 4.2: Extract of Site Layout – Level 0 | Not to scale.

Figure 4.3: Extract of Site Layout – Level 1 | Not to scale

4.4.2 Building B

Building B will be a seven-storey building with 90 dwellings. It will be orientated north-south giving the majority of the apartments east and west aspect. It will enclose the upper meadow and communal area, identified as *Meadow 02* in **Figure 4.3**. The northern gable will address the central street of the proposed development and form an angled edge to the central duplex units in Building H. The main entrance to the building will be on the eastern side facing the pedestrian zone along the gable of Building H.

The layout of the building has been designed to ensure that most of the living areas are on corners and/or project beyond the line of the building in order to ensure good orientation and maximise dual aspect.

The building design achieves 61% dual aspect and 61% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.4: Overview of Building B | not to scale

4.4.3 Building C

Building C will be a nine-storey building with 116 dwellings. It will be orientated north-south giving most of the apartments east west aspect.

Building C will link the central street to the Town Square Plaza addressing the central court garden. Along with Building F it will enclose the garden court area and overlook the transition between this residential amenity area and the more public Town Square by means of lifts and steps around the coffee kiosk. The northern gable will address the Primary Care Centre (subject of a separate planning application).

The main entrance into the building will be on the eastern side facing the pedestrian zone along the gable of Building G.

The layout of the building has been designed to ensure that most of the living areas are on corners and/or project beyond the line of the building to ensure good orientation and maximise dual aspect.

The building will achieve 60% dual aspect and 63% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.5: Overview of Building C | not to scale

4.4.4 Building E

Building E will be a part six to eight storey and part 15-storey building with 115 dwellings. It will be a landmark building on the junction of Tramore Road and Kinsale Road and will be orientated to the four points of the compass.

Along with Building D, which includes the Primary Care Centre (subject of a separate planning application), Building E will address the Town Square providing public activity with a gym, retail and café uses at ground floor level. The building will also address the Kinsale Road and Tramore Road junction with active street frontages.

The main entrance into the building will be on the western side directly from the Town Square.

The layout of the building has been designed to ensure that most of the living areas are on corners and/or project beyond the line of the building in order to ensure good orientation and maximise dual aspect.

The building design achieves a very high 82% dual aspect.

Figure 4.6: Overview of Building E | not to scale

4.4.5 Building F

Building F will be nine-storeys facing Kinsale Road. The building will be part seven storeys and will include 142 dwellings. It will be a primary "L" shape building that will provide multiple orientations. At ground floor, the building will provide the community centre hub and crèche. It will also provide the pedestrian entrance to the under-podium carpark and the main bicycle parking area. The design also addresses Kinsale Road and provides an active edge to the street and due to changes in levels, Building F will be eight-storeys facing Kinsale Road. The east west return in the building will be lower and will provide a roof terrace that will be accessible from the seventh floor, from where there will be views to the landscaped courtyards to the south and the Town Square to the north.

Along with Building C and G, Building F will address the garden court and provide passive surveillance over the main vehicular entrance into the development from its southern gable end, forming a gateway into the development with Building J.

The main entrance into the building will be on the western side adjacent to the community hub facility.

The layout of the building has been designed to ensure that most living areas are on corners and/or project beyond the line of the building in order to ensure good orientation and maximise dual aspect.

The building design achieves 54% dual aspect.

Figure 4.7: Overview of Building F | not to scale

4.4.6 Building J

Building J will be a six-storey building with 69 dwellings. It will be orientated north south giving the majority of the apartments east and west aspect.

The ground and first floor will include 14 townhouse apartments. It will enclose the upper meadow and communal area, identified as *Meadow 02* in **Figure 4.3**. . The northern gable will address the central street of the development and will forms a gateway with Building F to the main vehicular entrance into the development.

The main entrance into the building will be on the eastern side facing the pedestrian zone along the gable of Building H.

The layout of the building has been designed to ensure that most living areas are on corners and/or project beyond the line of the building to ensure good orientation and maximise dual aspect.

The building design achieves 59% dual aspect and 70% of the dwellings are 10% larger than the minimum standard area for its type.

Figure 4.8: Overview of Building J | not to scale

4.4.7 Building G

Building G will be a duplex type building and will consist of five two-bed ground floor apartments with five four-bed two storey townhouses above.

The duplex building design is arranged in a row along the main central street forming a traffic calmed raised table area with the duplex Building H opposite.

These buildings will form a lower height streetscape in the centre of the development while also providing an alternative typology. They will form a distinct enclosure, separating the landscaped courtyard spaces from the more public central street.

The entrances to both dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure which will provide privacy. The upper townhouse will have terraces to the front and rear and will have front to back dual aspect living space. The upper townhouse will also have the benefit of a roof garden with views all across the centre of the development.

The building design achieves 100% dual aspect and 100% of the dwellings are 10% larger than the minimum standard area for its type.

Figure 4.9: Overview of Building G | not to scale

4.4.8 Building H

Building H will be a duplex type building consisting of four two-bed ground floor apartments with four four-bed two storey townhouses above. The duplex building design is arranged in a row along the main central street forming a traffic calmed raised table area with the duplex Building G opposite.

These buildings will form a lower height streetscape in the centre of the development while also providing an alternative typology. They will form a distinct enclosure separating the landscaped courtyard spaces from the more public central street.

The entrances to both dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure which provides privacy. The upper townhouse will have terraces to the front and rear and a front to back dual-aspect living space. The upper townhouse will also have the benefit of a roof garden with views across the centre of the development.

The building design achieves 100% dual aspect and 100% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.10: Overview of Building H | not to scale

4.4.9 Building I

Building I will be a duplex type building consisting of four two-bed ground floor apartments with four four-bed two storey townhouses above. The duplex building design is arranged in a row along the pedestrian route into the Meadow Park area overlooking the Upper Meadow. Along with Buildings L, N and M it will form a distinct enclosure creating a distinctive residential square.

The entrances to both dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure which will provide privacy. The upper townhouse will have terraces to the front and rear and will have front to back dual aspect living space. The upper townhouse will also have the benefit of a roof garden with views all across the centre of the development.

The building design achieves 100 % dual aspect and 100% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.11: Overview of Building I | not to scale

4.4.10 Building M

Building M will be a duplex type building consisting of three two-bed ground floor apartments with three four-bed two storey townhouses above. The duplex building design is arranged in a row along the southern boundary of the site forming a book end for the development. Along with Buildings L, N, and I it will form a distinct enclosure creating a distinctive residential square.

The entrances to both dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure, providing privacy. The upper townhouse will have terraces to the front and rear and front to back dual aspect living space. The upper townhouse will also have a roof garden with views all across the centre of the development.

The building design achieves 100 % dual aspect and 100% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.12: Overview of Building M | not to scale

4.4.11 Building L

Building L will be a duplex type building consisting of nine two-bed ground floor apartments with nine four-bed two storey townhouses above. The duplex building design is arranged in a row along the western boundary of the site forming an active edge for the development. Along with Buildings M, N, and I it will form a distinct enclosure creating a distinctive residential square.

The entrances to both dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure providing privacy. The upper townhouse will have terraces to the front and rear and front to back dual aspect living space. The upper townhouse will also have a roof garden with views all across the centre of the development.

The building design achieves 100 % dual aspect and 100% of the dwellings will be 10% larger than the minimum standard area for its type.

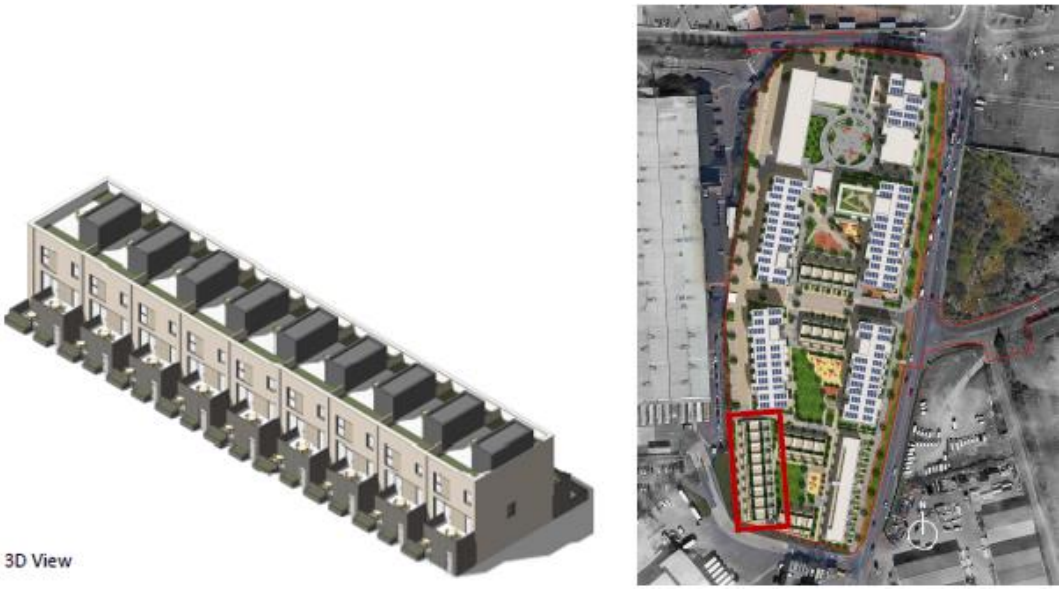


Figure 4.13: Overview of Building L | not to scale

4.4.12 Building N

Building N will be a duplex type building consisting of nine two-bed ground floor apartments with nine four-bed two storey townhouses above. It will be a four-storey building with nine deck access apartments above the duplex units. The duplex building design is arranged in a row along the eastern boundary of the site forming an active edge along the Kinsale Road. Along with Buildings L, N, and I it will form a distinct enclosure creating a distinctive residential square.

The entrances to ground floor and townhouse apartment dwellings will be from the same side of the block with the upper stair access internalised providing own front door access directly to the street. The lower apartment will be accessed via a courtyard which will be screened from the footpath by a permanent planter structure providing privacy. The upper townhouse will have terraces to the front and rear and front to back dual aspect living space. The deck access apartments on the third floor will be accessed by a single centre and lift core accessed from the Kinsale Road.

The building design achieves 100 % dual aspect and 100% of the dwellings will be 10% larger than the minimum standard area for its type.

Figure 4.14: Overview of Building N | not to scale

4.4.13 Commercial Spaces

4.4.13.1 Crèche

The crèche facility (289m^2) will be located on the ground floor of Block F and will be located close to the main entrance to the proposed development off the Kinsale Road.

While the entrance into the crèche will be from the internal landscaped courtyard it will also be capable of serving the wider community as it will be located just off the central road into the proposed development.

It is intended that this will be a full day care facility for babies (0-1 year) and toddlers (1-2 years). The documents; "*Best practice guidelines for the Design of Child Care Facilities*" as well as "*Childcare Facilities, A guideline for Planning Authorities 2001*" informed the design of the proposed on-site crèche facility.

Based on the requirements within "*Childcare Facilities, A guideline for Planning Authorities 2001*" the facility will provide for 63 children based on the calculation of minimum floor space of 2.32m^2 with two large dedicated play rooms and sleep rooms for toddlers, along with dedicated baby playroom and sleep room. These will be supported by a kitchen/snack room, staff room, large bright lobby with managers office/parents room, ancillary boys and girls toilets and nappy change room.

All the playrooms will open into a large wrap-around outdoor play area, adjoining one of the central south-facing courtyard gardens.

4.4.13.2 Community Hub

The 547.5m^2 community hub facility will be located on the ground floor of Block F, adjacent to the crèche with its entrance door accessed from the internal

landscape courtyard. The community hub facilities will include a dedicated on-site management presence. This team will respond to any requirements, take in the mail and deliveries if necessary as well as provide security and on a presence on site. The community hub will consist of high quality and regularly maintained public areas for community and recreation uses which includes:

- A large community lounge;
- Co-working lounge;
- Coffee Dock, eatery; and
- Cinema/screening room.

In addition, an external communal courtyard for events such as community barbecues will be provided. The community hub will also offer an alternative space for home workers, and to meet neighbours and encourage social interaction.

4.4.13.3 Café and Retail

The café will be a large high-ceilinged unit of 272m^2 forming the corner of Tramore road and the entrance to the town square. Outdoor seating will be provided on the square.

The 218m^2 retail unit is envisaged as the local shop for the proposed development, supported by the existing Centra located to the south of the proposed development.

4.4.14 Gym and Coffee Kiosk

A gym/large scale fitness centre of 550m^2 will offer a range of wellness features for both the residents and local community. The space is envisaged as a large functional training area with cardio and weight equipment, as well as a fitness/yoga studio.

The coffee kiosk will mark the transition point from the Town Square down to the court garden, creating a natural division between more public and private spaces within the proposed development. The 100m^2 glass “pavilion” is envisaged as a relaxed, informal social space and meeting point for residents. Both this and the main café may act as alternative, flexible home working spots. The Kiosk will have a raised, full south facing outdoor terrace affording views down on the landscaped court garden below.

4.4.15 Bicycle Parking Provision

Bicycle parking and storage facilities will be provided at a quantity of one covered and secure parking space per bedroom in compliance with the standards for Cycle Parking and associated Cycling Facilities for new Developments set down by Cork City Council.

2,147 bed spaces will be provided in the scheme and 1,145 bike spaces will be provided within dedicated internal and external secure cycle stores. A large

central facility will be provided within the car park providing space for stacked bikes using two tier stack bike racks. This will have direct internal connections to all blocks and direct access to the Kinsale Road.

4.4.16 Site Infrastructure

4.4.16.1 Surface Water Drainage

The intention is to discharge surface water offsite to the existing surface water drainage network located within Kinsale Road to the south of the site. This surface water pipe ultimately outfalls to the Tramore River. A CCTV survey of this pipe was carried out which indicates a blockage along the existing pipework upstream of the outfall. From discussions with Cork City Council, it is understood that the existing gullies in the vicinity of the pipework may not be adequately connected to the existing pipework. The pipe blockage will be remedied and the existing gullies will be connected to the pipework. Refer to drawing 252666-ARUP-ZZ-XX-DR-C-1000 included as part of this planning application.

4.4.16.2 Foul Water Drainage

It is proposed to construct a dedicated below ground foul network to collect and convey all foul water generated by the proposed development. The existing 600mm diameter combined sewer will be diverted to accommodate the proposed buildings/site layout. It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer. The remaining buildings to the south cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul water from most of the site to a centrally located Pumping Station (PS). A rising main from the PS will discharge to the combined sewer. Refer to drawing 252666-ARUP-ZZ-XX-DR-C-2000 included as part of this planning application.

4.4.16.3 Proposed Potable Water Supply Strategy

It is proposed to construct a dedicated below ground portable water network to serve the site.

It is proposed to provide a new connection from the existing watermain in Kinsale Road to serve the site.

A bulk water meter will be provided immediately downstream of the connection point. Downstream of the bulk water meter, a series of ring mains will be provided onsite, off which each development block will be fed.

External fire hydrants will be connected to the ring mains on site. 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. Subsequent to this, the planning design drawings were shared with Irish Water and they have issued a Statement of Design Acceptance.

Refer to drawing 252666-ARUP-ZZ-XX-DR-C-3000 included as part of this planning application.

4.4.17 Sustainability

A Building Energy Rating (BER) certificate will be provided for each apartment, duplex apartment and duplex townhouse, which will provide detail of the energy performance and carbon emissions associated with each of the dwellings. It is proposed to target a BER Rating for each apartment of A2.

The following Low Energy / Carbon and Renewable Energy Solutions are being considered for the proposed development:

1. Heat pumps

Space heating to each apartment/townhouse will be provided by Exhaust Air Heat Pumps (EAHP). The proposed exhaust air heat pump supplies low temperature hot water to the apartment/townhouse radiators. The heat pump will also provide hot water to a built-in water tank. The hot water is produced by a heat exchange with the extracted warm air from the apartment/townhouse wet rooms.

An alternative approach is the use of electric radiator using the Dimplex Electric system.

2. Condensing gas boilers

Condensing gas boilers are being considered in conjunction with renewable technologies as they have a higher operating efficiency than standard boilers. Condensing boilers utilize heat losses from the boiler exhaust flue gases to preheat the circulating heating water which typically results in an operating efficiency in excess of 90%.

Space heating to the community facilities (gym, café etc.) will be provided by a small central Low Pressure Hot Water (LPHW) system which will comprise of a high efficiency gas boiler, district heating network and panel radiators.

3. Mechanical ventilation heat recovery

Mechanical ventilation heat recovery (MVHR) will provide ventilation to each apartment.

MVHR provides tempered external fresh air to occupied spaces and extract ventilation from rooms with “Bad Air” such as bathrooms, utility stores etc.

Heat is recovered from exhaust air streams and transferred to the fresh air stream negating the requirements to use heating energy to heat incoming cold external fresh air.

Mechanical ventilation to each apartment/townhouse will be provided by Exhaust Air Heat Pumps.

For mechanical ventilation to the community facilities (gym, café etc.), a high-efficiency heat recovery system will be employed on appropriate air systems in order to minimise associated energy use.

4. Photovoltaic (PV) panels

PV Panels are capable of generating direct current electricity from the sun's energy, which can then be converted to alternating current and used within the building. They are a "maintenance free" technology as there are no moving parts. They typically have a 20-year manufacturer's guarantee on electrical output and can be expected to operate effectively for 30 years or more.

Capital costs have also reduced significantly in recent years due to a worldwide increase in production levels. They are adaptable and scalable in that the amount installed can be selected to suit the budget available.

The energy balance for this high-density residential development means that the use of Exhaust Air Heat Pumps/PV panels or the Dimplex electric system/PV panels would be the most practical option for meeting compliance with the Near Zero Energy Building requirements and other regulations.

The use of the PV can also be used to supply energy back to the grid.

The proposed development will incorporate the use of PV solar panels on the building roofs.

5. ECAR Charging Points

Ducting will be provided from local distribution boards to designated E-Car charging car park spaces within the basement car park. This will provide the management company with the option of installing a number of E-Car charging points to cater future E-Car demand of residents.

In addition, roof gardens are to form part of the proposed development on Buildings E and F. This has been indicated in **Figure 4.7** and drawing 252666-ARUP-ZZ-XX-DR-C-1000 which is included as part of this planning application.

5 Construction Strategy

5.1 Duration and Phasing

The proposed development is anticipated to be constructed in five sequential phases; a site enabling works phase followed by four main construction phases. It is intended that the construction of the proposed development will be completed together with a Primary Care Centre development, located in the north-western part of the site. This scenario represents a reasonable worst-case in relation to the potential for generating adverse effects on the environment, so the following description includes the construction of that development, which is the subject of a separate application for planning permission. Should the Primary Care Centre development not proceed, the following construction activities will be simplified and shortened in duration accordingly.

In summary, the proposed development consists of the following components and is described further on the relevant drawings and architectural reports that accompany this application:

- **Site Enabling Works (2-4 months)**
- **Phase 1 Construction (2.5-3.5 years):**
    - Primary Care Centre Including Retail – Pharmacy (this is the subject of a separate planning application)
    - Retail (Gym, Crèche, and Café)
    - Town Square
    - Court Garden
    - Coffee Kiosk
    - Residential Blocks E and F
    - New entrance from Kinsale Road
    - Ancillary site development works (Including underground services, pavement upgrade works, central avenue site works, surface car parking, landscape works etc.)
- **Phase 2 Construction (circa. 2-2.5 years):**
    - Residential Blocks G and C
    - Ancillary site works
- **Phase 3 Construction (circa. 2.5-3.5 years):**
    - Residential Blocks J, H and B
    - Ancillary site development works (Including underground services, pavement upgrade works, landscape works – Meadow 2 etc.)

- **Phase 4 Construction (circa. 1.5-2.5 years):**
    - Residential Blocks I, L, M and N
    - Ancillary site development works (Including underground services, pavement upgrade works, landscape works – Meadow 1 etc.)
- **Project Completions (circa. 3-6 months)**

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 there 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 presented in **Figure5.1** and **Figure 5.2**.

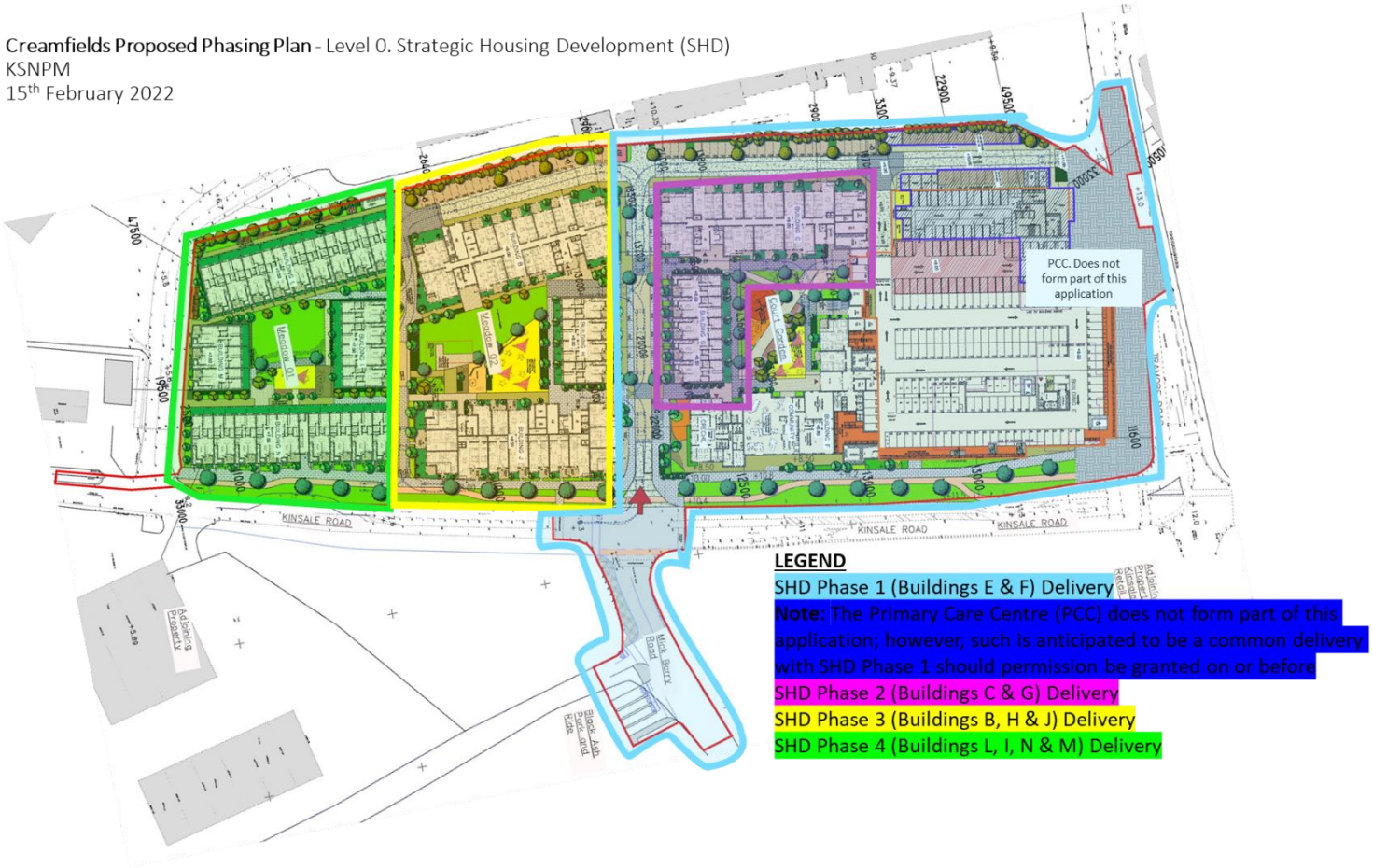


Figure 5.1: Phasing Plan – Level 0 | not to scale

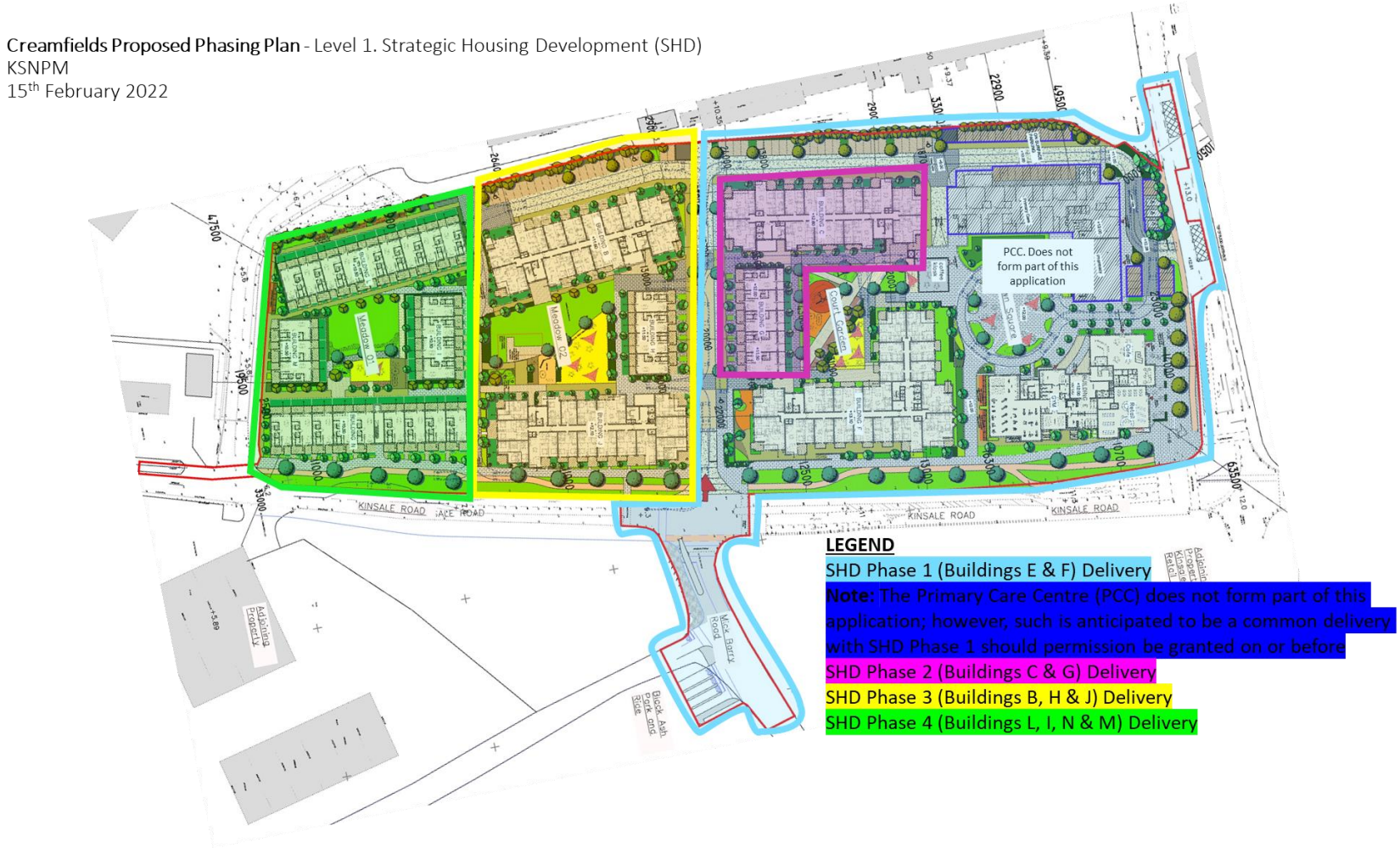


Figure 5.2: Phasing Plan – Level 1 | not to scale

5.2 Site Preparation and Enabling Works

The site preparation and enabling 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.

5.3 Demolition and Site Clearance

There are no buildings or structures currently present on the site, however there are concrete ground floor slabs and foundations for previously demolished structures within the site.

The proposed development includes the demolition and removal of the existing concrete ground floor slabs and foundations along with carpark surfacing. The approximate area of hardstanding to be removed is 18,308m^2 and includes the areas is outlined in **Figure 5.3** below.

Figure 5.3: Extract from Google Maps marked up to show existing concrete ground slabs and foundations | red: concrete floor slabs/ foundations, blue: carpark | not to scale

5.3.1 Pre-Demolition and Condition Surveys

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 ground floor slab and foundation construction so that measures can be put in place to ensure the safe demolition. This information will also assist in the preparation of a detailed Waste Management Plan for these waste streams.

A Construction and Demolition Resource and Waste Management Plan has been prepared as part of this planning application package and is included in **Appendix 5.2** of this EIAR. In this Plan, it is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. Where possible clean, non-hazardous or inert excavation material will be re-used. The Contractor will endeavour to send all other remaining materials to authorised facilities for beneficial re-use, recovery or recycling so far as is reasonably practicable, in accordance with the provisions of the Waste Management Act, 1996 as amended.

The pre-demolition 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 as required 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

Asbestos Containing Materials (ACMs) were identified in a previous asbestos survey and during standard geo environmental sampling undertaken as part of site investigation works at the proposed development site. A formal asbestos audit will therefore be undertaken prior to any demolition and excavation works. If ACM 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.

5.3.3 Structural Demolition

The structural demolition scope for the development will be minimal as the previous buildings that were present onsite have already been demolished. The demolition works to be undertaken as part of the development comprise the demolition and removal of the existing concrete ground floor slabs and associated foundations.

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.

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

- Saw cutting and lifting:
  This method will be adopted in sensitive locations.

- 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.

5.4 Services and Utilities Requirements

5.4.1 Existing Services

There is an existing Irish Water 600mm diameter combined sewer which enters the site from the west and exits to the east before ultimately draining away from the site in a north-easterly direction. There are existing utilities on site that previously served the former CMP site (e.g. water, power, telecoms). These are assumed to be redundant but will be reviewed by the contractor in advance of any works.

There is existing potable watermain infrastructure located adjacent to the site within Kinsale Road (150mm diameter) and Tramore Road (200mm diameter).

It is understood there are two surface water outfalls into the Tramore River to the south of the site. These are understood to take surface water runoff from the roads and buildings to the north.

5.4.2 Watermain

It is proposed to provide a new connection from the existing watermain on Kinsale Road to serve the site.

A bulk water meter will be provided downstream of the connection point. Downstream of the bulk water meter a series of ring mains will be provided on site from which each development block will be fed.

The assumed water metering strategy for the individual buildings within the site is described in **Figure 5.4** (and drawing 252666-ARUP-ZZ-XX-DR-C-3000 included with the planning application) and will be confirmed and agreed with Irish Water during detailed design. It is assumed that booster pumping will be required for high rise buildings on site.

External fire hydrants will be connected to the ring mains on site.

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. Subsequent to this, the planning design drawings were shared with Irish Water and they have issued a Statement of Design Acceptance.

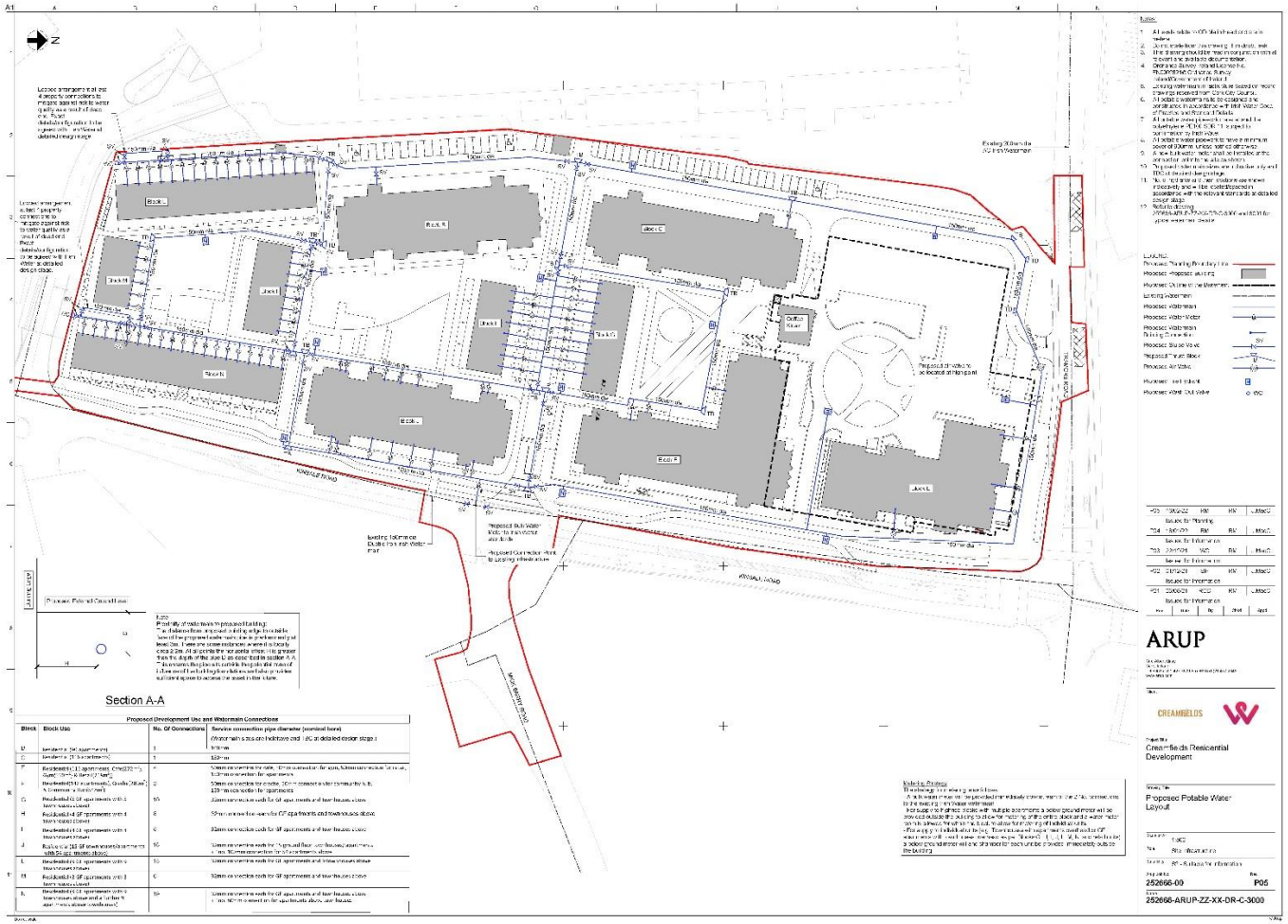


Figure 5.4: Watermain Layout. Not to scale.

5.4.3 Foul Sewer

It is proposed to construct a dedicated below ground foul network to collect and convey all foul water generated by the development. Foul water flows generated on site are expected to be collected as follows.

As described in **Section 5.4.1** there is an existing 600mm diameter combined sewer crossing the site from west to east. This sewer will be diverted to coordinate with the proposed buildings /site layout. The sewer will be diverted beneath a proposed site road and the route will take into account any Irish Water wayleave requirements.

It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the aforementioned diverted combined sewer.

The remaining buildings to the south of the site cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul runoff from the southern section to a centrally located pumping station. A rising main from this pumping station will discharge to the combined sewer to the north. Refer to **Figure 5.5** and drawing 252666-ARUP-ZZ-XX-DR-C-2000 included with this planning application.

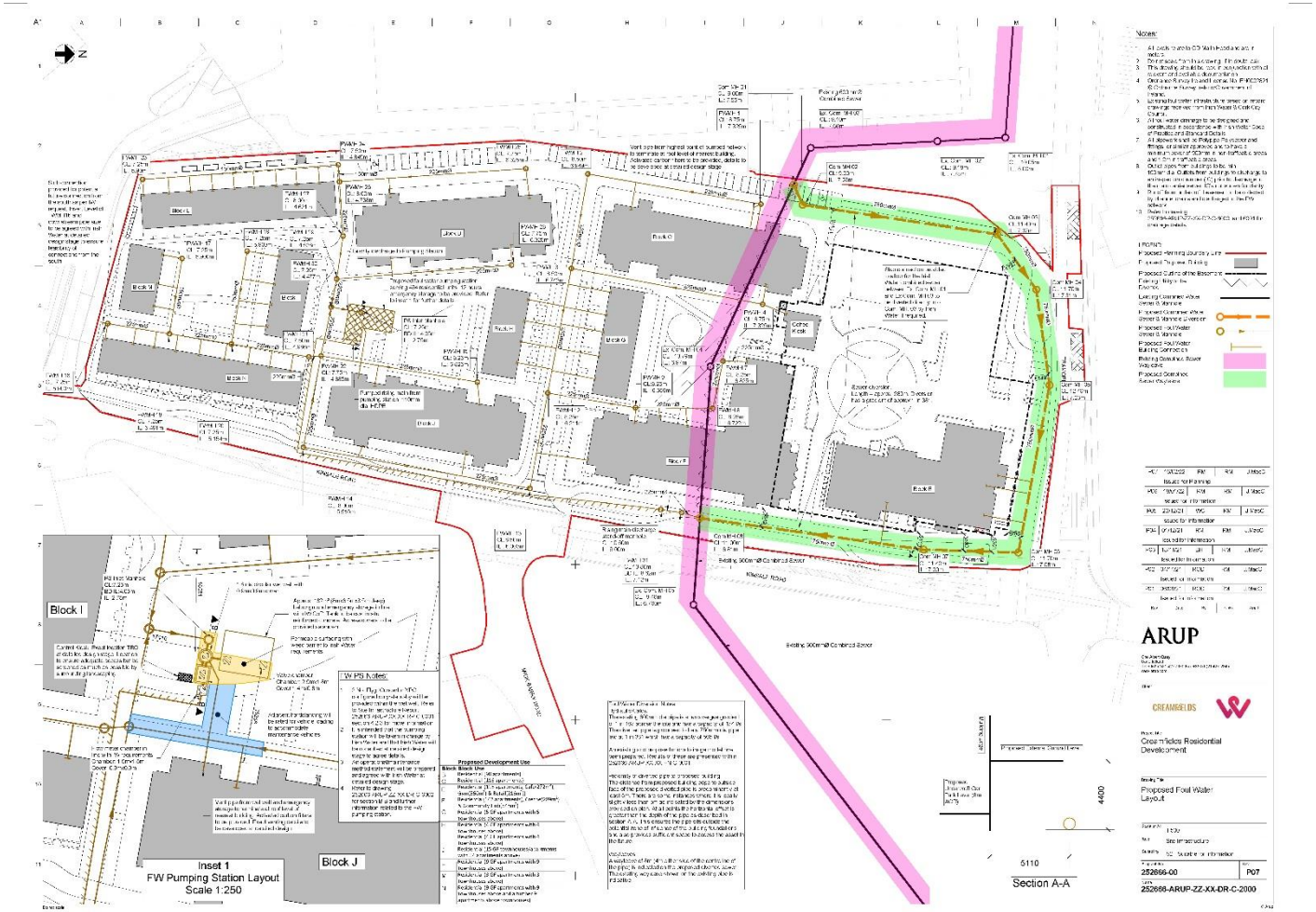


Figure 5.5: Foul Sewer Layout. Not to scale.

5.5 Construction of New Buildings

5.5.1 Podium Structure Works

The proposed development requires the construction of one single storey podium structure to serve Block E and the public realm space. The podium structure will be under the footprint of Block E and will support podium landscaped courtyards and open spaces between these buildings. Beneath the podium structure, car and bike parking will be provided along with waste storage rooms and plantrooms.

5.5.2 Earthworks

During the construction of the foundations, site services and attenuation tanks it is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. It is noted that there is likely to be asbestos contamination present in soils on 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.

Although the soil to be excavated may contain contaminants it may also have suitable engineering properties that could make it useful as a fill material. A detailed analysis will 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 under hard and soft landscaping areas such as public open spaces. This is likely to comprise a sustainable solution but will likely require some offsite disposal for excess soils.

If it is required to export contaminated soil offsite for disposal (with or without treatment) it is likely to be classified as either non-hazardous waste with trace level of asbestos or hazardous waste. In this case, it will likely be exported and disposed of outside of Ireland.

Samples from the ground investigation will 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 will 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.

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.

A Construction and Demolition Resource and Waste Management Plan has been prepared for the proposed development which details the management of exported

soils from site. This document will be further updated by the contractor prior to construction and is included as **Appendix 5.2** to this EIAR.

5.5.3 Foundations

The design of the foundations will be subject to detailed design at a later stage but initial indications from the site investigation carried out would suggest that a piled / raft slab solution may be the preferred foundation type. If piling is deemed the preferred solution these would be either Continuous Flight Auger or rotary cored piles to minimise noise and vibration.

5.5.4 Ground Floor slab and Substructure

In general, it is envisaged that the ground floor of each building will comprise reinforced concrete suspended slabs, spanning onto the pile caps. The exact depths of excavation required for the ground floor and foundation structures varies, depending on existing ground level, however it will generally be in the region of 1-2.5m below existing ground level.

Block E will be constructed on top of a podium structure as described in **Section 5.5.5**

5.5.5 Podium Slab and Transfer Structures

The podium structure comprising a reinforced concrete flat slab will be constructed beneath Block E including the hard and soft landscaped areas in this part of the development. The outer walls and the internal core walls and columns will be constructed from in-situ concrete. The western, northern and eastern walls of the podium bounding the Tramore Road and Kinsale Road will be retaining structures designed as propped cantilevers and therefore will require the podium floor slab to be cast and cured prior to backfilling.

Due to varying structural grids between residential and commercial/ car parking, a transfer structure will be required at Level 01 of Block E. It is intended that this will consist of a thickened reinforced concrete flat slab designed to support the loading from the residential block over.

5.5.6 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 reinforced concrete lift and stair cores in each building, 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.

5.5.7 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 will be 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.

5.5.8 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, paths and cycle lanes.

5.5.9 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:

- BusConnects Cork

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.

5.6 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 250 personnel at the most intensive fit-out and landscaping 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

08:00	18:00	Monday - Friday
08:00	16:00	Saturday

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

5.7 Likely Significant Effects

5.7.1 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.

5.7.2 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.

5.7.3 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 5.8.3**.

5.7.4 Contaminated Soils

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*.

5.7.5 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.

5.7.6 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.

5.7.7 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.**

5.8 Construction Mitigation Measures and Monitoring

5.8.1 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.

5.8.2 Traffic and Transportation

The following measures will be implemented in relation to traffic and transportation during construction:

5.8.2.1 Construction Traffic Management Plan

A Construction Traffic Management Plan has been prepared and is included with this application. The Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction,

to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

The CTMP provides details of intended construction practices for the development, including:

- Outlining the minimum road safety measures to be implemented at the site access/egress locations and at the approaches to such access/egress locations, during the works.
- Demonstrating to the contractor and suppliers the need to adhere to the relevant guidance documentation for such works.
- Providing the basis for the contractor to further develop the details of the CTMP.

Overview

The potential temporary impacts of the scheme on the road network are as follows:

- Temporary impacts during construction due to the excavation of materials in order to facilitate construction, and the associated movements of excavation vehicles;
- Temporary impacts associated with the importing of construction materials to the works areas, and the relevant movements of delivery and construction vehicles and construction workforce;
- Construction staff commuting to and from the construction compounds; and
- General service traffic associated with construction activities (i.e. plant deliveries, visitors, traffic between compounds and working areas, etc.)

Traffic Generation from Proposed Scheme

The level of construction traffic associated with the proposed development will vary over the course of the construction programme. It is envisaged that construction will take place in four phases, starting at the northern part of the site with phase 1 and gradually moving towards the south as the remaining construction phases commences.

Although both applications, the Strategic Housing development and the Primary Care Centre site boundaries overlap, they are separate applications, and it is assumed for the purpose of this CTMP that both applications will be granted planning permission and therefore that the construction of each development will occur concurrently.

The construction phasing is the best estimate presently and will need to be updated after planning permission is obtained and more detail on the construction programme becomes available. The current estimation suggests that Phase 1 will take approximately 2.5 years to complete and each of the subsequent phases two years to complete.

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth. In 2025 therefore there will be traffic associated with first residential blocks occupied by residents and the functional primary health care facility and construction traffic associated with Phase 2.

By 2030, which corresponds to the Opening Year +5 it has been assumed that both development phases 1 and 2 will be completed and occupied and that phase 3 will be under construction. In 2040, the entire development will be in place and therefore no construction traffic associated with the development will be on the road network.

Heavy and Light Construction Vehicles

The movements of HCV's and LCV's 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.

Refer to **Chapter 7** *Traffic and Transportation* for details of the predicted traffic impact of the construction phases of the proposed development.

Workforce

The most intensive phase of construction for workforce numbers is also the fit-out and landscaping phases, when a total of 250 construction personnel are expected to be on site per day.

Due to the site benefiting from bus services in the vicinity and 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.

Construction hours are expected to be from 08:00-18:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. This can be done by agreeing with Cork County Council that site personnel should arrive before or after peak hour traffic. The prevailing peak hours should be determined closer to the time of construction by carrying out new link counts or by reviewing traffic data collected by permanent counting stations on the N40 and the N27. Based on the above it has been assumed that 10% of the construction personnel trips arrive on site during the morning peak and depart the

site during the evening peak on the local road network, respectively. Allowance is also made for the off-peak direction during each peak hour period to account for instance for a contractor leaving the site during the AM peak due to unforeseen circumstances.

Envisaged Construction Equipment

Construction equipment and vehicles required for each construction element/operation will be delivered to site by appropriate vehicles. Specific equipment and vehicles which are deemed to be required for the proposed development by the principal contactor, suppliers and staff are to be confirmed and included in the updated CTMP, prior to the commencement of construction.

Matters to be Addressed in More Detail

The contractor will be required to ensure that the contents of this CTMP are further developed prior to the commencement of works. The contractor will implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the CTMP. The updated CTMP will address the following issues:

- Site/works area access and egress;
- Traffic management signage;
- Timings of material deliveries to site;
- Traffic management speed limits;
- Road cleaning;
- Vehicle cleaning;
- Road condition;
- Road closures;
- Enforcement of traffic management plan;
- Emergency procedures during construction; and
- Communication.

These items are explained in detail in the CTMP which has been included as an appendix to the Construction Environmental Management Plan as **Appendix 5.1**:

- Location of materials compound(s) including area(s) identified for the storage of construction refuse;
- Location of areas for construction site offices and staff facilities;
- Details of site security fencing and hoardings;
- Details of on-site car parking facilities for site workers during the course of construction;

- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;
- Measures to obviate queuing of construction traffic on the adjoining road network;
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works;
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
- Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
- Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil; and
- Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.

5.8.3 Dust

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.

The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- During very dry periods when dust generation is likely, construction areas will be sprayed with water.
- Scaffolding will be erected around the site during construction along with hoardings at ground level. Mesh netting will be erected around the scaffolding during construction if necessary as a mitigation measure to minimise dust emissions from the site.
- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery.
- Vehicle speeds will be limited in the construction site.

- Surrounding roads used by trucks to access to and egress from the site will be cleaned regularly using an approved mechanical road sweeper. Roads will be cleaned subject to local authority requirements. Site roads will be cleaned on a daily basis, or more regularly, as required.
- Wheel-wash facilities will be provided with rumble grids to remove excess mud from wheels. These facilities will be located at the exit from the site and away from sensitive receptors, where possible.

The technique adopted for all works shall minimise the release of dust into the atmosphere.

Daily visual inspections will be carried out at locations around the site boundary as required. These inspections will monitor the effectiveness of dust mitigation measures.

5.8.4 Debris

The following are some of the measures that will be taken to ensure that the site and surroundings are maintained to a high standard of cleanliness:

- 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.
- 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.

5.8.5 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 is provided in **Section 5.1** above.

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.

5.8.6 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.

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

5.8.7 Biodiversity

Mitigation measures concerning biodiversity 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*.

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. 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 **Appendix B** to this **Appendix 5.1**. This outlines specific measures that will be taken to treat and manage the known infestation of Japanese Knotweed on the site.

5.8.8 Archaeology, Architecture and Cultural Heritage

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by a record, i.e. written and photographic record will be made.

5.8.9 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.

5.8.10 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.

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.

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).

5.8.11 Water

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

- 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;
- A designated bunded refuelling area on an impermeable surface will be provided at a minimum distance of 15m away from any watercourse. No vehicles will be left unattended when refuelling;
- Dedicated fuel storage areas will be introduced on-site which will be a minimum of 15m from watercourses or drains or, alternatively, fuelling will take place offsite;
- 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;
- Oily water associated with construction activities will pass through an oil separator before discharging into the surface water drainage system which discharges into the local watercourse to the west of the site;

- 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;
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land;
- Minimise the use of cleaning chemicals;
- Use trigger-operated spray guns, with automatic water-supply cut-off;
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt;
- 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, on an impermeable base away from drains or watercourses;
- 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;
- Silt traps will be located around the site to collect run off, with settled solids removed regularly and water recycled and reused where possible; 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, 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;
- 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.
- Works at the existing outflow on the Tramore River will be carried out from July to August inclusive to minimise impacts on spawning fish .

5.8.11.1 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.

5.8.11.2 Flooding

No construction materials or temporary stockpiles will be stored in flood plains or in areas which would impede flood flow paths.

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.

5.8.12 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; and

- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.
- 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.

5.8.13 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 5.8.2** for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Section 5.8.3 and 5.8.5** 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 5.8.6** 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.

5.8.14 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.

5.8.15 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 Watfore 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.

See **Section 5.8.11** for details on pollutant control.

5.8.16 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.

5.9 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.

5.10 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**.

5.11 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.

5.12 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 and Policy

6.1 Introduction

This chapter focuses on the key planning policies at national, regional and local level that guide the nature and extent of the proposed Strategic Housing Development.

The chapter has principally been written by Naomi Dowds, Assistant Planner, Coakley O'Neill Town Planning Ltd, with support from Aiden O'Neill, Town Planner and Director of Coakley O'Neill Town Planning Ltd. Refer to **Chapter 1** *Introduction* for details of Naomi and Aiden's relevant qualifications and expertise.

6.2 Project Description

The proposed development will consist of a Strategic Housing Development (SHD) of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork

6.3 Overview

In summary, a review of planning policy at a national, regional and local level reveals the following issues which the proposed development is well-positioned to address:

- Ambitious population growth targets for Cork city are in place, which require the delivery of residential development at a heretofore unprecedented scale;
- The required new homes and neighbourhoods must be developed in accordance with the principle of compact growth and be in close proximity to public and active modes of transport so that they are sustainable;
- Compact growth on urban brownfield sites is fully supported, which involves higher density developments and necessitates taller buildings in suitably appropriate locations;
- The regeneration of this site on the Tramore Road/Kinsale Road area of Cork city for primary residential use, as well as a Primary Care Centre (subject to a concurrent application to be made direct to Cork City Council) is a priority.

6.4 Planning History

The site of the proposed development has been subject to several planning applications in the past, which are summarised as follows:

- **Application Register Reference 17/37528:** Permission was applied for on the 11th of August 2017 in respect of a retail warehousing/retail showrooms/medical services development. The application was subsequently withdrawn on the 5th of October 2017.
- **Application Register Reference 06/30717:** Permission was granted on the 22nd of September 2006 for the demolition and removal of existing buildings, the diversion of the municipal sewer around the site, and the carrying out of ground remediation works.
- **Application Register Reference PL28.206292 (03/27881):** Outline permission was granted on the 30th of August 2004, after a first party appeal, for a 4-storey office building with a total floorspace area of 5000m^2 and associated car park on the southern 1.55Ha portion of the site.

Other relevant planning history pertaining to sites in the vicinity of the subject site is outlined in the Planning Report and Statement of Consistency prepared by Coakley O'Neill Town Planning Ltd., copies of which are submitted as part of this application.

6.5 Planning Context

The key provisions of national, regional and local planning policy as they relate to the proposed development are set out in the following sections.

The principal guiding international, national, and regional documents are listed below:

- Project Ireland 2040 - National Planning Framework (2018)
- Housing For All (2021)
- Climate Action Plan (2019)
- Urban Development and Building Height Guidelines (2018)
- Sustainable Urban Housing Design Standards for New Apartments, Guidelines for Planning Authorities (2020)
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)
- Urban Design Manual – A Best Practice Guide
- Design Manual for Urban Roads and Streets (2019)
- Guidelines for Planning Authorities on Childcare Facilities (2001)
- Smarter Travel – A New Transport Policy for Ireland (2009)
- The Planning System and Flood Risk Management (2009)
- The EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC)
- Regional Spatial and Economic Strategy for the Southern Region (2020)
- Cork Metropolitan Area Transport Strategy (2020)

- Cork Metropolitan Cycle Network Plan (2017)
- Cork City Development Plan 2015-2021
- Draft Cork City Development Plan 2022-2028

6.5.1 National Planning Framework (2018)

The National Planning Framework (NPF), which forms part of Project Ireland 2040, is the national level statutory plan guiding land use and sustainable development in Ireland for the next two decades (Department of Housing, Local Government and Heritage, 2020).

The NPF is guided, in part, by the aim of achieving regional parity in the country by significantly growing the population of both the Southern Region and the Northern and Western Region over the next two decades, to counterbalance the dominance of the Greater Dublin Area.

In relation to Cork, the NPF sets a population growth target of at least 50-60% for Cork City and its suburbs by 2040. This is to facilitate Cork becoming a city of scale so that Cork can become competitive with Dublin, as well as with other comparable European and UK cities of similar scale.

These population growth projections equate to approximately 324,000 people living and working in the city and suburbs and will mean enabling the city to grow by twice as much to 2040 as it has over the past 25 years.

The preferred spatial development approach contained in the NPF is to provide as compact an urban environment as possible through the reuse of previously developed brownfield sites, the development of infill sites, and the redevelopment of existing underutilised sites.

Key future growth enablers for Cork outlined within the NPF includes the following:

- Identifying infill and regeneration opportunities to intensify housing development in inner city and inner suburban areas, supported by public realm and urban amenity projects. The proposed development site is one such enabler that will contribute to the future growth of Cork City in line with the NPF;

National Strategic Outcome (NSO) 1 “Compact Growth” of the NPF is aimed at consolidating and densifying future urban growth and development within existing settlements and their built-up footprints.

NSO 4 “Sustainable Mobility” is aimed at facilitating a move away from polluting and carbon intensive propulsion systems towards new technologies, as well as facilitating an increase in the patronage of public transport and supporting modal shift towards greater levels of walking and cycling as transport mode choices.

NSO 7 “Enhanced Amenity and Heritage” is focussed on enhancing recreational spaces and attractiveness in city and town centres to support a good quality of life. Well-designed public realm, which includes public spaces, parks and streets, and recreational infrastructure are key to achieving this NSO.

NSO 10 “Access to Quality Childcare, Education and Health Services” is prefaced on the fact that good access to a range of quality education and health services is key to creating attractive, successful, and competitive places.

NPF National Policy Objective (NPO) 1a is aimed at ensuring that the projected level of population and employment growth in the Eastern and Midland Regional Assembly area (which contains the Greater Dublin Area) will be at least matched by that of the rest of the country. This NPO is informed by the concept of regional parity, where the targeted growth of the rest of the country up to 2040 should exceed that of the Eastern and Midland Region.

NPO 1b states that the Southern Region of the country is to have an additional 340,000 - 380,000 people, i.e. a population of almost 2 million by 2040.

In the context of Cork, NPO 2a translates to a target of half (50%) of future population and employment growth in Cork to be focused in Cork City and its suburbs.

Similarly, NPO 3b means that at least half (50%) of all new homes to be developed in Cork City and suburbs should be delivered within the built-up footprint of the city and its suburbs. This is to be facilitated through the Cork Metropolitan Area Strategic Plan (MASP).

NPO 4 aims to ensure the creation of attractive, liveable, well designed, high quality urban places for diverse, integrated communities, where a high quality of life and well-being can be enjoyed.

NPO 5 dictates that cities and towns should be developed to sufficient scale and quality to be able to compete internationally and to be drivers of national and regional growth, investment, and prosperity.

NPO 6 seeks the regeneration and rejuvenation of cities, towns and villages as environmental assets that can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area.

NPO 11 is as follows:

> *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.*

NPO 13 supports the relaxing of certain planning and related standards in urban areas, in particular building height and car parking, to achieve targeted growth, with these features being assessed in the context of well-designed high quality outcomes, with the caveat that public safety is not compromised and the environment is suitably protected.

NPO 27 is aimed at ensuring the integration of safe and convenient alternatives to the car into the design of communities by prioritising walking and cycling accessibility.

NPO 32 is as follows:

To target the delivery of 550,000 additional households by 2040.

NPO 33 prioritises the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.

NPO 35 is aimed at increasing 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.

NPO 64 seeks to improve air quality and reduce pollution in our urban and rural areas through, amongst other measures, integrated land use and spatial planning that prioritise public transport, walking and cycling.

The proposed development aligns with the above NSO's and NPO's of the NPF in that it:

- is a high-density residential development on a vacant brownfield site within the existing footprint of Cork City;
- is located in close proximity to a public transport service (Black Ash Park & Ride) that is currently underutilised as well as other existing bus services on which capacity has been identified in the documentation submitted with this planning application;
- is located along a planned strategic public transport corridor and existing and proposed cycle network;
- is in close proximity to high-quality public amenities;
- will contribute positively to the public realm along Kinsale Road, Tramore Road and Mick Barry Road;
- will provide high-quality public open space on site;
- will provide good access to a quality childcare facility on site.

6.5.2 Housing For All (2021)

On 2nd September 2021 the Government launched the latest national housing policy document in the form of "*Housing for All – A new Housing Plan for Ireland*" (HFA). This is the Government's revised policy and investment plan (replacing the 2016 "*Rebuilding Ireland: Action Plan for Housing and Homelessness*") to address the housing crisis which has affected the country since 2014.

With regard to new housing supply, section 3 of the HFA states that over 300,000 new homes are needed by 2030 to address pressure on the housing market. This means 33,000 new homes per annum on average to 2030.

Section 5.6 of the plan emphasises that transport infrastructure and access to public transport are critical enablers of new housing supply, and that if the long-term trend of growth in demand for housing and transport is to be met, we must improve land-use and transport planning to meet the NPF strategic objective of achieving compact growth.

The proposed development, in delivering an additional 609 no. residential units, including 122 no. social housing units, will contribute towards achieving the housing target of the HFA.

6.5.3 Climate Action Plan 2021

The Climate Action Plan 2021 sets out Government policies that will support the achieving of a 51% reduction in overall greenhouse gas emissions by 2030, enabling Ireland to reach net-zero emissions by 2050, as committed to in the Programme for Government and set out in the Climate Act 2021.

One of the targets of the Climate Action Plan aimed at meeting the required level of emissions reductions by 2030 is to fully implement the NPF.

Specifically, it is the NPF objective for compact growth and policies that support brownfield and infill development which the Climate Action Plan refers to as the means by which the spatial planning sector will contribute towards GHG emission reductions. These policies and objectives will ensure that more people will be living within the existing built-up footprint of cities and towns, making much more use of sustainable modes of transport.

Achieving the objectives of the Climate Action Plan will thus be supported through:

- *Reduced travel distances between home, work and services, which will enable a greater proportion of journeys by bicycle or on foot (zero emissions)*
- *Greater urban density will ensure more viable public transport leading to reduced transport emissions*
- *Higher density residential development, which tends to comprise smaller units and, therefore, require less energy to heat – NPF targets require the proportion of apartments to treble, from 13% in 2019, to 39% by 2030*
- *Closer proximity of multi-storey and terraced buildings, which will require less energy and make renewables-based systems of energy distribution, such as district heating, or area-wide technology upgrades, more feasible*

The proposed development is located in a sustainable inner suburb of Cork City, with existing and proposed transportation modes that support walking, cycling and use of public transport, thus maximising the potential for sustainable transportation modal choice.

The proposed development is further responsive to climate change in that it contributes to a reduction in urban sprawl, regenerates brownfield land and incorporates SuDS which will improve the quality of surface water run-off, thereby safeguarding local biodiversity.

The Climate Action Plan envisages that, by 2030, up to 80% of electricity will be generated using renewable energy, with 1.5-2.5 GW from solar PV, and will develop a Small-scale Generation Scheme (>50 kW) to support the deployment of rooftop and ground-mounted solar PV.

The proposed development responds directly to this new paradigm in that solar PV panels will be installed on the roof of the majority of the residential buildings.

The proposed development is also focused on delivering a high-quality built form that will be focused on energy efficiency. Exhaust Air Heat Pumps will be used throughout the scheme to heat internal spaces as well as to heat domestic water.

Best practice fabric U-values and air tightness standards will be implemented in order to minimise heat flow/loss through the building envelope. Passive solar principles have informed the design and external shading – in the form of window reveals and overhangs, and solar performance glazing – and are incorporated into the façade design to assist in the reduction of overheating. Meanwhile, passive solar heat gain will be harnessed by allowing sunlight to enter the buildings in areas with high thermal mass such as exposed concrete.

In addition, the proposed development will contribute towards the creation of a compact urban environment in the south inner suburb of Ballyphehane, with reduced car parking provision and enhanced cycle parking provision. The proposed development will have a positive impact on climate action by reason of being a high-density predominantly residential scheme that benefits from sustainable connectivity with the city centre and other hubs of employment, social, educational, and recreational importance.

6.5.4 Urban Development and Building Height Guidelines (2018)

The Guidelines are premised on there being "*a presumption in favour of buildings of increased height in our town /city cores and in other urban locations with good public transport accessibility*" (para 3.1). They require Local Authorities in their plans to be "*more proactive and more flexible in securing compact urban growth through a combination of both facilitating increased densities and building heights, while also being mindful of the quality of development and balancing amenity and environmental considerations*."

Specifically, SPPR (Specific Planning Policy Requirement) 3A of the Guidelines states that where:

- *an applicant for planning permission sets out how a development proposal complies with a number of criteria [in relation to design, context, visual impact, wind assessment, daylight/sunlight/overshadowing, etc.), and*

- *the assessment of the planning authority concurs, taking account of the wider strategic and national policy parameters set out in the National Planning Framework and these guidelines,*

then the planning authority may approve such development, even where specific objectives of the relevant development plan or local area plan may indicate otherwise.

Therefore, proposals for tall buildings can no longer be ruled out in principle in the built-up footprint of Cork City.

The Guidelines set out three development management principles that planning authorities must follow when assessing planning applications, namely if the proposal positively assists:

> *"in securing National Planning Framework objectives of focusing development in key urban centres and in particular, fulfilling targets related to brownfield, infill development and in particular, effectively supporting the National Strategic Objective to deliver compact growth in our urban centres".*

It has already been explained above in this chapter how the proposed development is consistent with NPF objectives regarding brownfield and infill urban development that supports modal shift, and especially with the National Strategic Outcome of delivering compact growth in urban centres.

In addition, the Guidelines list multiple development management criteria, regarding different scales of development, that applicants must satisfactorily demonstrate to the planning authority that their application follows. These criteria are as follows:

At the scale of the relevant city/town

- The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport.

In terms of radial and orbital connectivity, there are several bus stops located near the site which are within a 15-minute walking distance from the proposed development site and which are served by the following routes:

- Route 203 – Lehenaghmore – City Centre – Farranree
- Route 206 – Grange – South Mall
- Route 219 – Munster Technological University Cork (formerly CIT) – Mahon Point Road
- Route 213 Black Ash – City Centre
- Route 226 – Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale
- Route 209A – St. Patrick Street – Ballyphehane

Of these routes, and as noted in the Bus Network Capacity Assessment Report which accompanies this application, Route No.213, the closest to the proposed development site has the most total peak hour capacity of 630 passengers during both the AM and PM peaks. It is important to note that walk-in pedestrians can use the bus services within the Park & Ride between the hours of 07:00 and 20:05, with the option to pay on the bus or use a leap card. The proposed development includes an upgrade to the Kinsale Road/Mick Barry Road junction to facilitate pedestrian connectivity between the proposed development site and the Black Ash Park and Ride.

There are also multiple proposed Bus Connects routes within the vicinity of the site. The routes include No. 5, 6, 7, 13, 14 and 42X. Routes No. 6 (Frankfield to Mercy Hospital) and 14 (CUH to Little Island) directly serves the proposed development site. Bus frequency in the vicinity of the proposed development will increase when Cork BusConnect is implemented.

Generally, the Bus Network Capacity Assessment Report has concluded that the percentage increase in bus passengers due to the proposed development is minor.

- 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.

The Architectural Design Report prepared by Reddy Architecture and Urbanism sets out how the proposed development has evolved during the design process. This included a critical assessment at an early stage to arrive at a scheme with buildings of a height and massing that are justified in their context, that will have a positive impact on the area, that do not interfere with any protected views, and to design a scheme that responds to the significant and unconstrained potential of a large brownfield site that is capable of generating its own character as a new high profile, high quality, predominantly residential neighbourhood hub at a key entrance to Cork City.

The design of the proposed development has also taken into consideration advice from the local authority regarding the provision of a scheme with a range of heights and typologies, and thus includes five no. three-storey buildings of duplex and townhouse apartments as well as a four-storey building with deck-access apartments along Kinsale Road at the south-eastern site corner.

The proposed development will also improve the public realm in the vicinity of the site, especially with regard to walking and cycling infrastructure, and improved pedestrian connectivity between the site and the Black Ash Park and Ride facility, as well as delivering new public open spaces, and services for the benefit of existing and future inner suburban residents, employees and visitors.

In addition to a single storey coffee kiosk in the town square, the proposed development includes five no. buildings at three storeys high, one no. building at four storeys high, one no. building at six storeys high, one no. building at seven storeys high, one no. building at part six, part eight storeys high, one no. building at nine storeys high, and one no. building at part six-eight storeys high with one no. fifteen storeys high tower. This is considered to be consistent with national

and regional planning objectives to achieve compact urban growth through the densification of brownfield sites. The rationale for the height of the proposed development is also derived from the emerging pattern of permitted development in Cork's southern suburbs.

In particular, a permitted SHD project at Jacob's Island (Application Register Reference: ABP-301991-18) involves three no. buildings at six storeys high, one no. building at seven storeys high, one no. building at eight storeys high and one no. building at 25 storeys high. Creamfields is markedly closer to Cork City centre than the Jacob's Island site, being located in an inner suburb as opposed to an outer one. As a result, a predominance of 6-9 storey buildings is considered appropriate at the location of the proposed development, especially when accompanied by 3 and 4 storey buildings.

Justification for the height of Building E in particular, which is proposed at 15 storeys, is considered on the following grounds:

- The building's location at the north-eastern corner of the site – at the brow of a hill and at the junction between Tramore Road and Kinsale Road – serves as a landmark building and focal point for the scheme itself and for the wider inner suburb of Ballyphehane, as well as heralding the southern entrance into Cork City. Two other existing landmark buildings are visible from this part of the subject site – the Elysian and the Church of Christ the King, Turner's Cross – and Building E of Creamfields is designed to speak to, but not deter from, these landmark buildings. A protected view of Christ the King Church begins at this junction between Tramore Road and Kinsale Road and Building E therefore serves as an orientation point for emphasising the view of the Church from this traditional approach into the city, without impacting this protected view.
- Building E is also regarded as furthering the language of the evolving skyline of Cork City, which has seen the granting of permission for tall buildings in the city core at Custom House Quay, Albert Quay, Railway Gardens, the Prism, Horgan's Quay and Victoria Road, and in the southern city suburbs at Jacob's Island and the former Crow's Nest site.
- In addition to considering the height of Building E being justified in pragmatic terms regarding densification and in architectural and urban design terms regarding the importance of landmark buildings in urban environments and Cork's evolving skyline in this regard, the height of Building E can further be considered appropriate from a cultural and economic perspective in terms of the branding of Cork. As a landmark inner suburban residential building located at the southern entrance into Cork City – the entrance that is used on approach from Cork Airport – Building E of Creamfields will assist in communicating the fact that Cork City is a dynamic, modern city , and an attractive living and working city.

The proposed development will thus:

- Help deliver economic growth, intensification and regeneration of Cork City and the Metropolitan Area generally;

- Increase density in an area well-served by public transport, infrastructures and facilities;
- Sensitively respond to the existing townscape, landscape character and setting of the city;
- Effectively contribute to place-making, an enhanced city image and co-ordinated skyline;
- Enhance legibility and local distinctiveness;
- Protect and enhance the view of Christ the King Church;
- Provide a comprehensive development with quality architectural and urban design of the highest order;
- Minimise negative impacts on the immediate environment, its residents and neighbours; and
- Will deliver added regeneration and public benefits.

Therefore, the height of the proposed development is entirely justified.

- Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.

A detailed and extensive landscape and visual impact assessment has been carried out and is included as part of this EIAR (see **Chapter 12** *Townscape and Visual*).

Chapter 12 of this EIAR concludes that the large number of neutral effects recorded for the twenty-two views assessed reflects the capacity of the site and locality to accommodate development of this scale without adversely affecting landscape or visual quality.

Beneficial outcomes associated with the development relate to the delivery distinctiveness, sense of place, quality of materials and finishes and green infrastructure in the form of specimen tree planting along adjoining roads.

- 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 will make an overwhelmingly positive contribution to place-making by introducing a new neighbourhood hub with a new street as well as a series of landscaped, interconnected public open spaces.

The proposed development is also linked with Black Ash Park and Ride and has the potential to link with Tramore Valley Park (which is being progressed as a separate project by Cork City Council and will facilitate easy and safe pedestrian and cycling connectivity for the entire local population to these facilities and amenities). The variety in height provided throughout the scheme, the variety in materials used and the architectural design of the building facades, and the landscaped buffer zone between the buildings and Kinsale Road and Tramore

Road will create an active street edge and visually interesting streetscape which will amount to a great improvement on what is currently the case.

At the scale of district/ neighbourhood/ street

- *The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape.*

The proposed development delivers high quality, exemplar modern architectural form at an appropriate scale of development at an elevated, focal gateway location in Cork City, at the junction of Kinsale Road and Tramore Road and along the southern approach into the city. It is intended that the proposed development will set a quality benchmark within Cork, which is experiencing significant development at the moment. With its 15-storey tower in the form of Building E, this building will be a beacon for a city rising in a highly sustainable location, acting as a catalyst for the further regeneration of Tramore Road and the Ballyphehane area.

The tallest element of the scheme – Building E – is situated on the brow of a hill on the prominent junction between Kinsale Road and Tramore Road and highlights this important entrance on the southern approach into Cork City as well as emphasising the view looking towards the city from Kinsale Road, especially the protected view of Christ the King Church at Turner's Cross. Building E itself is carefully designed and will provide an elegant and slender addition to the skyline in views from close-by as well as over the city. A tall building on this site, with its raised elevation and location, is justified and it will positively contribute to and complement the city's evolving skyline and the branding of Cork.

- *The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab Buildings with materials / building fabric well considered.*

The proposed development is of high architectural quality, presented as a coherent series of 12no. buildings ranging in height from one to nine storeys and culminating in the landmark 15 storey element of Building E in the most appropriate location on the site. 'Step outs' in the façades of the buildings are provided in a number of apartment units which serve the dual purpose of ensuring the facades of the buildings are visually interesting as well as providing a dual aspect characteristic to most of the units. Brick has been chosen as the preferred, high-quality and low-maintenance façade material, with the majority of the scheme being faced in brick and, with the exception of the 6-storey section of Building E along Tramore Road, the entirety of all outward-facing elevations of the scheme constitute brick façades.

- *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 proposed development will improve the public realm in the vicinity for the benefit of the City, with an appropriate setback on the northern elevation from

Tramore Road as well as the landscaped buffer zone with incorporated, separate pedestrian and cycle paths, and will open up the site through the provision of new public and semi-public spaces internally. The urban design response is set out in detail in the Architectural Design Report prepared by Reddy Architecture and Urbanism which accompanies this planning application.

There are no historic flood events recorded within the proposed development site according to FloodInfo.ie. Notwithstanding, a Flood Risk Assessment (FRA) has been prepared and informs this EIAR. The FRA finds that the risk of fluvial flooding from the nearby Tramore River is considered to be low. The risk of pluvial flooding, tidal flooding and groundwater flooding are also considered to be low. See **Chapter 14** *Water* and **Appendix 14.1** *Flood Risk Assessment* for further details.

- *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 layout of the proposed development responds to the accessibility of the site and a high degree of permeability in all directions is incorporated into the urban design of the scheme. The town plaza, garden court, and meadow parks with connecting pathways all facilitate easy access within and into the scheme. The massing of the scheme along Kinsale Road is broken up and has visual clues as to the character areas within, with five clearly defined access points from Kinsale Road and Tramore Road.

The proposed development includes children's play areas, a town square plaza, a creche, gym, café, retail unit and coffee kiosk and thus offers facilities for a wide range of different ages. In addition, the landscaped, residential street edge of the proposed development along Kinsale Road will be a pleasant space for passers-by to pass through, while the tree planting and wide paving along Tramore Road which lead into the town square plaza will be inviting to passers-by.

- *The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood*.

The mix of uses, especially the children's play areas, retail, café, creche, coffee kiosk and gym uses, the town square plaza and linkages to Black Ash Park and Ride and, potentially, to Tramore Valley Park (subject to a separate project on the part of Cork City Council), ensure the proposed development integrates physically and socially into the wider suburb of Ballyphehane, and the mix of uses will complement the prevailing commercial uses in the immediate vicinity of the site.

The immediate surrounding area, while zoned for "*Light Industry and Related Uses*", "*Retail Warehousing*" and "*Sports Grounds*", is, in reality, a mixed-use context This was key to the decision of Cork City Council to progress Variation No. 6 of the current Cork City Development Plan 2015 to rezone the proposed development site from Light Industry and Related Uses to Residential, Local Services and Institutional Uses, which was adopted by Members on 11th November, 2019. Accordingly, the proposed development that is mixed-use but primarily residential is entirely appropriate and sympathetic to its siting.

The various neighbouring uses of a sports ground, fast food restaurant, newsagents at the filling station north-east of the proposed development site, convenience retail store south of the subject site, and café to the north-east are all highly compatible with the primarily residential use of the proposed development.

In addition, the neighbouring dwelling choices are primarily traditional three-bedroom semi-detached houses to the north-east, north, north-west and west. The proposed development comprises 31% one-bedroom units and 55% two-bedroom units in a range of apartment and townhouse types This greatly adds to the choice of dwelling size and type available in the area.

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 proposed development has been designed with floor to ceiling glazing, with adequate ventilation, for all apartments, therefore maximising views and access to natural daylight as far as possible. 68% of dwellings benefit from having a dual aspect. The design approach has also ensured that there will be minimal overshadowing.

- *Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'*.

A Daylight and Sunlight Assessment has been completed in full compliance with the relevant BRE Guidance. See **Chapter 16** *Population and Human Health* of this EIAR for a summary of this assessment, and the full assessment report is included as part of the planning application documents for the proposed development.

Specific Assessments

The Guidelines indicate that in order 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.*

The proposed development has been subject to a Wind Microclimate Study prepared by B-Fluid (Buildings Fluid Dynamic) Consultants, copies of which accompany this planning application. The study shows that the development is designed to be a high-quality environment for the scope of use intended of each areas/building (i.e. comfortable and pleasant for potential pedestrian), and, from a qualitative point of view, it is not expected to introduce any critical impact on the surrounding areas or on the existing buildings.

The following is a summary of the wind microclimate study:

- The wind profile around the existing development environment was built using the annual average meteorology data collected at Cork Airport Weather Station. In particular, the local wind climate was determined from historical meteorological data recorded 10 m above ground level at Cork Airport.
- The prevailing wind directions for the site are identified as South-South-West, South-West and West, with magnitude of approximately 6m/s.
- The proposed Creamfields Development, Kinsale Road, Cork 's Project has been designed in order to produce a high-quality environment that is attractive and comfortable for pedestrians of all categories. To achieve this objective, throughout the design process, the impact of wind has been considered and analysed, in the areas where critical patterns were found, the appropriate mitigation measures were introduced.
- As a result of the final proposed and mitigated design, wind flow speeds at ground floor are shown to be within tenable conditions. Some higher velocity indicating minor funnelling effects are found near the South side of the development and areas between the blocks. However, as it was shown in the Lawson map, the areas can be utilised for the intended use such as short-term sitting, walking and strolling.
- Given the position of the development, major issues of high flow speeds are not expected on footpaths.
- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings. Moreover, in terms of distress, no critical conditions were found for "Frail persons or cyclists" and for members of the "General Public" in the surrounding of the development.
- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings.

- *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.*

The proposed development site has been assessed for the presence of bats. Although some of the trees on site such as Hawthorn and Willow are mature, there are no large mature or overmature trees with the potential to be of value for roosting bats. The habitats which dominate the proposed development site, i.e., recolonising bare ground and artificial surfaces, are of low value for foraging bats. A bat survey carried out by DixonBrosnan in September 2021 focused on habitats within the proposed development site as well as on external boundaries. Bat activity levels were low to moderate, with foraging recorded by two species i.e., Common Pipistrelle and Leisler's Bat. Activity was concentrated in the southeast corner of the proposed development site, where vegetation is denser and provides better foraging habitat. Please refer to **Chapter 10** *Biodiversity* for further details.

- An assessment that the proposal allows for the retention of important telecommunication channels, such as microwave links.

The proposed development will not impact telecommunication channels.

- An assessment that the proposal maintains safe air navigation.

Having regard to Figure 3.7 of the *Ballincollig Carrigaline Municipal District Local Area Plan 2017* and Figure 10.32 of the *Draft Cork City Development Plan 2022-2028*, the proposed development site is located outside the Public Safety Zones relating to Cork Airport. In relation to Obstacle Limitation Surfaces (OLS), which control the erection of obstacles to aviation that might endanger aircraft in flight, the proposed development, at its maximum height (Block E at 49.7m (+67.1m OD)), is lower than the maximum allowable height of obstacles (>90m), as per Table 3.10 and Figure 3.8 of the *Ballincollig Carrigaline Municipal District Local Area Plan 2017.*

6.5.5 Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2020)

Section 1.21 of the Guidelines states that Specific Planning Policy Requirements (SPPRs) contained in the Guidelines take precedence over any conflicting policies and objectives of development plans.

Section 2.4 of the Guidelines identifies central and/or accessible urban locations as being generally suitable for small-to-large scale and higher density development. The proposed development site, which is located along an existing public bus route which operates at a high frequency during peak times (i.e. every 10 minutes) and on a proposed public bus route that will operate at a minimum frequency of every 15 minutes, and is within 15 minutes-walk from 3 other public bus routes, can be classified as an accessible urban area.

The proposed development includes 48no. townhouses, 304no. standard apartments, and 257no. Build-To-Rent apartments. Having regard to the Guidelines, the proposed development complies with the following SPPRs (as detailed in the Housing Quality Assessment prepared by Reddy Architecture and Urbanism):

SPPR 1

- 31% of the apartments are one-bedroom units. This is under the maximum upper limit of 50%.

SPPR 3

- All 1-bedroom apartments meet the minimum required floor area of 45m^2
- All 2-bedroom apartments meet the minimum required floor area of 73m^2
- All 3-bedroom apartments meet the minimum required floor area of 90m^2

As the Housing Quality Assessment details, almost 72% of the proposed units (excluding those in Buildings E and F) exceed the minimum internal floor area

standards by 10% and all of the minimum floor areas for private amenity space for the various types of dwellings are met or exceeded.

In addition, 19% of the Build-To-Rent apartments in Buildings E and F exceed the minimum internal floor area standards by 10%.

SPPR 4

- 68% of the proposed dwellings are dual aspect. This exceeds the minimum requirement of 50% in suburban locations.

The elevation drawings detail the proposed development's compliance with the following SPPR:

SPPR 5

- All ground level apartment floor to ceiling heights are a minimum of 2.7m

The plan drawings detail the proposed development's compliance with the following SPPR:

SPPR 6

- All buildings comply with the maximum limit of 12 apartments per floor per lift/stair core.

In addition, the 257 no. Build-To-Rent apartments in Buildings E and F comply with the following SPPRs specific to Build-To-Rent developments:

SPPR 7

- Resident support facilities will be provided (concierge and management; parcel/post area; waste management).
- Resident services and amenities will be provided (community lounge/town hall events space, co-working lounge/business centre, cinema/media presentation room at ground level), and rooftop terraces on Levels 7 of both Building E and Building F.

SPPR 8

- Unit floor areas accord with the Guidelines per each unit type.
- Noting there are no restrictions on dwelling mix or no. of units per core, 78no. 1 bed units; 142no. 2 bed units and 37no. 3 bed units are proposed in Buildings E and F, of which 82% are dual aspect in Building E and 52% are dual aspect in Building F. No studios are proposed.
- The proposed development will ensure overall quality, with a good provision of storage and private amenity space per apartment as well as communal amenity space, balanced with the provision of compensatory communal support facilities.
- Floor to ceiling heights are proposed at 2.7m, and there are no more than 6 units per core in Building E and no more than 9.5 units per core in Building F.

In addition to all of the above, minimal car parking is provided for the entire scheme (209no. shared spaces plus 98no. reserved spaces for the Primary Care Centre (which is the subject of a separate application), whereas 1,145 no. cycle spaces are proposed. 122no. units are proposed to be leased for Part V purposes. three no. children's equipped neighbourhood play areas are also proposed in the garden court and in the meadow parks.

In addition to the above, section 2.6 of the Apartment Guidelines highlight that:

> *"Demographic trends indicate that two-thirds of households added to those in Ireland since 1996 comprise 1-2 persons, yet only 21% of dwellings completed in Ireland since then comprise apartments of any type. The 2016 Census also indicates that, if the number of 1-2 person dwellings is compared to the number of 1-2 person households, there is a deficit of approximately 150%, i.e. there are approximately two and half times as many 1-2 person households as there are 1-2 person homes."*

In the context of Cork, apartments represent 19.3% of all household types in Cork City. However, according to Census 2016 data, 97% of all apartments built in Cork City were built before 2010, excluding premises for which the period built was not declared.

Over the last three years (mid-2018-present)[20], 11,716 apartments were built in Ireland but just 360 of them were built in Cork City i.e. just over 3% of the total number of apartments built nationally. Over the same period, 65,230 dwellings were built in Ireland but just 2,362 of them were built in Cork City i.e. 3.6% of the total number of dwellings built nationally. In 2022, with an estimated population of at least 5million nationally and 235,643 in Cork City[21], Cork City will be home to at least 4.7% of the national population.

It is clear from the above figures that Cork, Ireland's second city, is seriously underperforming in respect of the delivery of new housing, and specifically apartments, to serve both its existing population and its projected population growth as envisaged under the NPF. The proposed development is a direct and conscious response to this situation.

6.5.6 Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)

Having regard to these Guidelines, the proposed development is focused on:

- Prioritising walking, cycling and public transport, and minimising car usage;
- Providing easy access for all users and ease of finding one's way around;
- Promoting the efficient use of land and of energy, and minimising GHG emissions;

[20] In 2018, the Central Statistics Office began publishing reports on New Dwelling Completions in Ireland. Detailed breakdowns of dwelling types completed in the jurisdictions of the thirty-one local authorities are available for Quarter 3 2018 – present (Quarter 3 2021) at: https://www.cso.ie/en/statistics/construction/archive/ [accessed 3rd December 2021].
[21] Source: *Cork City Draft Development Plan 2022-2028*, page 32.

- Providing a mix of land uses to minimise transport demand; and
- Reducing traffic speeds in housing developments.

The proposed development is plan-led in that it will deliver an efficient use of appropriately zoned land and an increased residential population of a minimum of 1,145 persons[22] in a new high-density, high-quality, distinctive primarily residential development in Cork City, which is fully supported by national, regional and local planning policy.

In accordance with Chapter 4 of the Guidelines, the proposed development will:

- Prioritise public transport, cycling and walking, with a significantly reduced quantum of car parking (this is outlined in the Traffic and Transportation Assessment and Mobility Management Plan Statement prepared by Arup and which accompanies this planning application);
- Ensure access for everyone, including people with disabilities (see the accompanying Architectural Design Statement prepared by Reddy Architecture and Urbanism);
- Encourage more efficient use of energy and a reduction in GHG emissions (see the accompanying SHD Energy Statement prepared by EDC);
- Include the correct quality and quantity of public open space (see the accompanying Architectural Design Statement);
- Include measures to ensure satisfactory standards of personal safety and traffic safety within the neighbourhood - the predominance of residential ground floor use means a high degree of passive surveillance throughout the proposed development, both in terms of the meadow parks and courtyard and the street edge along Kinsale Road. The ground floor retail, gym and café uses in Building E will also provide passive surveillance along Kinsale Road and Tramore Road, as well as internally in the scheme regarding the town square plaza in combination with the coffee kiosk. In addition, there are only two vehicular entrances proposed to this 3.39ha site, with the emphasis throughout the scheme being on pedestrian permeability and safety by means of shared surfaces throughout the development;
- Present an attractive and well-maintained appearance with high quality material finishes on the facades of the buildings as well as the hard and soft landscaping of the open spaces;
- Promote social integration and provide for a range of household types for different age groups, including nine no. one-bed, wide deck-access apartments specifically designed for elderly residents. The predominant focus is on open tenure and the Build-To-Rent units are focused on the rental sector;
- Protect, and where possible, enhance the built environment; and
- Provide for appropriate drainage systems.

[22] If each bedroom is occupied by 1 person. The maximum bed space capacity would cater for 2,147 people. ,

The proposed development site falls within the following criteria, which are locations that are appropriate for increased densities: (b) Brownfield sites in combination with (c) Public transport corridor.

Although the Guidelines caveat the criteria of (b) Brownfield sites as being located within city or town centres, the definition the guidelines then offer is "*any land which has been subjected to building, engineering or other operations, excluding temporary uses or urban green spaces*" and offers redundant industrial lands as one of the primary examples of what constitutes brownfield land.

Therefore, notwithstanding that the proposed development site is not located in the city centre, it is appropriate to consider the site as a brownfield site for the purposes of assessing the site against the criteria of the Guidelines.

Paragraph 5.7 of the Guidelines states that, in the case of brownfield sites, and particularly those located close to existing or future public transport corridors, the opportunity for their re-development to higher densities is subject to the following safeguards:

- *Compliance with public and private open space standards*: the proposed development provides 0.7865ha (23%) of public space at ground level, including landscaped, interconnected semi-public open spaces in the form of meadow parks and a garden court, as well as two no. rooftop gardens, a public town square plaza and upgraded public realm along Kinsale Road and Tramore Road and at the junction between Kinsale Road and Mick Barry Road. In addition, the proposed development meets all the necessary minimum standards regarding private open space provision.
- *Avoidance of undue adverse impact on the amenities of existing or future adjoining neighbours*: the accompanying reports of Arup (Daylight, Sunlight and Overshadowing) and B Fluid (Wind Modelling) clearly indicate that the proposed development will not have an adverse impact on the amenities of existing or future adjoining neighbours.
- *Good internal space standards of development*: as set out in the Reddy Architecture and Urbanism Housing Quality Assessment which accompanies the planning application, the proposed development provides internal spaces that meet or exceed the requirements of the Guidelines.
- *Conformity with any vision of the urban form of the town or city as expressed in development plans, particularly in relation to height or massing*: the proposed development is located in the Ballyphehane inner suburb of Cork City which has been identified as being a disadvantaged area in need of regeneration and urban renewal. In addition, the site was the subject of the rezoning that constituted Variation No. 6 of the Cork City Development Plan 2015-2021, where the zoning of the subject site itself was changed from "Light Industry and Related Uses" to "Residential, Local Services, and Institutional Uses". This variation of the Plan has established that a mixed use, primarily residential development is permissible in principle on this site. Under the Urban Development and Building Heights Guidelines for Planning Authorities, 2018 proposals for tall buildings cannot be ruled out in principle and must be assessed under the principles set out in those Guidelines. Section

6.5.4 above sets out how the proposed development is consistent with the provisions of those Guidelines.

- *Recognition of the desirability of preserving protected buildings and their settings and of preserving or enhancing the character of an Architectural Conservation Area*: there are no protected structures on or within close proximity to the subject site and the site is not located in or near an Architectural Conservation Area. As has already been discussed above in Section 6.5.4 of this chapter, a protected view of Christ the King Church, Turner's Cross begins at the north-eastern corner of the site at the junction between Tramore Road and Kinsale Road. The proposed development does not interfere with this protected view in any way – on the contrary, the tall building that is proposed -Building E -will serve to emphasise it.
- *Compliance with plot ratio and site coverage standards adopted in development plans*: The proposed development equates to a plot ratio of 1:1.8, site coverage of 26%, and a residential density of 180 units/ha. An indicative plot ratio of 1.0-1.75 is set out in the Development Plan. The plot ratio of the proposed development is generally consistent with this indicative measure. Densities in suburban areas will normally be a minimum of 75 units/ha along bus routes with higher densities appropriate on larger development sites (>0.5 hectares in size) capable of generating and accommodating their own character. There are no standards regarding site coverage. Owing to the size, character and context of the subject site, the nature and scale of the development, and the urgent national policy agenda to densify our urban settlements and counterbalance the disproportionate growth of the Greater Dublin Area, proposing a plot ratio that is marginally higher than the indicative one contained in the Development Plan is considered appropriate.

In relation to (b) and (c), the proposed development site is brownfield, is located along an existing and a planned public bus route and is within 15 minutes-walk of five other bus routes. The Guidelines state that the opportunity for the redevelopment of such sites to higher densities, subject to the above safeguards, should be promoted.

6.5.7 Urban Design Manual – A Best Practice Guide

The Architectural Design Report prepared by Reddy Architecture and Urbanism sets out the urban design rationale for the proposed development in detail. In relation to the 12 criteria of the Urban Design Manual, the following can be stated as set out in **Table 6.1**:

Table 6.1 Design Response to the Urban Design Manual

Criterion	Commentary
01. Context: How does the development respond to its surroundings?	The proposed development positively responds to the opportunity to mark this important gateway location at the southern approach into Cork City by a significant, primarily residential scheme on a large 3.39ha site, with the inclusion of a tall building. This latter element of the scheme is in accordance with ancient and contemporary architectural and urban design principles. In addition, the Ballyphehane residential suburb has been identified as a disadvantaged area in need of regeneration, where a

	succession of local authority-built housing estates and architecturally utilitarian commercial and industrial buildings currently characterise the surrounding urban form. The proposed development creates a southern focal point for Ballyphehane and is distinctive and of a scale and height that is appropriate to its large site context, surrounding site context and its key location on the southern approach into Cork City. As a landmark the development is perceived as a positive addition to Ballyphehane and the city and delivers an architecturally exemplar building that sets a quality benchmark within Cork. Along the eastern boundary, the proposed development includes a landscaped buffer zone for pedestrians and cyclists along the Kinsale Road between the ground floor residences of the scheme and Kinsale Road itself. The western and southern site boundaries will comprise a mixture of tree planting, while the northern boundary with Tramore Road will involve paving and street trees. These measures are considered wholly appropriate responses in terms of boundary conditions on the site. The tallest element of the scheme is situated on the brow of a hill on the prominent junction between Kinsale Road and Tramore Road to highlight this important entrance on the southern approach into Cork City and to emphasise the view looking towards the city from Kinsale Road, especially the protected view of Christ the King Church at Turner's Cross. Building E itself is carefully designed and will provide an elegant and slender addition to the skyline in views from close-by as well as over the city. A tall building on this site with its raised elevation and location is justified and it will positively contribute to and complement the city's evolving skyline and the branding of Cork. The proposed development includes duplex buildings of apartments and townhouse apartments that are three and four storeys high, which coherently knits the proposed development together with nearby suburban residential patterns of development and thus provides a transitional reference point between nearby residential development and the taller aspects of the scheme.
02. Connections: How well connected is the new neighbourhood?	The layout of the proposed development responds to the accessibility of the site. The mix of uses (especially the creche, retail, café, coffee kiosk and gym uses), the landscaped semi-public meadow parks and garden court, public town square plaza and linkages to Black Ash Park and Ride ensure the proposed development integrates physically and socially into the wider suburb of Ballyphehane, with a high degree of permeability in all directions incorporated into the urban design of the scheme. The immediate surrounding area, while zoned for "*Light Industry and Related Uses*", "*Retail Warehousing*" and "*Sports Grounds*", is, in reality, a mixed-use context. Accordingly, the proposed development that is mixed use but primarily residential is entirely appropriate and sympathetic to its siting. In addition, as the Black Ash Park and Ride bus terminus is less than 5 minutes' walk from the subject site and as a future priority BusConnects route will run along the eastern site boundary with Kinsale Road, the proposed development facilitates excellent connectivity to and from the City Centre by public transport. The site being within a 15-minute walk

	of five other bus routes also ensures easy east-west access across the southern suburbs of the city.
03. Inclusivity: How easily can people use and access the development?	With its mix of one-bedroom (31%), two-bedroom (55%) and three-bedroom (8%), and (6%) four-bedroom units, mix of unit typology in the form of regular apartments and townhouse apartments which have own-door access, with accessible lifts in Building B, C, E, F, and J, and with the 9no. deck-access apartments in Building N the proposed development caters for the aspirations of a range of people and households. The landscaped meadow parks and garden court with connecting pathways both facilitate easy access within and into the scheme, for the future residents as well as the wider community of Ballyphehane and other visitors. The massing of the scheme along Kinsale Road is broken up and has visual clues as to the character areas within, with five no. clearly defined access points from Kinsale Road and Tramore Road. The proposed development includes landscaped meadow parks, a landscaped garden court, three children's outdoor play areas, a town square plaza, a creche, gym, café, retail unit, coffee kiosk and thus offers facilities for a wide range of different ages. In addition, provision of private amenity space for each dwelling unit either meets or exceeds the standards. Building F also includes communal spaces in the form of a community lounge/town hall events space, co-working lounge and cinema/media presentation room. These facilities will be for use by all residents of the scheme as well as the wider community, which will further serve to integrate the proposed primarily residential development with the surrounding established community. In addition, the landscaped, residential street edge of the proposed development along Kinsale Road will be a pleasant space for passers-by to pass through, while the tree planting and wide paving along Tramore Road, which lead into the town square plaza, will be inviting to passers-by.
04. Variety: How does the development promote a good mix of activities?	The proposed development will add to the mix of the surrounding neighbourhood and complement the prevailing commercial uses in the immediate vicinity of the site. Residents will animate the area outside of office and retail hours, and bring life to the streets, especially in the evenings and weekends. The proposed development provides for active ground floor uses (gym, café, coffee kiosk, creche and retail) in the northern section of the site which will animate the street and the town square. These uses are all located on the northern section of the site along the boundary with Tramore Road and at the junction of that road with Kinsale Road. This is the most prominent and accessible part of the site and the locating of these uses and the town square plaza here is a conscious urban design strategy. These facilities and services complement the established offering of facilities in the area. The various neighbouring uses of a sports ground, fast food restaurant, newsagents at the filling station north-east of the subject site, convenience retail store south of the subject site, and café to the north-east are all highly compatible with the primarily residential use of the proposed development. In addition to all of the neighbouring uses

	previously mentioned, there is also an ALDI supermarket approximately 415m north of the subject site. In addition, the neighbouring dwelling choices are primarily traditional three-bedroom semi-detached houses to the north-east, north, north-west and west. The proposed development comprises 31% one-bedroom dwellings and 55% two-bedroom dwellings. This greatly adds to the choice of dwelling size and type available in the area.
05. Efficiency: How does the development make appropriate use of resources, including land?	The proposed development maximises the development potential of this large, currently vacant, strategic brownfield 3.39ha site located on a public transport corridor by providing 609no. apartments (304no. standard apartments, 48no. townhouses and 257no. Built-To-Rent apartments) in a series of 11no. residential buildings that range in height from 3 and 4 to 6, 7, 8, 9 and 15 storeys, as well as a single storey coffee kiosk. The total gross floor area of the development proposed is 60,833.7m^2. The proposed development will improve the public realm in the vicinity of the site and will connect to existing public services. The landscaped meadow parks, garden courtyard, rooftop gardens and town square plaza are all south-facing, exploiting the best solar orientation for these public open spaces. There are currently 148 no. trees on site. 120 no. of these trees are categorised as being of low quality, or 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, or are young trees (for more detail, please refer to the Landscape Design Rationale statement prepared by CSR, copies of which accompany this planning application). In order to deliver an interactive and permeable urban edge to the street along the eastern, northern and southern boundaries and to accommodate the development footprint generally, all existing trees are proposed to be removed. To mitigate the loss of existing site vegetation, the proposed development includes a comprehensive tree and shrub planting strategy aimed at greening the site to enhance the biodiversity potential of the site in line with the All-Ireland Pollinator Plan, using a range native and high value non-native species throughout the development. A total of 505 no. trees are proposed to be planted. Native woodland trees comprise some of the proposed planting. In addition, SUDS such as permeable paving, rain gardens, and the rooftop gardens on Buildings E and F have also been incorporated into the landscaping of the proposal. All of these measures will support biodiversity on site while providing amenity for residents and visitors to the site. Dedicated waste storage facilities are provided via 6no. large, ventilated storage rooms in Buildings B, C, E, and F and adjacent to Building L. The approach taken in the design has been to reduce bin quantities and increase number of collections with increased recycling facilities provided. Waste streams expected include mixed municipal waste, dry mixed recyclables and glass. Space is also provided for future compost bins. The proposed development equates to a plot ratio of 1:1.8, site coverage of 26%, and a residential density of 180 units/ha.

06. Distinctiveness: How does the proposal create a sense of place?	The proposed development site is located on an elevated, prominent site with the northern section of the site being at the brow of a hill and beside a significant junction between two important roads. The architectural design of the 12no. buildings is coherent in its form, layout and façade treatment. In addition, the large size of the site means that the proposed development functions as a distinct neighbourhood hub with its own character in southern Ballyphehane. The buildings follow the north-south orientation of the site and are stepped in height and varied in profile along Kinsale Road so that the elevations rise from four storeys to a 15-storey landmark building in a sequential and legible manner. At 15 storeys, Building E will serve the function of a distinctive and attractive landmark brick building on site itself as well as for the surrounding area and will highlight the proposed development as one of the key landmarks in the city. The proposed development breaks down the site into a series of buildings that are separated by generous, internal landscaped public and semi-public open spaces which correspond with four "character areas" in the development – Town Square, Garden Court, and two Meadow Parks. The meadow parks and courtyard are focal points for the surrounding buildings with the town square plaza being the overall focal point for the scheme. In addition, the inclusion of five no. 3-storey duplex buildings and one no. four-storey duplex and apartment building coherently knit the proposed development together with nearby suburban residential patterns of development and provide a transition reference point for the taller aspects of the scheme. The proposed development establishes a strong urban edge and well-defined street space along Kinsale Road and Tramore Road, with strong visual clues and clearly defined entrances to the character areas within the scheme. The proposed design respects the human scale at street level – there are residential apartments at ground floor level with floor to ceiling windows along Kinsale Road as well as a landscaped buffer zone with footpaths and cycle paths that serves as a transition zone between the built form of the development and Kinsale Road. In addition, the gym, café and retail units on the ground floor level of Building E are extensively glazed and front onto generously wide paving along Tramore Road.
07. Layout: How does the proposal create people friendly streets and spaces?	The layout of the proposed development is pedestrian focused and offers an attractive pedestrian route through the centre of the scheme with a meandering pathway through a series of character areas that move from a public town square environment to semi-public residential outdoor spaces, which are all south-facing and landscaped. These routes offer potential for pedestrian connectivity to adjoining sites to the west regarding any potential future development there. Primary vehicular access for the proposed development is centrally provided at the junction of Kinsale Road and Mick Barry Road. This access creates a central street that enables connectivity for future development to the west. All streets have a shared surface to support pedestrian movement through the scheme. The central street is fronted by two no. three-storey duplex buildings to north and south, thus providing a more suburban sense of scale along this street. In addition,

	the 48no. townhouse apartments throughout the rest of the scheme all have ground level own door access, which will generate a high degree of domestic activity at ground level in the proposed development. The street between Buildings I, L and N to the south and Buildings B and J to the north will provide access for essential services and there is no car parking provision along this street. The vehicular entrance to the car park under the podium in the northern section of the site is from Tramore Road, at the location of the current site entrance. This under croft carpark not only serves the residents but will also serve the anticipated Primary Care Centre (subject to a separate application). Locating the car park below ground level and having a minimal distance on site for traffic to travel to enter/exit the car park ensures a safer scheme for more vulnerable road users. There is some on grade parking on the street network of the scheme for residents and also visitors and/or drop off for the creche. This on grade parking is located along the central street and on the street to the west of Buildings B, C and the building which is anticipated to house a Primary Care Centre, subject to a separate application.
08. Public Realm: How safe, secure and enjoyable are the public areas?	The public realm areas are almost entirely internal to the scheme and overlooked by the residential and ground floor commercial and community uses. The wide, paved public area along Tramore Road invites passers-by, visitors and residents into the scheme and benefits from passive surveillance from the commercial ground floor uses in Building E. The public realm areas will be attractive and inviting spaces to be enjoyed by all, where ample open space has been created to ensure people can practice physical distancing. Vehicular movements on the internal street network are tempered by the fact that all streets have a shared surface. The orientation of the buildings around the internal open spaces will create a sense of enclosure whilst the fact that they are south-facing means they will receive direct sunlight throughout the day. In addition, all of the dwellings in the five no. three-storey duplex buildings have own door access. This, in conjunction with the fact that the remaining 48no. townhouse apartments in other buildings throughout the scheme also have own door access from street level, means that there will be a very high degree of passive surveillance in the proposed development – arguably much more than if the buildings were conventional apartment buildings. The external public realm area along Kinsale Road is well defined and landscaped which provides a pleasant and comfortable environment for pedestrians and cyclists, where physical distancing is easy to practice.
09. Adaptability: How will the buildings cope with change?	The proposed development has the potential to provide for a conversion of the ground floor commercial spaces to alternative uses.
10. Privacy and Amenity: How	The proposed development provides for communal amenities on level 0 of Building F (reception, community space/town hall events space,

does the scheme provide a decent standard of amenity?	cinema/media presentation room, and co-working etc.) to a total of 547.5m^2. The proposed development also provides for communal roof terraces on Levels 7 of both Building E and Building F. In addition, there are the landscaped meadow parks, a garden court, and town square plaza. There is also a café use on the ground floor of Building E (272m^2), a gym use on the ground floor of Building E (550m^2), and a coffee kiosk (100m^2) in the south-western corner of the Town Square, all of which are available for the use of residents of the proposed development and are also open to the public. All apartments meet the requirements of the Apartment Guidelines, specifically: unit areas; bedroom areas; bedroom aggregate areas; and living/dining/kitchen areas. 68% of dwellings benefit from dual aspect, and there is a maximum of 9.5 units per core. All dwellings have a 2.7m floor to ceiling height.
11. Parking: How will the parking be secure and attractive	Minimal car parking is provided for the entire scheme (209no. spaces plus 98no. spaces for the anticipated Primary Care Centre, which is subject to a separate application), whereas 1,145no. cycle spaces are proposed. Of the 209no. car parking spaces, 62no. are surface level parking spaces with the remaining 147no. being provided in the under croft car park. The 62no. on grade car parking spaces will benefit from passive surveillance, while the under croft car park is secure by means of the fact that it has one entrance/exit and is sheltered from inclement weather. 1,145no. bedrooms are provided in the scheme and 1,145no. bicycle parking/storage spaces have been provided within seven no. dedicated internal and external secure cycle stores (including two no. internal bicycle storerooms totalling 168m^2 on level 0 of Building F, one being accessed from the under podium car park, the other accessed by an external door on level 0 of Building F., and external covered bicycle shelter to the west and south of Building L). A large central bicycle stacking facility is provided on level 0 of Building E which merges with the under croft car park using two-tier stack bike racks, with direct access to Kinsale Road via an external door on level 0 of Building F, as well direct access internally to all other buildings in the scheme. All of the bicycle parking is thus secure by way of being internally located under cover in the buildings/car park or benefitting from passive surveillance outdoors.
12. Detailed Design: How well thought through is the building and landscape design?	As is detailed in the accompanying Architectural Design Statement, the vision guiding the design of the proposed development is to consciously respond to the site and its context to deliver a “best-in-class” residential apartment scheme that provides attractive, modern, sustainable living accommodation finished to a very high standard, both internally and externally. The proposed development has also been designed as an appropriately scaled urban development to act as the basis for a new architectural idiom for the urban regeneration of the Kinsale & Tramore Road areas. The ratio of brick to render façade is 7:3. This ensures that a high-quality, low-maintenance finish predominates throughout the scheme and

	especially along the outward facing elevations along Tramore Road, Kinsale Road and along the south and west of the site. Shared surfaces across the entire internal street network ensure that the most comfortable and safe environment is facilitated for users of the scheme. In addition, the 3-storey buildings G and H along the central street and Buildings I, L, M and N that define the lower meadow park ensure that the central axis of the scheme is characterised by aspects of serial vision, where the full extent of the north-south internal view within the site is not immediately revealed, thus piquing interest and inviting exploration of the site, whilst also helping to create a sense of enclosure and residential privacy.

6.5.8 Design Manual for Urban Roads and Streets (2019)

The proposed development involves the creation of a new street running east-west along the centre of the site from the junction between Kinsale Road and Mick Barry Road, and then north-south along three quarters of the length of site to the west of Buildings B, C and D (the latter being subject to a separate planning application for a primary care centre), with access to/from the proposed development also occurring via the pre-existing vehicular site access along Tramore Road. As part of the Traffic and Transportation Assessment and Mobility Management Plan Statement for the proposed development, ARUP have prepared a DMURS Compliance Statement.

The DMURS Compliance Statement details how the proposed development complies with DMURS in that it creates a sense of place through connectivity, enclosure, active edge and pedestrian activity, and adheres to the following key design principles of DMURS:

- Design Principle 1: Connected Networks

This principle considers how the development is integrated with the surrounding street network, how it facilitates movement in terms of a street hierarchy, and how permeability and legibility are achieved.

The proposed development incorporates dense and permeable pedestrian and cyclist networks that align as closely as possible with the various desire lines, both within the proposed development and to and from key external destinations. Provision is made to connect the development to potential future development i.e. the Musgraves site to the west. Pedestrians traveling to and from the proposed development will have a variety of routes to choose from, ensuring that they can take the shortest route to their destination.

- Design Principle 2: Multifunctional Streets

Under this principle it is demonstrated how the proposed layout provides route choice and connection to focal areas. Adherence to footpath and cycle route widths are also demonstrated, as well as how verges are proposed along major routes. The principle also focusses on self-regulation of vehicle speeds and minimising air pollution from a transport point of view.

The internal street and road network and access junction are designed to ensure safe and comfortable co-existence of different street users. Where necessary, priorities have been established and assigned with respective design solutions such as wide footpaths, dedicated cycle lanes, various surface treatments, pedestrian and cyclist crossings, raised tables at junctions, tight radii, traffic lights, road markings, and shared and segregated space areas.

Kinsale Road includes a variety of land uses and is developing into an activity spine where a mix of activities and land uses adjacent to the road attracts people from neighbouring residential areas and places of work. The placement of a high-density residential development along this route will encourage a larger variety of development to occur along this route and is also expected to have a positive impact on the turnover of business next to the route. Adding a residential development therefore creates a richer development strip where local demand is created, promoting shorter trips.

- Design Principle 3: Street Design-Pedestrian Focus

Aspects were considered such as how the development balances speed management with the values of place, and how the development promotes a reasonable balance between physical and psychological measures to regulate speed. The streetscape, street furniture and lighting, materials and finishes, on street parking, and loading and appropriate carriageway design and surfaces are outlined in the Traffic and Transportation Assessment and Mobility Management Plan Statement.

The internal street and road network has been designed to ensure convenient, safe, and comfortable movements for pedestrians in the first instance. This has been enhanced and ensured with the help of such design features as a continuous and integrated network of dedicated and wide footpaths along with signalised pedestrian crossings at the western access junction.

- Design Principle 4: Multidisciplinary Approach

The DMURS Compliance Statement demonstrates how the design of the development is a collaboration between the architect, the landscape architect and the traffic engineer.

All design elements of the internal street and road network were developed in line with requirements and limitations associated with other design elements of the development such as drainage, structures, utilities and landscape.

The proposed development thus delivers an environment that will promote sustainable transport modes by prioritising pedestrians and cyclists over private vehicles on its streets, as prescribed by DMURS. At the same time, the design also facilitates convenient and safe vehicular movements and manoeuvres necessary for the operation of the development.

6.5.9 Guidelines for Planning Authorities on Childcare Facilities (2001)

Although Appendix 2 of the Childcare Guidelines for Planning Authorities 2001 states an indicative standard of one childcare facility per 75 dwellings in new housing areas, this is no longer considered to be a practical benchmark. The 2020 Apartment Guidelines require that childcare facilities be provided in accordance with the demographic profile of the area and the existing capacity of childcare centres. The 2020 Guidelines also specifically state that "*one-bedroom or studio type units should not generally be considered to contribute to a requirement for any childcare provision and, subject to location, this may also apply, in part or whole, to units with two or more bedrooms*".

A Childcare Needs Assessment of the proposed development has been prepared by Coakley O'Neill Town Planning Ltd. and accompanies the planning application. The assessment found that existing childcare facilities in the local area could not accommodate the anticipated demand for early years childcare spaces that the proposed development is likely to generate.

As a result, the provision of an early years childcare facility as part of the proposed development was deemed necessary. A creche with a gross floor area of 289m^2 and associated outdoor crèche garden of 242m^2 is proposed on level 0 of Building F. The proposed creche can accommodate up to 63no. children.

6.5.10 Smarter Travel – A New Transport Policy for Ireland 2009-2020

The proposed development is located on an existing high frequency public bus route (City Centre-Black Ash Park and Ride), a proposed BusConnects radial route under CMATS, and is within 15 minutes walking distance from five other public bus routes. In addition, a Cork Metropolitan Area primary cycle route runs along the site's eastern boundary with Kinsale Road.

1,145no. bicycle parking spaces are proposed. Only 209no. car parking spaces are proposed for this primarily residential development, with an additional 98no. car parking spaces being proposed for the anticipated Primary Care Centre development on site (subject to a separate application). These car parking figures are at a significantly reduced level relative to the Cork City Development Plan standard (209no. spaces proposed versus an approximate maximum of 898no. spaces for the mix of uses proposed).

In addition, it is envisaged that a car sharing company will have access to some car parking spaces located within the under croft car park. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents to have access to a car without the need to own a personal car. The provision of a car sharing scheme will support residents' transport needs as well as helping to ensure that the proposed development supports sustainable transport modes of choice. The proposed development is thus consistent with the requirements of the Smarter Travel Policy.

6.5.11 The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009)

There are no historic flood events recorded within the proposed development site according to FloodInfo.ie. The proposed development site is located in Flood Zone C and so a Justification Test for the development is not required. Therefore, the proposed development is not likely to have an impact on floodplain storage and conveyance and will not increase flood risk off site during the construction phase. Notwithstanding, a Flood Risk Assessment has been prepared and informs this EIAR.

The FRA finds that the risk of fluvial flooding from the nearby Tramore River is considered to be low. The risk of pluvial flooding, tidal flooding and groundwater flooding are also considered to be low. See **Chapter 14** *Water* and **Appendix 14.1** *Flood Risk Assessment* for further details.

6.5.12 EU Birds and Habitats Directives

The network of Natura 2000 sites across the EU is comprised of all designated sites that fall into one of two categories: Special Area of Conservation (SAC) and Special Protection Area (SPA).

The protection and conservation of Natura 2000 sites is provided for by means of both the Habitats Directive 92/43/EEC and the Birds Directive 79/409/EEC.

Article 6(3) of the Habitats Directive states that:

> *Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

The Habitats Directive has been transposed into Irish law, with the current relevant legislation being the European Communities (Birds and Natural Habitats) Regulations, 2011. Section 42(1) of Part 5 of these regulations states that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site.*

There is a source-pathway link receptor between the Cork Harbour SPA and the proposed development site via the Tramore River. The Tramore River is located circa. 80m to the south of the site and flows into the Cork Harbour SPA circa. 2.8km downstream. In addition, there is also a source-pathway link receptor via the Tramore River between the proposed development site and the Great Island Channel SAC which is further downstream in Cork Harbour.

A Stage 1 Appropriate Assessment (AA) Screening Report has been carried out to aid the Board in its determination as to whether or not a Stage 2 Appropriate Assessment is required. The AA Screening Report has been submitted as part of the planning application for the proposed development. Based on the nature and extent of the proposed development and the conservation interests of the two designated sites, a Natura Impact Statement (NIS) has been prepared for the proposed development. The NIS finds that 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 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.

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

The Southern Regional Assembly was responsible for creating the Regional Spatial and Economic Strategy for the Southern Region (RSES), which came into effect on 31st January 2020. Included in the RSES for the Southern Region is the Cork Metropolitan Area Strategic Plan (MASP).

Regional Planning Objectives (RPOs) 6-10 of the RSES relate to the MASPs for each of the three metropolitan areas of the Southern region – Cork, Limerick-Shannon and Waterford.

National and regional policy have assigned a heretofore unprecedented scale and rate of growth for Cork City in order to assist in counterbalancing the excessive growth and sprawl of Dublin. In order to achieve the ambitious regional growth targets set for Cork, it is paramount that proposals such as the subject proposed development of this report are facilitated through the planning process.

RPO 7 of the RSES is as follows:

> *"Delivery and Funding"*
>
> *It is an objective to:*
>
> - *Support sustainable delivery of the Strategic Investment Priorities identified by the NDP for the Cork, Limerick-Shannon and Waterford metropolitan areas and progress co-ordination between the principal stakeholders for delivery to achieve the vision and objectives identified in each MASP.*

- *Promote the sustainable implementation of innovative, collaborative projects through the Urban Regeneration & Development, Rural Regeneration & Development, Climate Action, and Disruptive Technologies funds within the Cork, Limerick-Shannon and Waterford Metropolitan Areas.*

The basis of Project Ireland 2040 is that the spatial plans and investment plans of the NPF and the National Development Plan (NDP) must align to ensure the timely delivery of the investment required to provide the housing, jobs and infrastructure needed for both the present population and the projected increase in population of an additional 1 million people by 2040.The *National Development Plan 2021-2030* (NDP) states that the NPF housing supply target has been revised "*to reflect recent (2020) ESRI research based on NPF population growth, taking into account both existing demand and a legacy of undersupply to date*" with the finding now being that there is "*a need to accommodate around 600,000 new households by 2040, with the Department of Housing planning to deliver an average of 33,000 homes per annum to 2030*" (NDP, 2021, p.55).

The proposed development is consistent with RPO 7a of the RSES in the following senses. The first is NSO 4 of the NPF, "Sustainable Mobility", which is supported by the strategic investment priorities outlined in Chapter 9 of the NDP. The site of the proposed development is located on an existing bus route between Cork City Centre and the Black Ash Park & Ride car park terminus. The Park & Ride bus (Route 213) operates at a high level of frequency and the terminus is only 4 minutes away from the subject site by foot. UCC students can avail of a free dedicated Park & Ride service to UCC from Black Ash also.

Other bus stops in close proximity to the proposed site are for bus services 203, 206, 219, 226 and 209A that are approximately 15 minutes away by foot, located to the north-west of the subject site. In addition, the eastern boundary of the subject site corresponds exactly with a priority BusConnects radial route, as identified in the Cork Metropolitan Area Transport Strategy 2040.

Furthermore, a mandatory cycle lane currently runs along the eastern boundary of the subject site (visible in Figures 12 and 13 above) and the site is currently within easy cycling distance (i.e. 8-25 minutes) of several significant employment, education, commerce and cultural hubs in Cork City: Cork City centre; UCC; CUH/Wilton Shopping Centre; Douglas village; Cork Airport Business Park; MTU Cork, and; Mahon Point.

The site context is extremely compatible with supporting future residents of and visitors to the proposed development to use sustainable modes of transport in terms of existing infrastructure, proximity to key locations in Cork City, and planned public transport strategies for Cork City as well as the modest levels of car parking provision that are proposed for the development, the ample levels of bicycle parking provision and improved pedestrian linkages between the subject site and Black Ash Park & Ride and, in time, Tramore Valley Park (subject to a separate proposal being progressed by Cork City Council).

In addition, it is envisaged that a car sharing company will have access to some car parking spaces located within the under-croft car park, the number of which is

to be agreed at a later date. The introduction of these spaces will enable residents to have access to a car without the need to own a personal car. The provision of a car sharing scheme will support residents transport needs as well as helping to ensure that the proposed development supports sustainable transport modes of choice.

The second sense in which the proposed development is consistent with RPO 7a of the RSES is the way in which the proposed development aligns with Strategic Investment Priority No. 10 of the NDP, which is "Education, Health and Childcare" and which corresponds with National Strategic Outcome 10 of the NPF. This is achieved through the provision of a creche on site, as well as a Primary Care Centre (subject to a separate application). The site is also located approx. 600m north of the out-of-hours Southside SouthDoc GP facility as well as being within 2.5km of 19no. TUSLA-registered early years childcare facilities.

In addition, eighteen no. primary schools and nine no. post-primary schools are located within 2.5km of the site. The subject site is also within easy access of the following third level educational institutions: Coláiste Stiofáin Naofa; Cork College of Commerce; St. John's Central College; Cork School of Music; Crawford College of Art and Design; UCC; and MTU Cork.

RPO 8 of the RSES is aimed at encouraging "Investment to Deliver on the Vision for Metropolitan Areas". Part b. of RPO 8 states the following:

> *Prioritise the delivery of compact growth and sustainable mobility in accordance with NPF objectives.*

The proposed development constitutes a residential density of 180 units/ha. This density facilitates the creation of a new, compact neighbourhood hub on a large vacant brownfield site that is located in close proximity to existing and planned public transport and cycling infrastructure. Clearly, the proposed development is exactly the kind of project whose delivery should be supported in order to satisfy RPO 8b.

Part c. of RPO 8 states the following:

> *Ensure the investment in and delivery of the Sustainable Place Framework within each MASP area, delivering quality of place attributes as an incentive to attract people to live, work and visit".*

RPO 8c refers to the "Sustainable Place Framework" of the RSES, which is also Goal 1 of the Cork MASP. This goal seeks:

- *Vibrant living and working city centre at the heart of a thriving metropolitan area and region.*
- *Social, physical and economic renewal of inner city neighbourhoods.*
- *Compact urban development, achieving brownfield and infill targets through innovative design approaches to appropriate density and height.*
- *Provision for diverse residential accommodation types to accommodate the needs of different groups in society including older age cohorts.*

- *Network of compact metropolitan settlements and employment areas offering quality residential and working choices, interconnected with sustainable public transport, pedestrian and cycling networks.*
- *A metropolitan area complemented by a network of connected regional settlements, fulfilling strong population and employment roles for their rural hinterlands.*
- *Enhancing the quality of our existing places through retrofitting a high standard of infrastructure, services and amenities that improve the liveability and quality of place in existing settlements and communities, especially locations that experienced significant new population growth in the past (such as metropolitan towns) and existing areas experiencing positive growth (such as city centre neighbourhoods).*
- *Achieve mixed use "five-minute" or "ten-minute" sustainable city and town models where short travel time and ease of access via sustainable travel modes is achieved between where we live, work, access services, access recreation and amenity inter alia.*
- *Seek infrastructure led development where housing and job provision is integrated with high standards in sustainable transport, social and community infrastructure, quality public realm, recreation and amenities.*
- *Targeted urban regeneration measures to address dereliction and underutilised lands, particularly in inner city and disadvantaged areas to provide improved environmental quality including street tree planting.*
- *Rejuvenation of our existing built assets and public realm.*
- *Protection and enhancement of the built and natural heritage and biodiversity.*
- *Working with/enhancing the amenities of the natural environment.*
- *Resilience to climate change and flooding.*

Clearly, the proposed development harmonises with this goal to a great extent. The proposed development is an urban regeneration project that will facilitate the delivery of a compact, high-density vibrant community on an underutilised, large brownfield site within a disadvantaged inner suburban neighbourhood in close proximity to existing public transport corridors.

The addition of a high-density residential development to the area will provide more footfall along Kinsale Road in particular, which will likely increase business turnover within the vicinity, thus growing the local economy.

The inclusion of a tall building of excellent architectural design into the scheme contributes to a unique sense of place at this entrance to Cork City and will serve as a focal point for the surrounding neighbourhoods. It also contributes to the evolving skyline of Cork City which is symptomatic of Cork becoming a living and working metropolitan city of scale.

Buildings B, C, E, F, J and N have lift access to the apartments for less able-bodied persons, and the nine no. one-bed, wide deck-access apartments in

Building N have been specifically designed for elderly residents. The proposed development is therefore an age-friendly one, where residents' needs can be accommodated over the period of their lifetimes with open and community spaces, healthcare facilities and services and excellent public transport provision on site. In addition, with 14% of the dwellings being three- and four-bedroomed, a diverse community atmosphere is guaranteed as the proposed development is suitable for families also.

The success of the proposed development is ensured by the fact that it is underpinned by the provision of high quality social and physical infrastructure, both in the wider area, as evidenced in the Social and Community Audit prepared by Coakley O'Neill Town Planning Ltd. which accompanies the planning application, as well as on site itself in the form of:

- a creche, gym, retail unit, café, and coffee kiosk;
- upgrades to the existing public realm along Kinsale Road regarding footpaths and to the existing cycle route, and the introduction of landscaped buffering which includes new tree planting;
- substantial bicycle parking provision and a series of landscaped, south-facing public and semi-public open spaces located in the centre of the scheme, and pedestrian and cycling infrastructure and a high-frequency future public bus corridor along Kinsale Road;
- a "fifteen-minute" city model where the city centre, Douglas, Wilton and UCC are all within 15 minutes cycling time and where Cork Airport, MTU and Mahon are within 15 minutes of the proposed development by public transport.

SUDS have also been incorporated into the landscaping of the proposed development, including four no. surface water attenuation tanks to be located underneath to be located underneath the public open spaces and the under-croft car park. This increases the ecological value of the scheme and will ensure that the proposed development will not pose a flood risk in the event of heavy rainfall.

In addition, the ambition of the Cork MASP is based on the principles of the RSES Sustainable Place Framework, with the framework informing the following 14 guiding principles for investment and sustainable development in the Cork Metropolitan area:

- *A Living City and Suburbs*
- *Metropolitan Engine*
- *Compact Sustainable Growth*
- *Integrated Transport and Land Use*
- *Accelerate Housing Delivery*
- *Employment Density in the Right Place*
- *Better alignment of Growth*
- *Social Regeneration*

- *Future Development Areas*
- *Metropolitan Scale Amenities*
- *Enabling Infrastructure*
- *Co-ordination and Active Land Management*
- *Re-intensify Employment*
- *Future strategic growth areas not to compromise the delivery of more sustainable regeneration and consolidation of existing more suitable strategic sites.*

The proposed development complements and supports 11 of these 14 guiding principles, and this is detailed below in **Table 6.2**.

Table 6.2 Design Response to MASP Guiding Principles

Cork MASP Guiding Principle		The proposed development
A Living City and Suburbs	✓	The density, site layout and mix of uses will facilitate the realisation of a vibrant residential neighbourhood hub with a distinct and unique sense of place, that is open, welcoming and useful to the surrounding local population of Ballyphehane and may stimulate knock-on regeneration projects within the area.
Metropolitan Engine	✓	The proposed development will provide residential and health functions along a public transport corridor (BusConnects), contributing to Cork City operating as a well-functioning, socially inclusive and energising place. As the site is not adjacent to any sensitive wildlife sites of particular conservation interest, the proposed development will also ensure the natural asset that is Cork Harbour continues to be protected.
Compact Sustainable Growth	✓	609no. residential units in conjunction with a creche, gym, retail unit, coffee kiosk and café on this 3.39ha brownfield site will contribute in a significant way to the consolidation of the south-central suburbs of Cork City and therefore towards achieving the target of providing at least 50% of new homes within the city's existing footprint.
Integrated Transport and Land Use	✓	The Land Use and Transportation guiding principle of the Cork MASP states that "[*s]ustainable higher densities must be delivered, especially at public transport nodal points*." (RSES, p.40). The Cork MASP also states, *"[t]he distribution of growth must follow a spatial hierarchy that underpins delivery of the CMATS."* (RSES, p.40). The proposed development will deliver targeted residential growth of Cork City along the BusConnects corridor which is identified in the Cork Metropolitan Area Transport Strategy 2040. The subject site of the proposed development is also located on the existing route of the Black Ash Park and Ride bus service and within walking distance of Cork City Bus Routes 203, 206 and 219. The proposed development will enhance the pedestrian connectivity between the site and the Black Ash Park and Ride facility on Mick Barry Road. The subject site is also located on a primary urban cycling route as identified in the *Cork Cycle Network Plan* (2017). An on-street cycle lane currently runs along the site's eastern boundary. This cycle lane will undergo improvements as part of the landscaped buffer that is proposed between the scheme and the Kinsale Road.
Accelerate Housing Delivery	✓	The predominantly residential nature of the proposed development, along with its scale, height, high-density and siting at this particular location, amounts to the

		activation of a strategic residential development within the existing footprint and suburbs of Cork City.
Employment Density in the Right Places	✓	The creche, retail, gym, coffee kiosk and café uses, as well as the tenancy management aspect of the proposed development, will re-intensify employment in this inner suburban location of Cork City.
Better Alignment of Growth	✓	In facilitating a significant increase in the local residential population, the proposed development constitutes a 'catch up' investment that will complement the existing employment, infrastructure, amenity provision and sustainable transport uses and facilities in the local area, as well as supporting the further development and improvement of these facilities.
Social Regeneration	✓	The subject site is located within the Togher/Mahon/Ballyphehane area that has been identified by Cork City Council as being disadvantaged and requiring intervention through the RAPID initiative. Improving the urban environment and increasing the provision of childcare facilities are all considered principles of the Cork City's RAPID initiative and the proposed development supports the realisation of these - the proposed development involves the regeneration of a significant large vacant brownfield site, currently surrounded by security fencing and mature hedging, at a prominent location on a crossroads at the brow of a hill. It is expected that, subject to a separate application, the subject site will also provide the new and existing local residential population with a Primary Care Centre, a healthcare facility that has been identified by the HSE as being required in the local area. This use would also align with Cork City Council's RAPID initiative.
Future Development Areas		n/a
Metropolitan Scale Amenities	✓	"*Tramore Valley Park looks magnificent today and is a continuing work in progress*" - Lord Mayor, Cllr Mick Finn on the opening day, May 2019. The scale and residential nature of the proposed development may support the realisation of further improvements to the public realm required at Tramore Valley Park by facilitating a critical mass of potential visitors to the park, which is likely to elevate the priority of carrying out the improvements.
Enabling Infrastructure	✓	The proposed development improves sustainability in terms of energy, waste management, resource efficiency and water conservation in the following ways: • 6 no. dedicated waste storage facilities are provided for residents and commercial tenants in the under-croft car park, the ground floors of Buildings B, C, and F, and externally to the west of Building L. Once separated and stored in segregated bins by the residential and commercial tenants, a licenced waste collector will collect the residual, dry mixed recyclable, organic and glass waste on a twice weekly basis. • SUDS (including four no. surface water attenuation tanks) have been incorporated into the landscaping approach to ensure water quality and local biodiversity is safeguarded. • The high residential density comprises smaller units than traditional lower density housing, and therefore will require less energy to heat. As detailed in ECD's Energy Statement, which accompanies the planning application, Exhaust Air Heat Pumps will be used throughout the scheme to heat spaces as well as domestic water. • Best practice fabric U-values and air tightness standards will be implemented in order to minimise heat flow/loss through the building envelope. • Passive solar principles have informed the design and external shading – in the form of window reveals and overhangs, and solar performance glazing

		– will be incorporated into the façade design to assist in the reduction of overheating. Meanwhile, passive solar heat gain will be harnessed by allowing sunlight to enter the buildings at areas with high thermal mass such as exposed concrete. • The close proximity of the multi-storey buildings to each other also makes renewables-based systems of energy distribution, such as district heating, or area-wide technology upgrades, more feasible in the future. • PV solar panels will be installed on the roofs of all of the residential buildings. • The landscaped buffer zone between Buildings E, F, J and N and Kinsale Road, and Buildings D (subject to a separate planning application) and E along Tramore Road will amount to a great improvement on what is currently the case along the boundaries of the site with Tramore Road and Kinsale Road and this will encourage and support increased pedestrian activity in the area.
Co-ordination and Active Land Management	✓	The proposed development should be recognised for the fact that it amounts to the active urban development of a strategically located, large, vacant, under-utilised brownfield site in an immediate context that is zoned primarily for light industrial and retail warehousing uses but which is, in reality, a mixed-use environment bounded by extensive established residential neighbourhoods.
Re-intensify Employment		n/a
Future Strategic Growth Areas to Complement Cork MASP		n/a

RPO 9 "Holistic Approach to Delivering Infrastructure" states the following:

> *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 including [amongst others] …green infrastructure…community and social…open space amenity…public realm.*

While the proposed development is not an infrastructure package in itself, the proposed development will involve considerable upgrade of the public realm along approximately 320m of Kinsale Road, over 90m along Tramore and approximately 70m along Mick Barry Road via a new landscaped buffer zone along Kinsale Road that includes footpaths and cycle paths, and improved connectivity between Kinsale Road and Black Ash Park and Ride.

The proposed development will also provide public open spaces for use by the general public. In addition, the scheme will complement the delivery of significant social infrastructure in the form of a Primary Care Centre which is the subject of a separate application under the consideration of Cork City Council. The rationale for the separate proposal of the Primary Care Centre is that it will serve a catchment population of 42,573 (Census 2016) in the areas of Ballyphehane, Togher, Greenmount, The Lough, Turner's Cross, Frankfield and Grange.

This population will also increase once the residential aspect of the proposed development is occupied. Within the HSE, this catchment area is known as "Community Healthcare Network 14, South Cork City", and is bounded by the N71 to the west and South Douglas Road to the east. Commercial floorspace limits in the legislation pertaining to SHDs precludes the applicant from applying for the development of the proposed Primary Care Centre as part of the proposed SHD.RPO 10 "Compact Growth in Metropolitan Areas" states the following:

- *Prioritise housing and employment development in locations within and contiguous to existing city footprints where it can be served by public transport, walking and cycling.*
- *Identify strategic initiatives in Local Authority Core Strategies for the MASP areas, which will achieve the compact growth targets on brownfield and infill sites at a minimum and achieve the growth targets identified in each MASP.*

The proposed development undoubtedly satisfies the aims of RPO 10a and 10b – the subject site of the proposed development is an unused, vacant brownfield site within the existing footprint of the southern inner suburbs of Cork City that will deliver 609 new homes within the Cork MASP area. The site is currently served by existing public transport and cycling infrastructure. The proposed development will also be served by the future priority public transport service of BusConnects as well as contributing to the upgrading and improving of the provision of cycling and walking infrastructure in the vicinity of the site.

RPO 31 "Sustainable Place Framework" is aimed at ensuring "*the development of quality places through integrated planning and consistently excellent design*". The proposed development is consistent with RPO 31 in the following ways:

- It complements 11 of the guiding principles of the Sustainable Place Framework.
- The predominance of brick as a façade treatment throughout the scheme amounts to a high quality, durable and aesthetically pleasing material appropriate for residential development.
- The architectural design of the individual buildings and the way they interact with each other and the public and semi-public open spaces to contribute to a coherent, unique scheme has been achieved by prioritising the residential amenity of future residents, creating a positive visual impact in the surrounding district and facilitating an active street edge along approximately 320m of the Kinsale Road. This has the potential to be a catalyst for future development along the Kinsale Road in the form of a boulevard.
- The landscaped semi-public courtyard garden and meadow parks, and the public town square plaza, with their variety of surface treatments, planting and interconnecting pathways, create a unique, varied and coherent sense of place and will be inviting. This will fulfil the vision for the proposed development to create a new focal point and local destination centre in an inner suburban area that has long been identified as being a candidate for urban regeneration.

- In addition, as has already been highlighted, sustainable modes of transport have been integrated into the design and siting of the proposed development, including the enhancing of pedestrian facilities along approximately 70m of Mick Barry Road to facilitate safe, easy connectivity between the Black Ash Park and Ride facility from Kinsale Road.

The Cork MASP is a constituent part of the RSES and aligns with current national planning policy and objectives, including those contained in the NPF.

The proposed development supports the following strategic goals of the Cork MASP:

- Goal 1: Sustainable Place Framework
- Goal 2: Excellent Connectivity and Sustainable Mobility
- Goal 4: High Quality Environment and Quality of Life

The Cork MASP specifically identifies Tramore Road as being an "Example Regeneration Area" within Cork city. A core aim of the Cork MASP is for Cork city's suburbs to be compact – the density of the proposed development will fully support this objective for the southern suburbs of Cork city.

The Cork MASP contains population growth targets for 2031 that are consistent with those in the NPF that are set for 2040. According to section 5 of the Cork MASP, Cork City and Suburbs are to grow by 75,000 by the year 2031, with a target population of 283,669 for that year.

According to the CSO, the current average household size in Ireland is 2.75 (Census of Population 2016 - Profile 4 Households and Families). Applying this figure to the 2031 population growth target for Cork City, an additional approximately 27,270 homes will need to be provided in the city by that year.

Furthermore, if the realisation of that target number of additional homes is to be consistent with National Policy Objective 3b of the NPF, then at least 13,635 new homes will need to be developed within Cork City and Suburbs within the next decade. This goal requires delivery of residential development in Cork City on an unprecedented scale. The proposed development can be considered as a direct response to this new paradigm for Cork City in that, if granted permission, it would account for the provision of just over 4.4% of that target.

Cork MASP Policy Objective 2 seeks the delivery of 11 key points. The proposed development will contribute to the delivery of 5 of these key points. These five key points are:

> *c. Seek investment to achieve regeneration and consolidation in the city suburbs and high quality architectural and urban design responses to enhance the uses of this waterfront and all urban quarters.*
>
> *f. Seek to achieve High Quality Design to reflect a high-quality architectural building stock in all urban quarters.*
>
> *g. Seek delivery of a network of large city parks and smaller green areas throughout the metropolitan area and inner-city areas.*

h. Strengthen Social and Community Development

i. Support active regeneration initiatives that are ongoing, especially driven through the Local Economic Community Plan, Local Community Development Committee and RAPID initiatives.

The subject site is located within one i.e. Togher/Mahon/Ballyphehane, of the four areas of Cork City previously identified by Cork City Council as being disadvantaged and requiring intervention through the RAPID initiative.

The proposed development involves investment in the regeneration and bringing back into use of a significantly large, vacant brownfield site in Ballyphehane. The proposal involves high-quality architectural and urban design on a site of scale, as is evidenced in the plans and other particulars that accompany this planning application.

The proposed development is an example of high-quality placemaking as, amongst other things, it embodies all of planning theorist Kevin Lynch's "elements of a city" (The Image of the City, 1960) – edge, path, node, landmark and district.

This will bring huge benefit to this inner suburban area, where a succession of local authority-built housing estates and architecturally utilitarian commercial and industrial buildings currently characterise the surrounding urban form. In fact, the vision for the proposed development is that, as a predominantly residential project of significant scale and quality, it will serve an additional function as the stimulation for the regeneration of the surrounding area.

In addition, the design of the scheme includes landscaped, green, south-facing semi-public open spaces which are linked together with pathways to the town square, a public plaza at the north of the site. These green spaces support a language of interconnected green open spaces within the Cork Metropolitan area and contribute to the green infrastructure network that the MASP envisages for the area.

The provision of a crèche facility, gym, community spaces, retail unit, coffee kiosk and café will also serve and bolster the social and community supports of not just the future residential population of the scheme itself but of the wider local population also.

6.5.14 Cork Metropolitan Area Transport Strategy (2020)

The Cork Metropolitan Area Transport Strategy 2040 (CMATS) was devised and published in 2020 in response to the policies contained in the NPF which envisage that Cork will become the fastest-growing city region in Ireland with a projected 50%-60% increase of its population in the period up to 2040. This population growth will see a commensurate increase in travel demand across the metropolitan area.

In terms of land use, some of the priorities of CMATS include the following:

- Targeting higher development densities in areas where opportunities exist for sustainable transport provision and in a manner that better aligns the provision of transport with demand
- Availing of existing transportation infrastructure, nearby amenities and facilities to deliver a critical mass of growth in population and employment which can support the transition and sequencing of investment to higher capacity public transport infrastructure and services; and
- The provision and design of new development in locations, layouts and at densities which prioritise walking and cycling and enable the efficient provision of public transport services.

CMATS proposes that an improved bus network will carry around 45 million passengers per annum and 32,000 passengers during the AM morning peak period in the Cork Metropolitan Area. In total, the network will comprise 200km of cross-city bus routes, 50km of orbital routes and 150km of radial routes.

The eastern boundary of the subject site comprises a section of a future public transport BusConnects radial route – Frankfield to Fairhill (also referred to as the Airport to City Centre route and Route 9) that has been identified in CMATS as a priority measure of the strategy. Specialists have been appointed by the NTA to carry out route determination and finalise the routes. This process is expected to be completed by early 2022.

The proposed development will increase the population living along this priority BusConnects radial routes, which may expedite the delivery of this strategic metropolitan public transport service.

CMATS is informed by guidance in the NPF that "*there should generally be no car parking requirement for new development in or near the centres of the five cities, and a significantly reduced requirement in the inner suburbs*".

The strategic location of the proposed development site along and in proximity to existing and planned sustainable transportation infrastructure supports the reduced level of car parking provision on site compared with development plan car parking standards which pre-date CMATS.

CMATS proposes the enhancement of the provision of park and ride facilities in the Cork Metropolitan Area as a solution to car parking demand in Cork City and aims to maximise public transport patronage. The strategy notes that the Black Ash Park and Ride facility, located in the vicinity of the subject site, currently operates below capacity.

CMATS states that such facilities, including the existing one at Black Ash, will require:

> *quality local walking and cycling networks to support safe and reliable interchange services and adjoining employment and residential uses.*

The proposed development supports this aim of CMATS in that the proposal involves additional landscaped pedestrian links that extend beyond the subject site to Black Ash Park and Ride facility.

The CMATS Cycle Network builds on the strategy and framework previously identified in the Cork Metropolitan Cycle Network Plan (2017). As such, additional cycle links have been proposed in CMATS that align with the proposed public transport networks including BusConnects. These include new primary routes, one of which runs along the eastern boundary of the subject site at Kinsale Road.

Regarding primary cycle routes, CMATS states that:

> *Primary routes have been designated as such because they experience the highest level of demand. Primary routes are typically direct and provide medium-long radial connections to key destinations across the CMA [Cork Metropolitan Area]. These routes are supplemented by secondary and feeder routes which may provide access to residential catchments.*

The strategy identifies 10 specific key primary cycle routes to be improved within the Cork Metropolitan Area, of which Kinsale Road-Cork Airport is one.

CMATS also makes provision for a greenway following Tramore River to connect to Tramore Valley Park. This route could potentially be linked to the development site via proposed pedestrian and cycle lanes along Kinsale Road, which may ultimately connect to a bridge connection over the South Link Road, a separate project from the proposed development which is currently being explored by Cork City Council. Such a link would undoubtedly be of use and benefit to future residents.

6.5.15 Cork Cycle Network Plan (2017)

Cork City Council and Cork County Council commissioned the Cork Metropolitan Cycle Network Plan to increase cycling mode share in the Cork Metropolitan Area from its present low base and to provide a clear plan for the development of the cycling network to encourage greater levels of cycling trips to places of employment, education, recreation and leisure.

The cycling facility on Kinsale Road was identified in the plan as having the potential to be a high-quality facility in the Cork Metropolitan Area cycle network that requires some upgrade and maintenance work.

According to the plan, the key locations the Kinsale Road cycling route serves are Black Ash Industrial Estate, South Ring West Business Park and surrounding employers and residential areas. The Kinsale Road cycle route also joins with a main south-east arterial route on South Douglas Road.

The proposed development will contribute towards some of the upgrading and maintenance work required for the Kinsale Road cycle route as identified in the Cycle Network Plan.

In addition, the plan proposes an east-west Greenway route to run from Curraheen to Douglas via Tramore Valley Park. As noted above in section 6.5.14, this greenway route will have linkages with the pedestrian and cycling infrastructure on Kinsale Road as the provision of an overbridge connection over the South Link Road is currently being explored by Cork City Council.

As has already been highlighted in this chapter regarding the delivery of the BusConnects service, the increase in population living along the Kinsale Road cycle route and in close proximity to the proposed east-west Greenway crossing of Kinsale Road may assist in expediting the delivery of this strategic metropolitan greenway infrastructure.

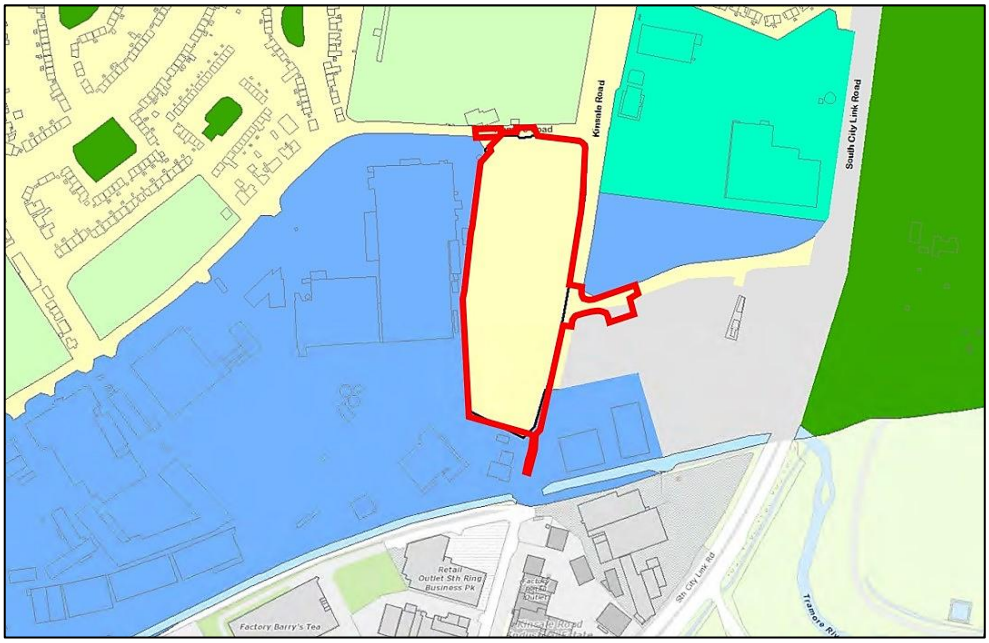
6.5.16 Cork City Development Plan 2015-2021

Of significance for the proposed development is adopted Variation No. 6 of the *Cork City Development Plan 2015-2021*. On the 11th of November 2019, Cork City Council adopted Variation No. 6 of the *Cork City Development Plan 2015-2021*, which changed the zoning of the proposed development site from "*Light Industry and Related Uses*" to "R*esidential, Local Services, and Institutional Uses*", with the corresponding zoning objective being as follows:

> *To protect and provide for residential uses, local services, institutional uses, and civic uses, having regard to employment policies outlined in Chapter 3.*

No revisions to the proposed variation were suggested in any of the submissions received by Cork City Council during the statutory public consultation period to vary the development plan.

Figure 6.1: Proposed development site in relation to the Residential, Local Services and Institutional Uses zoning objective (site generally outlined in red). (Source: Proposed Variation No.6 (Tramore Road/Kinsale Road Site) to the Cork City Development Plan 2015-2021, Chief Executive's Report; Annotated by Coakley O'Neill, 2022).



Of particular note, the Office of the Planning Regulator's submission on the then proposed variation states the following:

> *The subject site is situated in an area identified for redevelopment and adjacent to a main arterial route to the City. The location is suitable for a mixture of uses as advocated by Policy Objective 14.5 (a) of the Cork City Development Plan and the Sustainable Residential Development in Urban Areas, Planning Guidelines (2009), and is consistent with NPO 3(a) of the National Planning Framework which requires 'the delivery of 40% of residential development within built-up footprints of existing settlements'.*
>
> *Given the vacant nature, limited size, and the strategic location of the subject site, this Office would be supportive of the regeneration of this brownfield site which would accommodate new more intensive development, including residential development, close to existing local services and amenities. Such an approach would be in accordance with established national planning objectives, and legislation encouraging redevelopment of vacant sites and efficient use of well serviced urban land in built-up areas.*

In addition, Cork City Council's Chief Executive's Report on this development plan variation states that:

> *1) The Office of the Planning Regulator states broad support for the variation, finding that the approach would be in accordance with established national planning objectives, and legislation encouraging redevelopment of vacant sites and efficient use of well serviced urban land in built-up areas.*
>
> *2) The Southern Regional Assembly states that the proposed variation is consistent with the South West Regional Planning Guidelines 2010-2022. It further states that the proposed variation is also consistent with the draft Regional and Spatial Economic Strategy and with the Draft Cork Metropolitan Area Strategic Plan.*

In addition, the Chief Executive's Report concludes that:

> *Providing residential development on this centrally-located brownfield site would be in keeping with policies set out in the National Planning Framework and with objectives for redevelopment in the Tramore Road area as set out in the Cork City Development Plan 2015-2021. The proposed rezoning could facilitate further housing in the city, close to existing amenities. Given these factors, the proposed rezoning is considered to be in accordance with the proper planning and sustainable development of the area.*

In addition to the proposed development site being appropriately zoned for "*Residential, Local Services, and Institutional Uses*", other goals and objectives of the *Cork City Development Plan 2015-2021* relevant to the proposed development are set out in **Table 6.3**.

Table 6.3 Relevant Goals and Objectives in the Cork City Development Plan 2015-2021

Cork City Development Plan 2015-2021	Description of Objective
Goal 1	*Increase population and households to create a compact sustainable city*
Goal 2	*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*
Goal 4	*Promote sustainable modes of transport and integration of land use and transportation*
Goal 6	*Tackle climate change through reducing energy usage, reducing emissions, adapt to climate change and mitigate against flood risk*
Objective 5.1	*Strategic Transport Objectives* Contains 15 specific objectives aimed at, amongst other matters, greater consolidation of development along strategic corridors in the city, encouraging and facilitating modal shift, and to reduce the requirement for car parking.
Objective 5.2	*Transport Assessment:* *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.*
Objective 5.3	*Travel Plans:* *Planning applications for new and significantly extended developments shall include a Travel Plan or a Travel* *Plan Statement in accordance with the following:* • *Those with more than 100 employees shall include a Travel Plan;* • *Those with approximately 25 – 99 employees shall include a Travel Plan Statement;* • *A Travel Plan or Travel Plan Statement may also be required in association for any proposed development that Cork City Council considers may have significant travel implications; this includes non-employment uses such as significant educational and residential development.*
Objective 5.16	*Design Approach for Local Streets:* *Both the construction of new local streets as well as works to the existing local network shall be in accordance with principles, approaches, and standards set out in Design Manual for Urban Roads and Streets.*
Objective 5.21	*Electric Vehicle Charging:* *Cork City Council will promote and facilitate the use of Electric Vehicles, including the provision of both on and off- street charging points.*
Objective 6.1	*Residential Strategic Objectives:* • *To encourage the development of sustainable residential neighbourhoods;*

	• *To provide a variety of sites for housing to meet the various needs of different sections of the population;* • *To continue to work with the Approved Housing Bodies and to actively engage with all key stakeholders in the provision of housing;* • *To continue to regenerate and maintain existing housing;* • *To encourage the use of derelict or underused land and buildings to assist in their regeneration;* • *To promote high standards of design, energy efficiency, estate layout and landscaping in all new housing developments;* • *To protect and, where necessary, enhance the amenities and the environment of existing residential areas.*
Objective 6.4	*Housing Provision:* *To support and facilitate the provision of housing through various sectors including private, voluntary and cooperative housing sectors. The Local Authority will continue to implement and operate a range of housing schemes and will continue to look at viable alternatives in the delivery of suitable accommodation for all.*
Objective 6.7	*Private Sector:* *The City Council will support the further expansion of the private owner occupier and private rented sectors to ensure the continuation of a range of housing choices in the city.*
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.*
Objective 6.9	*Housing Density:* *To promote suitable densities to meet the needs outlined in the Core Strategy as set out in Chapter 16 Development Management.*
Objective 7.1	*Inclusive Neighbourhoods Strategic Objectives:* • *To support provision of appropriate community facilities and services for all, young, the ageing population, able-bodied, disabled etc.* • *To support the provision by voluntary and state agencies of a wide range of community facilities.* • *To facilitate and support existing and proposed educational facilities.* • *To support dual use of community facilities.*

	• *To encourage the provision of suitably sized health care facilities located close to communities serving a sufficient catchment and accessible by public transport.* • *To ensure that social inclusion objectives are fully integrated into planning policy.* • *To support the particular needs of an area in terms of provision of childcare whether it is to be a crèche facility/pre-school/after-school etc.* • *To consider the child as a citizen of Cork City.* • *To work to ensure Cork City is a family friendly city.* • *To consider cultural diversity and ethnic minorities in planning for the needs of communities.* • *Continue to encourage active public participation in the Planning process.* • *To encourage socially inclusive and safe communities.* • *To consider the needs of groups with specific design/planning needs in the formation of policy documents.* • *To make Cork a sustained healthy city in which to live, work and visit.*
Objective 7.2	*Sustainable Neighbourhoods:* *To support the creation of sustainable neighbourhoods which allow access to services and facilities for all users and to foster a sense of community and a sense of place.*
Objective 7.4	*Social Inclusion:* *c. To support urban regeneration in areas across the city in order to enhance social cohesion.*
Objective 7.6	*Cork City as a Child-Friendly City:* *To promote Cork as a child-friendly city by considering the needs of children in terms of appropriate design when changes are proposed to the built environment.*
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 the given area and will:* *i) 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;* *ii) Consult with the Cork City Childcare Company and the HSE on planning applications where childcare facilities are proposed;* *iii) Require employers with more than 500 members of staff to provide childcare facilities as part of planning applications for significant new and extended development.*

Objective 7.15	*Neighbourhood Recreation & Amenity:* *a) To support and facilitate the development of outdoor and indoor recreational facilities to cater for all age-groups on suitable sites.*
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.*
Objective 10.1	*Landscape Strategic Objectives:* *To preserve and enhance Cork's landscape character and key landscape assets.* *To preserve and enhance Cork's views and prospects of special amenity value.*
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, (as set out in Table 10.1).*
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.*
Objective 11.1	*Recreational Infrastructure Strategic Objectives:* *It is the policy of Cork City Council:* • *To ensure that the City has an Open Space Strategy that is fit for purpose;* • *To ensure, in partnership with Cork County Council where appropriate, that Cork has a well-balanced provision of parks and larger open spaces to provide focal points for the city and its constituent neighbourhoods, with each park accommodating a range of activities suited to its context and purpose;* • *To ensure that all areas of the city have an appropriate provision of local public amenity space and facilities to enable people of all ages to recreate, meet, enjoy and contribute to improved health;* • *To ensure that play provision meets the needs of all age groups to best practice standards in terms of quantity, quality and accessibility;* • *To ensure that playing pitch and active sports infrastructure meets the needs of Cork's population;*

	• *To ensure that Cork has a supply of allotments to meet the needs of the community;* • *To ensure that the network of green infrastructure linkages are protected and enhanced to provide for movement and ecological networks, and that open spaces are designed to maximise their biodiversity so that people have access to nature close to where they live;* • *To ensure that streets within the city fulfil their potential as public space as well as movement corridors;* • *To ensure that the city's open space and recreational assets are managed effectively, efficiently and smartly so that the maximum benefit for all in the common good can be gained from them, given finite space within the city and the finite monetary resources available.*
Objective 11.7	*Public Open Space:* • *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;* and • *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;* • *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;* • *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;* • *Specific design outcomes should be framed in relation to the nature of spaces being created or enhanced (e.g. in relation to maintenance, nature exposure and connectivity, strategic landscape and social role).*
Objective 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 Buildings. Older children should have access to larger equipped play areas within 5 minutes walk of home.
Objective 12.3	*Sustainable Urban Drainage Systems:* *Planning applications shall include proposals for managing stormwater in accordance with details set out at www.irishsuds.com (unless superseded by policies and standards set out in the adopted "Storm Water Management Plan per Objective 12.2) and shall minimise and limit the extent of hard surfacing and paving.*
Objective 12.19	*External Lighting:* *To require that the design of external lighting minimises the incidence of light spillage or pollution on the surrounding environment and results is no adverse impact on residential amenities or distraction to road users.* *Development proposals that require lighting of outdoor areas shall be required to include details of external lighting scheme and proposed mitigation measures.*
Objective 14.5	*Tramore Road/Kinsale Road:* • *To develop a vision for the future of the area; including identifying a suitable mix of uses and appropriate quantum of development, taking into account the need to retain locations for light industry while facilitating suitable reuse of vacant and underutilised land;* • *To co-operate with Cork County Council in devising a co-ordinated approach to the future development of the adjoining areas on each side of the administrative boundary;* • *To take account of transport and access issues including potential impact on the adjoining national road and the provision of sustainable modes of transport.*
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.*
Objective 16.2	*Visual Impact Assessment:* *All significant planning applications shall submit an accompanying visual impact assessment.*
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.*
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.*
Objective 16.9	*Sustainable Residential Development:* *Residential developments shall be sustainable and create high quality places and spaces which:* *4 Deliver a quality of life which residents and visitors are entitled to expect in terms of amenity, safety and convenience;* *5 Provide adequate open space which are practical in terms of scale and layout and naturally supervised by the aspect of the dwellings it serves;* *6 Provide a good range of suitable facilities;* *7 Prioritise walking, cycling and public transport and minimise the need to use cars* *8 Present an attractive appearance with a distinct sense of place;* *9 Are easy to access and navigate;* *10 Promote the efficient use of land in terms of density and plot ratio;* *11 Promote social integration and provides accommodation for a diverse range of household types and age groups;* *12 Enhance and protect the built and natural heritage.*

Having regard to these objectives, the proposed development:

- Will comply with the Z0 4 Residential, Local Services and Institutional Uses zoning objective for the site, which supports the protection and provision of residential uses, local services, institutional uses, and civic uses, having regard to the Plan's employment policies.
- Will result in an increased population that will contribute to the realisation of a compact, sustainable city (Goal 1) and will assist in meeting the target 30,770 population for Cork (Table 2.1 of the Plan).
- Will result in a distinctive, landmark development that signals itself and Cork City as being an attractive, high-quality place to live and visit (Goal 2).
- Will deliver a new high-density, primarily residential neighbourhood hub along an existing as well as planned high-frequency public transport corridor that encourages, through its design and facility provision, cycling, walking and public transport use as the preferred modal choices (Goal 4).
- Will provide sustainability best practice in terms of design and construction to create spaces that deliver net positive impacts environmentally, socially and economically, including the use of SUDS, the planting of 505 no. new trees including native woodland species, and other planting throughout the scheme

of native and high value non-native species in line with the All-Ireland Pollinator Plan to support biodiversity on site (Goal 6).

- Will contribute to the achievement of Objective 5.1 of the Plan, in particular:

  - 5.1b, which seeks to reduce the percentage of persons who drive to work;

  - 5.1d. which seeks 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, and;

  - 5.1i which seeks to provide new local roads, streets, upgraded streets, and pathways where required to increase connectivity. A Traffic and Transport Assessment and Mobility Management Plan has been prepared (copies of which accompany the planning application) in line with Objective 5.2, and ensures that electric vehicles are catered for, in line with Objective 5.21, as well as disabled and motorcycle parking facilities, in line with Table 16 of the Plan which details the Plan's car parking standards.

- Is consistent with Objective 5.16 of the Plan in that the proposed development complies with DMURS (as is detailed in the DMURS Compliance Statement which accompanies the planning application).

- Is consistent with Objectives 5.2 and 5.21 of the Plan in that its design is informed by a Traffic and Transportation Assessment and Mobility Management Plan, and EV charging equipped parking has been included in the design.

- Is consistent with Objective 6.1 of the Plan, as it will encourage the development of sustainable residential neighbourhoods; encourage the use of derelict and underused land and buildings for regeneration purposes; will deliver high standards of design, energy efficiency, layout and landscaping; and will protect and enhance the amenities and the environment of existing residential areas.

- Responds to the demand for more residential units accommodating fewer people (paragraph 6.18 of the Plan) and provides a mix of apartment types in a high-density development, in accordance with Objectives 6.8 and 6.9 of the Plan.

- Will deliver additional private rented accommodation with a mix of typologies and sizes and at an appropriate density in line with Objectives 6.4, 6.7, 6.8 and 6.9 of the Plan.

- Will deliver a sustainable neighbourhood in an area identified as having potential for intensification of development and will thus contribute to the developing of a vision for the future of the area, consistent with Objectives 7.2, 14.5 and 16.9 of the Plan.

- Will deliver an inclusive neighbourhood that has accessible, appropriately sized accommodation with facilities, supports, amenities and recreational public open space on site in a development that has passive surveillance and permeability designed into it, consistent with Objectives 7.1, 7.7, 7.15, 7.18, 11.1, 11.5 and 11.7 of the Plan.

- Will support the urban regeneration of the Tramore Road/Kinsale Road area, consistent with Objectives 7.4 and 14.5 of the Plan.
- Will enhance the landscape assets of this gateway location in a key area along a key approach road (see Figure 17 below) by delivering a landmark tall building as part of a high-quality, distinctive development, consistent with Objectives 10.1, 10.2 and 10.3 of the Plan.
- Incorporates SUDS measures in accordance with Objective 12.3 of the Plan.
- Responds to Objective 12.19 of the Plan and details of the external lighting scheme and associated proposed mitigation measures have been prepared by EDC and submitted as part of the planning application.
- The proposed development has been subject to an Architectural Design Statement, which incorporates an Urban Design Statement, and a Landscape and Visual Impact Assessment (please refer to **Chapter 12** *Townscape and Visual* of this EIAR) in accordance with Objectives 16.1, 16.2 and 16.3 of the Plan. The statements and the drawings that accompany this application demonstrate how the proposed development has been designed in accordance with Objective 16.4 of the Plan.

According to the Cork City Development Plan 2015-2021, the following maximum car parking standards apply to the proposed development:

- Residential (1-2 bedroom) – 1 space + 0.25 visitors parking per unit
- Residential (3-3+ bedroom) – 2 spaces +0.25 visitors parking per unit
- Creche – 1 space per 6 students
- Café/restaurant – 1 space per 20m^2 net floor area
- Convenience Retail – 20 spaces

In addition, the current Development Plan requires that development providing 10 or more parking spaces must provide at least 1 parking space equipped with a functioning EV charging point and at least 10% of spaces must incorporate ducting to allow for future fit out of a charging point. Apartment developments should also provide 1 motorcycle parking space for every 10 car spaces, 5% of car parking spaces provided should be set aside for disabled car parking, and bicycle parking should be provided as follows:

- 0.5 per suburban apartment
- 1 per 100m^2 of convenience retail gross floor area
- 1 per 200m^2 of café/restaurant gross floor area
- 1 per 150m^2 of fitness centre/sports centre gross floor area
- 1 per 25 children enrolled at a creche

The proposed development involves the provision for a total of 209 no. car parking spaces and 1145 no. sheltered bicycle parking spaces to serve all of the proposed uses. The parking proposals align with more up-to-date policy, such as

the NPF and the Apartments Guidelines 2020, as well as Smarter Travel policy aimed at encouraging modal shift.

High levels of sustainable transport use at the proposed development site will be supported by the fact that the site is well located in terms of existing (Black Ash Park and Ride), existing bus services within 15 minutes walk, and future (Bus Connects) public transport access and that many local facilities (i.e. shops, schools, community facilities, etc.) are located nearby. In addition, the proposed development also provides a range of services on site including retail, a gym, café, health care and community facilities which reduce the need for longer distance travel.

The proposed development will provide 21 no. EV charging equipped spaces and 21 no. motorcycle parking bays, with disabled parking spaces also being provided in line with the Development Plan requirements.

Regarding residential density, paragraph 16.41 states that in suburban city areas, residential density greater than 50 units/ha will be appropriate at locations along bus routes and on larger development sites (>0.5ha) capable of generating and accommodating their own character. The subject site is consistent with both of these requirements.

It is acknowledged in paragraph 16.34 of the Cork City Development Plan (page 240) that tall buildings will be resisted in areas of special and/or significant character in the city, to include the suburban areas of the city (apart from locations specified in the Plan) and that the proposed development is not in one of those suburban locations specified in the Plan as being suitable for tall buildings.

However, it is also noted that paragraph 16.37 of the Plan states that "*tall buildings will normally be appropriate where they are accessible to a high quality public transport system which is in operation or proposed and programmed for implementation*".

In addition, paragraph 16.38 of the Plan states that:

> *Tall buildings should always be of high design quality to ensure that they fulfil their role as strategic landmarks. As well as having a positive impact on Cork's skyline and built environment, tall buildings can have negative impacts also. These impacts will need to be assessed in any planning application and can include: relationship to context; the effect on the whole existing environment; the relationship to transport infrastructure; the architectural quality of the building; sustainable design and construction; the credibility of the design; the contribution to public spaces and facilities; the effect on the local environment; the contribution made to the permeability of the environment and the provision of a high quality environment.*

It is further acknowledged that paragraph 16.43 of the Plan states that policies setting out the need for a mix of dwelling sizes are set out in paragraph 6.19 and Objective 6.8 Housing Mix, with Table 16.4 "Indicative Targets for Dwelling Size and Distribution" set out in **Table 6.4**.

Table 6.4 Dwelling Size Distribution Targets

Existing Household mix		Dwelling size distribution targets	
		Zones*	
Household size	**House size**	**Zone 1 and Zone 2 and all Apartment / Duplex schemes**	**Zone 3 (Suburbs) (mixed house / apartment schemes)**
1 Person	1 Bed	Max 15%	Max 20%
2 Person	2 Bed	Max 50%	Min 30%
3 Person	3 / 3+ Bed	Min 35%	Min 50%
4 Person			
5 Person			
Total		100%	100%

**Zones defined in Figure 16.1 and on Map 12* [sic] *of Volume 2*

The proposed development involves a dwelling size mix as follows:

1-bed	31%
2-bed	55%
3-bed	8%
4-bed	6%

However, Goal 1 of the Plan states that "*household size has declined in line with national trends"*, with acknowledgement of this decline being reiterated in para 2.12 of the Plan. Furthermore, it is noted that para 6.18 of the Plan states the following: "*The average number of persons in Cork City households is 2.45 persons. This is down from 2.61 in the 2006 Census. The demand is for more units accommodating fewer people. The provision of a range of housing types and sizes in the city will increase in importance as trends continue to show a decline in family housing and an increase in elderly and single person households. The predominant household size in Cork City is 2-person households which accounts for 32% of all household types, followed by 1-person households (29%) (Census 2011)."*

6.5.17 Draft Cork City Development Plan 2022-2028

Figure 6.2: Excerpt from Map 7 of the Cork City Draft Development Plan 2022-2028. Subject site generally outlined in red. (Annotated by Coakley O'Neill Town Planning Ltd., 2022).

The Cork City Development Plan review process is currently underway. A new Draft Development Plan was published in July 2021, with the period of public consultation on that Plan ending in early October. The Chief Executive's Report, containing proposed amendments to the Draft Plan, was published on 20th December 2021, with the Elected Members having until mid-March to consider the proposed amendments. Should a new Development Plan be adopted while this SHD application is under consideration by the Board, the application would be subject to compliance with the new Plan.

Under the Draft Cork City Development Plan 2022-2028 the subject site is zoned ZO 02 "New Residential Neighbourhoods" with the zoning objective being as follows:

> *To provide for new residential development in tandem with the provision of the necessary social and physical infrastructure.*

The proposed development site is also explicitly designated as a Tier 1 site, as per Figure 2.21 of the Draft Plan. Section 12.13 of the Draft Plan explains that Tier 1 lands are zoned, serviced lands, the development of which can easily be facilitated within the lifetime of the Plan.

The subject site is located just south of an existing Neighbourhood Centre at Tory Top Road and a proposed Neighbourhood Development Site on the site of the former Vita Cortex plant. The site of the former Vita Cortex plant is located approximately 230m north of the proposed development site.

Section 10.336 of the Draft Plan states the following with regard to the Tramore Road/Kinsale Road area:

The mixed industrial / commercial area centred on the Tramore Road and Kinsale Road has regeneration potential with higher density development, linked to the development of high quality public transport.

The proposed residential development, with its mix of uses, as well as the contemporaneous proposal for a primary care centre on the same site (subject to a separate planning application), is thus fully in line with the draft zoning objective for the site as well as the vision for high-density regeneration to occur in the area generally.

In addition, with regard to the site of the former Vita Cortex plant, paragraph 10.354 of the Draft Development Plan states that Neighbourhood Development Sites are considered to have the potential to provide local benefit to the local neighbourhood and act as catalyst developments. The proposed use of the former Vita Cortex site, according to the Draft Development Plan, is for mixed use development including residential and convenience retail. This is further evidence of the fact that the immediate area surrounding the subject site is in transition from a former pattern of light industrial land use towards that of a residential neighbourhood. Therefore, the proposed development can be understood as supporting this new paradigm.

The proposed development clearly aligns with and supports the following key strategic principles of the Strategic Vision of the Draft Cork City Development Plan 2022-2028:

- Compact growth
- A city of neighbourhoods and communities
- Sustainable and active travel
- A resilient city
- A healthy, inclusive and diverse city
- A connected city

The subject site is located in Inner Urban Suburb 5, “South Link Road Corridor”, an area identified for an uplift in existing residential density and building height from the current low intensity uses. According to Table 11.2 of the Draft Development Plan, this area is identified as being suitable for densities of 50-100 units/ha and heights of 3-4 storeys.

Section 4 “Building Heights Analysis” of the Cork City Urban Density, Building Height and Tall Building Study, a constituent part of the Draft Cork City Development Plan, sets out a methodological approach designed to determine areas considered to be most suitable for taller buildings, which can be summarised as follows:

- Access to services
- Proximity to community facilities

- Proximity to green and blue infrastructure
- Identified opportunity areas (including those identified under CMATS)
- Proximity to railway stations
- Proximity to high frequency bus services
- Proximity to "normal" bus service
- Proximity to the planned Light Rail Transit (LRT)

In acknowledging that a tension exists between physical characteristics and policy framework, Section 3 of the study states that the building height and density strategy prepared for Cork City has been developed and arrived at:

> *in the knowledge that some **informed judgements will also need to be made to reflect on local circumstances when considering suitability for different forms of development and proposed densities on a case by case basis.*** [emphasis added]

Section 7 "Density Done Well" of the study presents clear evidence that densities of between 52-274 units/ha are appropriate in Inner Urban Suburb locations. The planning history of Cork City outlined in Section 3 of this report above also highlights that higher residential densities well in excess of 100 units/ha are routinely considered acceptable in inner suburban and, indeed, outer suburban locations in the city.

Paragraph 11.42 of the Draft Development Plan states the following:

> *Whilst high density does not imply high rise, tall buildings can form part of a plan-led approach to facilitating regeneration opportunities and managing future growth, contributing to new homes and economic growth, particularly in order to make optimal use of the capacity of sites which are well-connected by public transport and have good access to services and amenities.*

The Building Height Guidelines (2018) require that local planning authorities identify in their development plans "areas where increased building height will be actively pursued for both redevelopment, regeneration and infill development" (SPPR 1) to secure NPF and RSES objectives.

With regard to the preparation of development plans, paragraph 2.11 states the following:

> *Locations with the potential for comprehensive urban development or redevelopment (e.g. brownfield former industrial districts, dockland locations, low density urban shopping centres etc) should be identified where, for example, a cluster of higher buildings can be accommodated as a new neighbourhood or urban district or precinct. Such areas, particularly those in excess of 2 ha (approx. 5 acres) in area, should be accompanied by appropriate master-planning exercises and local planning frameworks to deal with movement, public realm, design and other issues that are best addressed at a neighbourhood level rather than at an individual site scale.*

SPPR 1 of the Guidelines is explicit that, in their development plans, planning authorities "*shall not provide for blanket numerical limitations on building height*".

The tip of the city centre island and Docklands areas of the city are identified in the Draft Plan as being appropriate locations in Cork city for tall buildings. The rationale is that these areas are suitable for the highest forms of high-density development and that the areas inherently lack sensitivities. On this basis, the same can be said for the location of the proposed development – it is a large, vacant brownfield site located along a strategic public transport corridor, unencumbered by environmental or other sensitivities, such as protected views.

Section 2.40 of the Draft Development Plan states that while the national average household size is 2.75, Cork City has a smaller average household size of 2.63. Figure 2.17 of the Draft Plan illustrates that for the South West Suburbs of the city – where the site of the proposed development is located – the average household size is smaller again, being 2.55. It must be noted that this figure is based on 2016 Census data.

Section 2.41 of the Draft Plan acknowledges that average household size will continue to decrease over the lifetime of the Plan, and states that the Joint Cork Housing Strategy and Housing Need Demand Assessment strategy (HNDA), "*sets out a city-wide average household size target of 2.49 for the Plan period based on a changing average household size from 2022-2028*."

Section 3.35 of the Draft Development Plan states that Build-to-Rent schemes will not be subject to dwelling mix requirements.

Table 3.4 of the Draft Plan is based on Table 4-26 of the HNDA and indicates that, over the lifetime of the Plan, an additional 4,268 1-person and 5,060 2-person households will require homes, as well as 3,042 3-person households. However, section 5.4.4.4 of the HNDA states that, in respect of the South-West Suburbs, just c. 926 additional residential units are proposed over the lifetime of the Plan.

It is noted in the Chief Executive's Report published on 20th December 2021,that the Tramore Road/Kinsale Road is proposed to form part of the Airport City Gateway long-term strategic regeneration area, for which a Framework Plan may be prepared. It is also of note that the proposed development site is zoned as Z02, New Residential Neighbourhoods. This confirms that the area in the vicinity of the proposed development site is accepted as having significant capacity to contribute to the achievement of the ambitious population growth targets for Cork set out in the NPF and RSES. This also confirms that the proposed development site, being of sufficient scale, located along existing and planned sustainable transport routes, will be a catalyst for the future wider regeneration of the area, as envisaged in Variation no. 6 to the current City Development Plan. The site of the proposed development is also the largest available site in the area capable of accommodating significant residential use. Accordingly, the scale of residential development being proposed for the site can be considered appropriate.

Table 11.8 of the Draft Development Plan presents the dwelling size mix for housing developments in the city suburbs and is as follows:

Table 6.5: City Suburbs Dwelling Size Mix for Housing Developments standards as per the Draft Cork City Development Plan 2022-2028.

	Min	**Max**	**Target**
Studios/ PBSA {at LRT Stops/ Urban Centre/ HEI Campus Only)	0%	15%	10%
1 Bedroom	15%	25%	20%
2 Bedroom	25%	40%	34%
3 Bedroom	18%	28%	28%
4 Bedroom/ Larger	5%	15%	8%

The fact that the average household size in the South-West suburbs is smaller than the national average, as well as the fact that, as discussed in Section 6.12 of this report, Cork is seriously underperforming in respect of the delivery of new housing, and specifically apartments, provides the rationale for providing a higher proportion of 1- and 2-bedroom dwellings as part of the proposed development. As the planning history of Cork City also reveals, the dwelling mixes of schemes considered as acceptable are very much assessed and found to be so on a case-by-case basis, with a wide variety of dwelling mixes previously permitted, depending on the site location and specific scheme.

Table 11.11 of the Draft Plan states that the general provision for public open space for the proposed development is 10%. The proposed development provides for more than double this amount, with 23% of the site designed as public open space.

Para 11.115 of the Draft Plan requires all large development proposals to be accompanied by a phasing schedule, while para 11.116 of the Draft Plan states the following:

> *Developments over 100 residential units shall demonstrate that adequate provisions for specified physical and social infrastructural requirements, including roads, sewers, water mains, community, recreational and sporting facilities (indoor and outdoor), public transport, first and second level schools and shops are available at completion to support the development.*

As detailed in the Construction and Environmental Management Plan (CEMP) prepared by Arup, copies of which accompany this planning application, following an initial site development works phase of approx. 2-4 months in duration, the proposed development will be constructed over 4 no. phases. These phases are detailed in the CEMP as well as above, in Section 5.2 of this report.

In addition, a Social and Community Audit (SCA) has been prepared by Coakley O'Neill Town Planning, copies of which accompany the planning application. The SCA demonstrates that, with the exception of childcare for pre-school children, adequate social infrastructure is/ will be available in the area to serve the proposed development.

Para 11.224 of the Draft Plan stipulates that the layout of proposed new residential developments must be designed in accordance with the Design Manual for Urban Roads and Streets (DMURS). As outlined above in Section 6.14 of this report, a DMURS Compliance Statement has been prepared in respect of the proposed development and is contained in the Traffic and Transportation Assessment and Mobility Management Plan Statement for the proposed development prepared by Arup.

According to para 11.234 of the Draft Plan, the site of the proposed development is located in Zone 2. As a result, the following maximum car parking standards apply:

- Residential (1-2 bedroom) – 1 space per unit
- Residential (3-3+ bedroom) – 2 spaces per unit
- Creche – 1 space per 10 students
- No parking is required for cafés or restaurants
- Convenience Retail – 1 space per 50m2 of gross floor area

In addition, the Draft Plan requires that multi-unit residential developments should provide a minimum of 1 EV equipped parking space per 5 car spaces, that apartment developments should provide 1 motorcycle parking space for every 10 car spaces, and that 5% of car parking spaces provided should be set aside for disabled car parking.

According to the Draft Plan, sheltered bicycle parking should be provided at a rate of:

- 0.5 per suburban apartment
- 1 per 100m^2 of convenience retail gross floor area
- 1 per 200m^2 of café/restaurant gross floor area
- 1 Per 150m^2 of fitness centre/sports centre gross floor area
- 1 per 25 children enrolled at a creche

As explained previously in this report, the provision of car parking as part of the proposed development is below the maximum standards cited above, to encourage modal shift. This is in tandem with the provision of a significant number of sheltered bicycle parking spaces.

In the event that the Draft Plan is adopted during the assessment timeframe of this planning application, some of the key Objectives of the Draft Plan which would apply to the assessment of the proposed development are set out in Table 6.6 below. Please refer to the Planning Report and Statement of Consistency prepared by Coakley O'Neill Town Planning Ltd. which accompanies the planning application for elaboration of the below objectives.

Table 6.6: Key Objectives of the Draft Cork City Development Plan 2022-2028 relevant to the proposed development.

Draft Cork City Development Plan 2022-2028	Description of Objective
Strategic Objective 1	*Compact Liveable Growth*
Strategic Objective 2	*Delivering Homes and Communities*
Strategic Objective 3	*Transport and Mobility*
Strategic Objective 4	*Climate and Environment*
Strategic Objective 5	*Green & Blue Infrastructure, Open Space and Biodiversity*
Strategic Objective 9	*Placemaking and Managing Development*
Objective 2.2	*National Planning Framework Targets*
Objective 2.3	*National Development Plan Investment*
Objective 2.4	*Cork Metropolitan Area Strategic Plan*
Objective 2.6	*Strategic Objectives*
Objective 2.8	*The 15-Minute City*
Objective 2.9	*Low Carbon City*
Objective 2.10	*Mix of Uses*
Objective 2.11	*Design-Led City*
Objective 2.12	*Walkable Neighbourhoods*
Objective 2.13	*Cork City Neighbourhood Profile*
Objective 2.14	*Neighbourhood Mix*
Objective 2.15	*Neighbourhood Design*
Objective 2.17	*Strategic Regeneration*
Objective 2.18	*Underutilised Sites*
Objective 2.22	*Population Growth*
Objective 2.23	*Quality of Life*
Objective 2.24	*Implementing the Core Strategy*
Objective 2.25	*Compact Growth*
Objective 2.26	*Housing Supply*
Objective 2.35	*Monitoring Regeneration*
Objective 3.1	*Planning for Sustainable Neighbourhoods*
Objective 3.2	*A Diverse, Inclusive and Equal City*
Objective 3.3	*New Housing Supply*
Objective 3.4	*Compact Growth*
Objective 3.5	*Residential Density*
Objective 3.6	*Housing Mix*
Objective 3.7	*Build-to-Rent and Shared Accommodation*
Objective 3.10	*Housing and Community for Older People (Age Friendly Housing)*

Objective 3.14	*Community Infrastructure and Services*
Objective 3.17	*Community Hubs*
Objective 3.20	*Cork City as a Child-Friendly City*
Objective 3.21	*Childcare Facilities*
Objective 3.28	*Neighbourhood Recreation and Amenity*
Objective 3.30	*Social Inclusion*
Objective 3.31	*Inclusive Design*
Objective 3.34	*Safe and Secure City*
Objective 4.1	*CMATS*
Objective 4.3	*Strategic Location of New Development*
Objective 4.4	*Active Travel*
Objective 4.5	*Permeability*
Objective 5.1	*A Climate Resilient City*
Objective 5.2	*International and National Climate Change Legislation, Policy and Guidance*
Objective 5.10	*Energy Conservation and Efficiency*
Objective 5.11	*Energy Efficiency Considerations*
Objective 5.12	*Energy Use Management*
Objective 5.13	*Waste Management – Construction and Operation of Development*
Objective 5.14	*Adaptable Design*
Objective 5.15	*Lifetime Adaptable Housing*
Objective 5.16	*Renewable and Low Carbon Energy*
Objective 5.17	*Heat Pumps*
Objective 5.18	*Roof-Top Solar Photovoltaic/Thermal Panels*
Objective 5.22	*Electric Vehicles*
Objective 5.24	*Green and Blue Infrastructure*
Objective 6.5	*Trees & Urban Woodland*
Objective 6.11	*Landscape and Development*
Objective 6.18	*Public Open Space*
Objective 6.20	*Active Recreational Infrastructure*
Objective 6.22	*Natural Heritage and Biodiversity*
Objective 6.26	*Alien Invasive Species*
Objective 7.8	*Mobility Management Plans*
Objective 7.31	*Small Local Shops*
Objective 9.2	*Waste Water*
Objective 9.4	*Sustainable Urban Drainage Systems (SUDS)*
Objective 9.5	*Discharging*
Objective 9.6	*Storm Water*
Objective 9.11	*Waste Management*

Objective 9.14	*Renewable Energy*
Objective 9.18	*External Lighting*
Objective 11.1	*Sustainable Residential Development*
Objective 11.2	*Dwelling Size Mix*
Objective 11.3	*Housing Quality and Standards*
Objective 11.4	*Daylight Sunlight and Overshadowing (DSO)*

The proposed development aligns with the above Draft Development Plan Objectives in the following ways:

- Will comply with the Z0 2 New Residential Neighbourhoods zoning objective for the site.
- Will contribute towards achieving NPF population growth targets and the objective of compact growth.
- Will deliver much needed new homes in Cork City, that will strengthen, expand and diversify the existing community in the area.
- Will support a high degree of sustainable transport use.
- Will support national and local climate action objectives regarding renewable energy generation, passive solar heating and a high standard of build quality including insulation.
- Will provide excellent open space with active recreational infrastructure for all age groups, while at the same time enhancing biodiversity on site through the use of SUDS and through the planting of new native and high value non-native trees and other plant species in line with the All-Ireland Pollinator Plan.
- Will exhibit an example of best-in-class placemaking, with high-quality urban design and the inclusion of a landmark tall building.
- Will support the objectives of the Cork MASP.
- Aligns with the objectives of CMATS, particularly in terms of BusConnects and walking and cycling routes and infrastructure.
- Will support the realisation of a 15-minute neighbourhood in the Kinsale Road/Tramore Road area that is walkable and permeable, with a high degree of passive surveillance designed into the scheme.
- Will provide a mix of uses, facilities and amenities which will complement the residential use proposed.
- Through its design, will ensure a high quality of life for those living on site and nearby.
- Will provide a good choice of dwelling types and sizes. This, combined with the high-quality urban design will support a sense of inclusive, diverse community forming on site.
- Has the potential to instigate the wider regeneration of the Kinsale Road/Tramore Road area.
- Will bring back into use a large, underutilised, brownfield site.

- Provides for EV parking and will facilitate a high degree of cycling.
- Is supported by a Daylight and Sunlight and Overshadowing assessment which demonstrates that the proposed development will ensure high levels of access to daylight and sunlight for future residents, without excessively overshadowing neighbouring properties.

Section 6.5.18 below addresses matters where the proposed development could be considered not to align with the Objectives of both the current and draft development plans, which are addressed in detail in the Statement of Material Contravention prepared by Coakley O'Neill Town Planning Ltd, copies of which accompany the planning application.

6.5.18 Summary

Existing and permitted heights in Cork City include 34 storeys (Custom House Quay), 25 storeys (Jacob's Island), 24 storeys (Albert Quay), 17 storeys (Elysian; Railway Gardens), 15 storeys (Prism), 14 storeys (the Former Ford Distribution Site), and several developments comprising 10 storeys.

Permitted densities in Cork City include 530 units/ha (Albert Quay), 495 units/ha (Horgan's Quay), 454 units/ha (Railway Gardens), 247 units/ha (The Former Ford Distribution Site), 238 units/ha (Victoria Road), 220 units/ha (Crow's Nest), 183 units/ha (Lower Friar's Walk), and 137 units/ha (Jacob's Island).

Furthermore, the pattern of permitted dwelling mixes in high-density residential developments in Cork City demonstrates that the indicative dwelling mix targets contained in Table 16.4 of the Cork City Development Plan 2015-2021 are very much indicative only.

A Statement of Material Contravention has been prepared by Coakley O'Neill Town Planning in respect of the proposed development and is included as part of the planning application.

The key arguments of that statement are:

- the proposed development is of strategic importance, as it will contribute to an increased supply of residential accommodation in the context of a chronic housing shortage and thus support national and regional policy objectives to deliver more homes within the existing footprint of cities and in cities other than Dublin to achieve regional parity in the country.
- there are conflicting objectives or objectives not clearly stated in the Development Plan, insofar as they apply to the preferred locations for tall buildings in Cork.
- permission for the proposed development should be granted having regard to the RSES for the Southern Region (which includes the Cork MASP), guidelines under section 28, policy directives under section 29, the statutory obligations of any local authority in the area, and any relevant policy of the Government, the Minister or any Minister of the Government, and
- permission for the proposed development should be granted having regard to the pattern of development, and permissions granted, in the area since the

making of the development plan, including recent decisions of An Bord Pleanála.

In this context, it is our submission that the Board can grant planning permission for the proposed development in accordance with Section 9(6)(c) of the Planning and Development (Housing) and Residential Tenancies Act, 2016 (as amended), and Section 37(2)(b) of the Planning and Development Act, 2000 (as amended).

6.6 Conclusion

In conclusion, having regard to:

- the provisions of the National Planning Framework, which support the escalation of population growth in the existing built-up area of Cork City,
- the provisions of the Urban Development and Building Height Guidelines 2018, which advocate a presumption in favour of tall buildings in cities, subject to assessment against specific performance criteria,
- the provisions of the Regional Spatial and Economic Strategy for the Southern Region, which recognises the need to densify Cork City,
- the Design Manual for Urban Roads and Streets 2019,
- the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, and the accompanying Urban Design Manual – A Best Practice Guide 2009,
- the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2020,
- the site's strategic position in a prominent gateway location along a key approach to the city,
- the site's proximity to public transport,
- the significant potential of the proposed development, owing to its scale and nature, to initiate regeneration of the wider Tramore Road/Kinsale Road area,
- the nature, scale and design of the proposed development, and
- the pattern of existing and permitted development in the area,

it is considered that the proposed development would not seriously injure the residential or visual amenities of the area or of property in the vicinity, would respect and enhance the existing character of the area and would be acceptable in terms of pedestrian and traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

6.7 References

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7 Traffic and Transportation

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) considers and assesses the potential traffic and transport effects associated with the construction, operational and decommissioning phase of the proposed Strategic Housing Development with a total application site area of c. 3.39 ha, on lands located at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork. For the remainder of this chapter, the proposed strategic housing development shall be referred to as the ‘proposed development’.

The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N, and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.

All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments, and a 289sqm crèche with ancillary outdoor play area, a 547.5sqm community hub facility, a 550sqm gym, a 218sqm retail unit, and a 272sqm café at ground floor level. The proposed development will also include; 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; and 1,145 no. bicycle parking spaces provided within dedicated external and internal cycle stores and 21 no. motor cycle spaces. The proposed total gross floor area above ground is 60,833.7sqm.

The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces at all levels; internal roads and pathways; pedestrian access points; hard and soft landscaping; boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction; a cycle lane on Tramore Road; an upgrade to the existing access from Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

As outlined in **Chapter 1 -***Introduction,* the proposed development site is located about 2km to the south of Cork City Centre on the southwestern corner of Kinsale Road and Tramore Road as shown in **Figure 7.1.** The site is located to the north of the N40 Ring Road and west of the N27, which is a direct link into the City Centre. 2km is a walkable distance for future residents to avail of employment, shopping and services available within the City Centre, provided that good quality infrastructure is available to connect the two locations. The University College

Cork (UCC) located towards the northwest is also located within 2km of the development site.

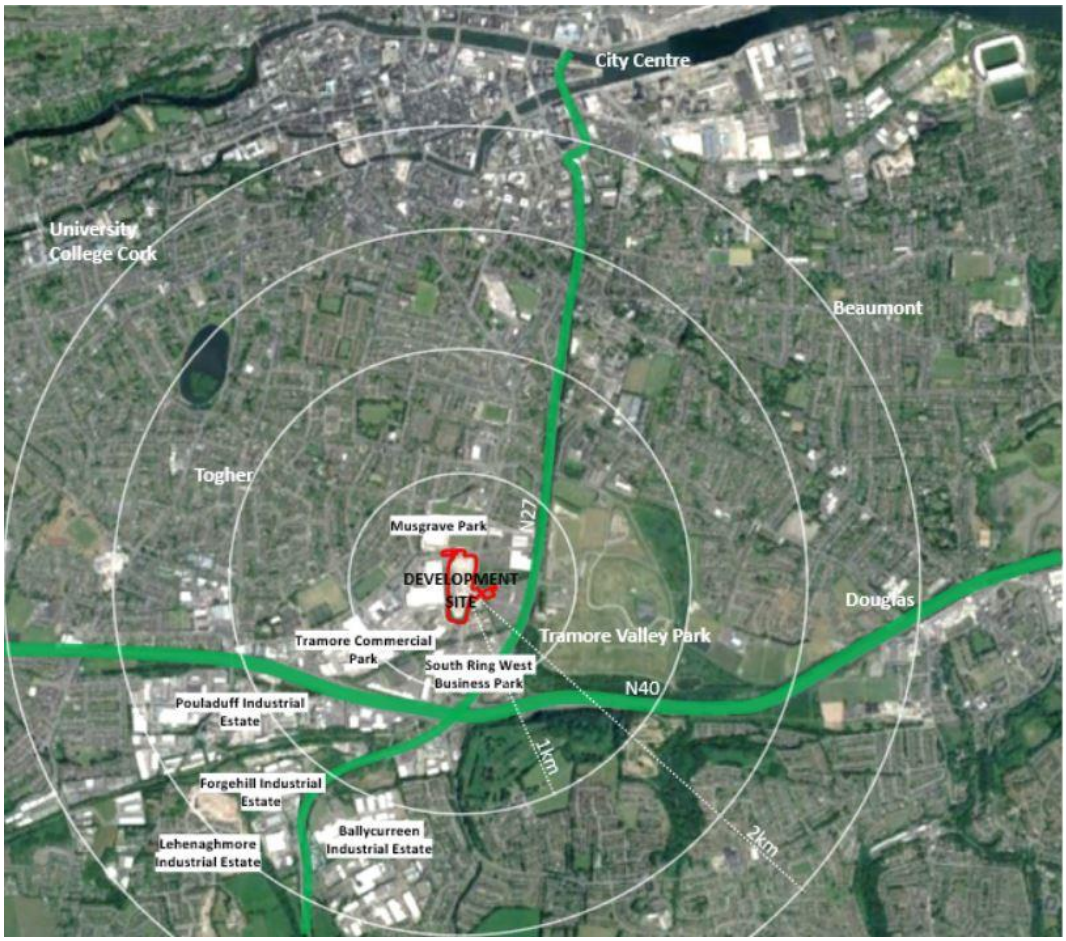


Figure 7.1: Site Location | not to scale

There are also several local shopping facilities in close proximity to the site including the Kinsale Road Retail Park to the northeast of the site and a variety of warehouse shops to the south of the site including a Centra, which is the closest convenience store to the site. A neighbourhood centre anchored by an Aldi is located approximately 600m to the north of the site, within walking distance.

There are many amenities within the vicinity of the site including the Tramore Valley Park, Musgrave Park and a variety of parks and sport fields within the residential areas to the west.

The site also lies next to the Black Ash Park and Ride which presents a great opportunity for residents to avail of bus services to the City Centre, Airport, and major employment areas like Ringaskiddy located further away.

Considering the proximity of employment, shopping and amenity facilities in close proximity, the proposed residential development is ideally located for a high percentage of short distance trips that can be by foot or bicycle.

The remainder of this Chapter is structured as follows:

- Section 7.2 - Assessment Methodology
- Section 7.3- Receiving Environment
- Section 7.4 Existing Traffic Volumes
- Section 7.7- Characteristics of the Proposed Development
- Section 7.8- Potential Effects:
  - Construction Phase
  - Operational Phase
  - Decommissioning Phase
- Section 7.9- Mitigation Measures and Monitoring
- Section 7.10- Cumulative Effects
- Section 7.11- Residual Effects

This chapter of the EIAR has been prepared in accordance with the following documents:

- Cork City Development Plan 2015-2021;
- Cork Metropolitan Area Transport Strategy;
- National Planning Framework (Ireland 2040); and
- Smarter Travel – a Sustainable Transport Future.

7.2 Assessment Methodology

7.2.1 Study Area

The core study area, considered as part of this assessment, includes the following roads/streets:

- Kinsale Road,
- Tramore Road,
- N27
- N40

The study area is considered to be the primary zone of influence with respect to the proposed development and most likely to be affected during the construction and operational phases of the proposed development.

No alterations are proposed to the surrounding road network as part of this project and as a result, the operational phase of the proposed development will have a non significant impact on the surrounding road network.

7.2.2 Guidance and Legislation

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, reducing unnecessary trips, to limit trip length and to connect residential nodes, places of work and education with one another via an integrated footpath, cycle and quality public transport network.

7.2.2.1 National Transport Policy

- **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.

- **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.

- **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, 2019, 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.

7.2.2.2 Regional and Local Transport Policy

- **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.

- **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 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.

- **Draft Cork City Development Plan (2022-2028)**

  Cork City Council has released the Draft Cork City Development Plan (2022 – 2028) for public comment recently. Similarly, to the current development plan, the new development plan includes a Transport and Mobility chapter which outlines strategic transport objectives.

  The Transport and Mobility Development Objectives of the Draft Development Plan includes amongst others the following:

  - Cork City Council is in support of the CMATS initiative and the Cork City Movement Strategy and will work together with other government bodies to deliver the strategy fully;
  - All new residential, employment and commercial development to be focussed in areas with good access to the planned high frequency public transport network;
  - To actively promote walking and cycling as efficient, healthy and environmentally friendly modes of transport by securing the development of a network of direct, comfortable, convenient and safe cycle routes and footpaths across the city; and
  - All new development, particularly alongside the possible routes for public transport improvements, shall include permeability for pedestrians and cyclists by creating direct links to adjacent roads and public transport networks.

  These objectives provide a good framework for new developments. The proposed development at the corner of Kinsale Road and Tramore Road relates very well to these objectives and therefore are in support of it.

- **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.

  In terms of land use, some of the priorities of CMATS include the following:

  - Targeting higher development densities in areas where opportunities exist for sustainable transport provision and in a manner that better aligns the provision of transport with demand
  - Availing of existing transportation infrastructure, nearby amenities and facilities to deliver a critical mass of growth in population and employment which can support the transition and sequencing of investment to higher capacity public transport infrastructure and services; and
  - The provision and design of new development in locations, layouts and at densities which prioritise walking and cycling and enable the efficient provision of public transport services.

  These land use priorities are supported, and we believe it can be achieved in the delivery of the proposed development.

  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;
  - Provision of a greenway following Tramore River to connect to Tramore Valley Park. This route could potentially be linked to the development site via proposed pedestrian and cycle lanes along Kinsale Road;
  - The Frankfield to Fairhill Bus Connects route (also referred to as the Airport to City Centre route and Route 9) is proposed along Kinsale Road and therefore directly links the development into the future public transport network;
  - A primary cycle route with footpaths along Kinsale Road which connects the development into the strategic cycle and pedestrian network and provides a direct link to Cork City Centre and other service nodes within the City;
  - Nearby BusConnect services are proposed on the N27 including the Kent Station to Airport, the Carrigaline to City Centre and the Ringaskiddy to City Centre via Passage West;

- 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.

These initiatives are supported and will improve the overall accessibility of the development site and its connectivity to the City Centre and other service and employment centres in and around Cork.

The CMATS proposals in the development site vicinity are discussed in further detail later in this assessment.

- **Cork Metropolitan Area Cycle Network Plan**

The Cork Metropolitan Area Cycle Network Plan 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.

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.

7.2.3 Impact Assessment Methodology

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 Baseline Environment

7.3.1 Available Road Network

The road network within the vicinity of the proposed development is shown in **Figure 7.2** below.

The national road network includes the N40 / South Ring Road which is a dual carriageway connecting the N22 from Killarney to the N28 to Carrigaline and the N25 to Waterford. The N40 can be characterised as being a key national road providing a southern by-pass of Cork city. Access and egress from the N40 to the proposed site can be made from the Kinsale Road Interchange (Junction 6), which is a roundabout providing access on and off the N40 via ramps.

The N27 / South Link Road is a north south dual carriageway which provides access from the N40 to Cork city centre and the N8. Access to this road can also be gained by Junction 6 as well as Mick Barry Road.

The local road network includes a number of urban and local connector roads and residential roads. Kinsale Road is an urban connector road which from a traffic point of view provides access from the south to the city centre. This route therefore has a mobility function but has also adopted the function of providing access to local connector roads and to provide direct access to adjacent developments. The road therefore has also an accessibility function and due to both the high level of access and mobility, there is a lot of activity along this route. The route could therefore also be classified as an activity spine which attracts business to settle next to it and caters for all modes of transport. Adding a high-density residential development next to it will enhance its function as an activity spine by providing more footfall along it which will likely increase business turnover within the vicinity. The improvement of pedestrian, cycle and public transport infrastructure along the route and also providing more priority to

these modes of transport is expected to have a positive impact on this road in creating a more vibrant environment.

Tramore Road is a single carriageway local connector that serves the industrial development to the south of it and the residential development to the north of it. This road connects to Kinsale Road and the junction is signal controlled. Right turning lanes are available at the approaches to the junction. This road is quite narrow and does not leave much room for pedestrians and cyclists. A footpath is provided only on its northern boundary and an on-street cycle lane on its southern boundary, which only starts beyond the development site. The Tramore Road also provides access to the South Ring Road via the Togher Interchange (Junction 5) with the Kinsale Road and provides access to residential housing estates.

Mick Barry Road is a single carriageway local connector which connects the Kinsale Road to the N27. This road serves the Black Ash Park and Ride facility serving Cork city centre. There is an existing pedestrian link adjacent to this road which links the Kinsale Road to the Black Ash Park and Ride, however there are no cyclist facilities provided along this road, making it difficult for cyclist to access the Park and Ride facility. It is understood that funding has been improved in principle for improved pedestrian and cyclist infrastructure that will link Kinsale Road to Tramore Valley Park. It is assumed that this infrastructure will further improve pedestrian connectivity with the Park and Ride Facility along its route and also provide a cyclist route to same.

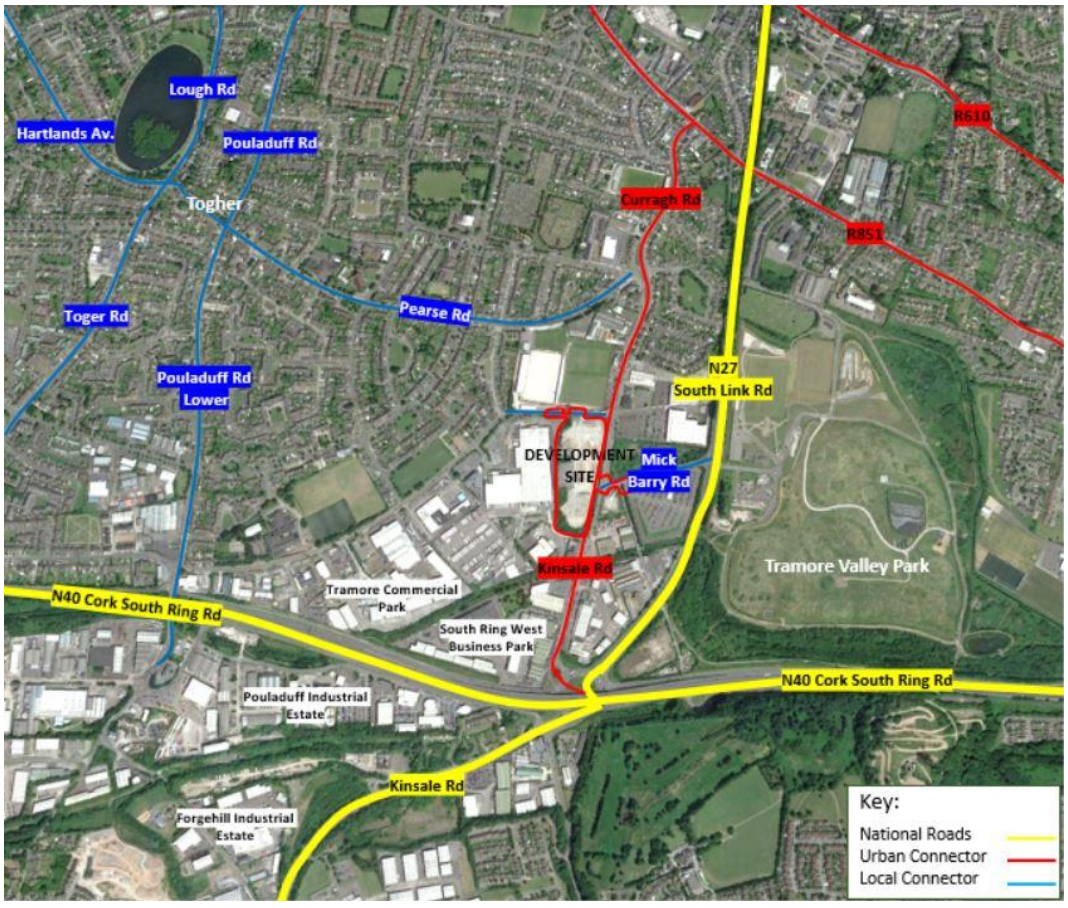


Figure 7.2: Existing Road Network | not to scale

7.3.2 Pedestrian Environment Existing Facilities

Figure 7.3 shows the existing pedestrian environment within the vicinity of the development. Footpaths are provided on all surrounding roads; however, it is only available on one side along Kinsale Road and Tramore Road. Pedestrian crossings are provided at Tramore Road / Kinsale Road junction as well as Kinsale Road / Mick Barry Road junction. Pedestrian footpaths and crossings are provided on Kinsale Road at the underpass at the Kinsale Road Interchange on the N40.

The Tramore River walking route links the Togher Community Park to the west to Kinsale Road. This route is within a greenbelt and continues underneath motorways and roads via underpasses. Unfortunately, the walking route does not connect with Tramore Valley Park. The section of the route along the River between Kinsale Road and Tramore Valley Park is prone to flooding and the headroom under the N27 is limited.

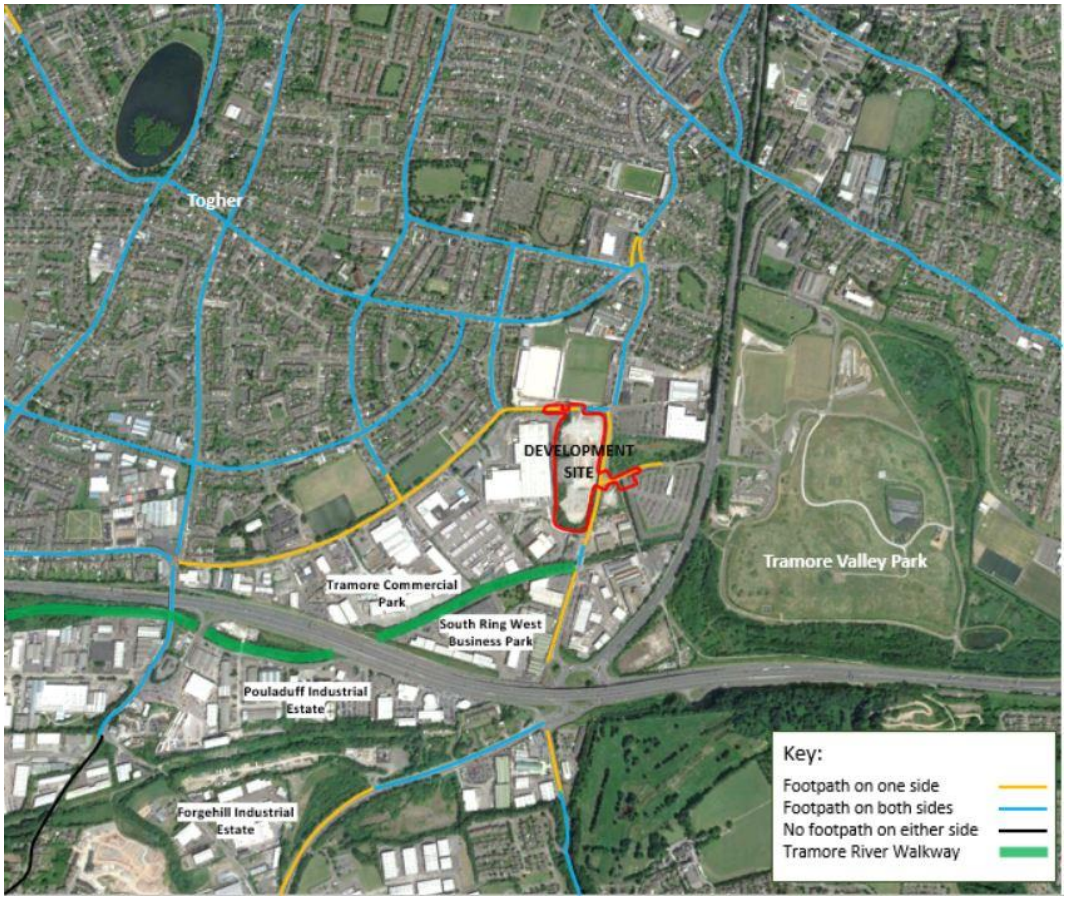


Figure 7.3: Existing Pedestrian Environment | not to scale

Figure 7.4 shows the footpath on Kinsale Road adjacent to the development site currently. Although a continuous footpath is available the existing footpath is narrow and the footpath is completely barriered from the development site by the palisade fence and the vegetation, leaving a harsh environment for pedestrian next to fast moving traffic.

Figure 7.4: View on Kinsale Road from junction with Mick Barry Road towards the south

Figure 7.5 shows that there is a footpath on the northern side of Kinsale Road. The footpath on the southern side is only available up to the site entrance and does not continue on the other side of the entrance.

Figure 7.5: View on Tramore Road from junction with Kinsale Road towards the west

Figure 7.6: shows that there is an existing footpath along the south side of Mick Barry Road that extends from its junction with Kinsale Road as far as the a the Park and Ride Facility.

Figure 7.6: View on Mick Barry Road from Kinsale Road junction to the east

Figure 7.7 shows the footpath available that will link the Centra convenience store to the development site. The pedestrian path is narrow, and pedestrians are required to cross wide car access roads. Since this is the nearest convenience store to the development site, it is recommended that the pedestrian linkage between the site and the shopping centre is upgraded to a higher quality facility.

Figure 7.7: View to Centra Shop on Kinsale Road towards the south

There is more than 42,000 people living within a 40-minute walk from the proposed development as illustrated in **Figure 7.8**. This catchment reaches as far as the city centre to the north, and Grange Road to the south. All the local shopping opportunities (including Aldi), Tramore Valley Park, Musgrave Park and the Black Ash Park and Ride are within 10 minutes walking distance. Both the City Centre and the University College Cork is within a 40-minute walk of the development site.

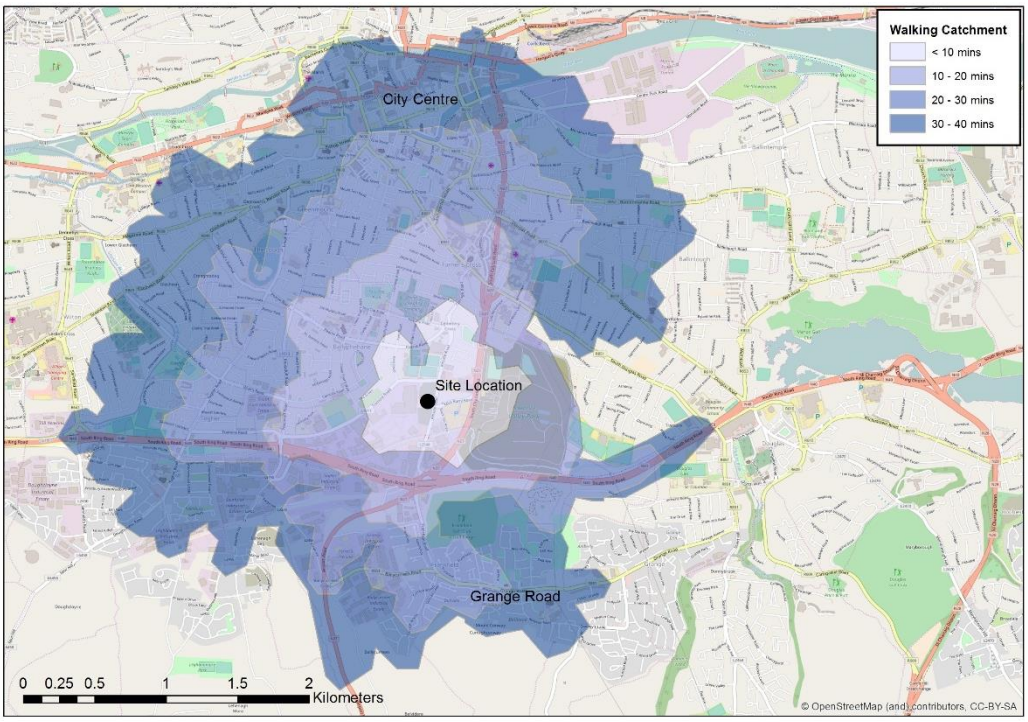


Figure 7.8: Pedestrian Accessibility | not to scale

7.3.3 Cycling Environment Existing Facilities

The existing cycle route network is shown in **Figure 7.9**. Cycle lanes are available currently on some of the major routes within the vicinity of the development including Kinsale Road, Tramore Road and the N27 (Airport Road) south of the junction with the N40. The current cycle network therefore mainly accommodates for a cycle desire line between the Airport and the City Centre. Although the cycle lanes are provided on the N27 to the south of the N40, the route continues along Kinsale Road, rather than the N27. Kinsale Road more suitable for cycling as vehicle speeds on this route is lower and the route is an activity spine, providing access to various land uses including shopping and services.

This route is however busy with high vehicular volumes. There are however cycle lanes available to provide some protection to cyclists using the route. In many locations the cycle route discontinues, forcing cyclists to either use the vehicular lane or footpath, which is not ideal.

There is also a westbound cycle lane on Tramore Street. This cycle lane only starts beyond the boundary of the development site.

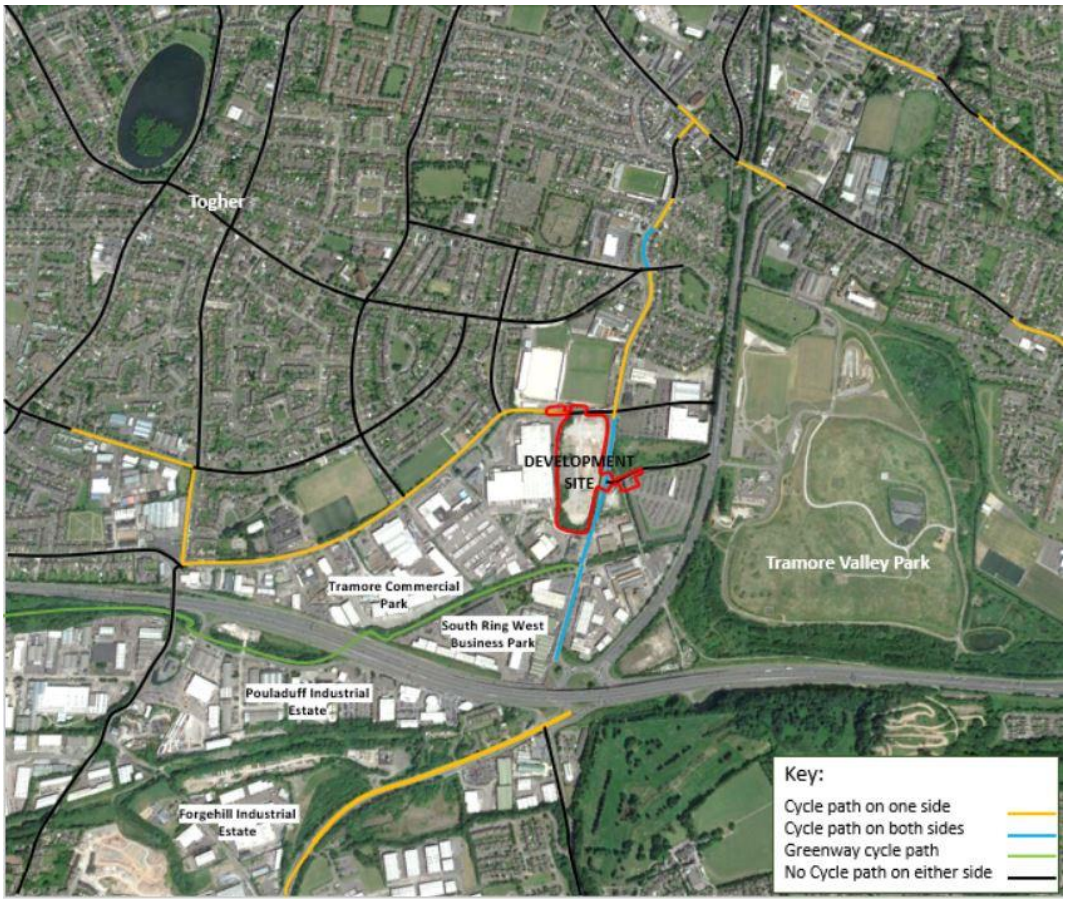


Figure 7.9: Existing Cycle Route Network | not to scale

The available cycle lanes are currently in a state of disrepair as shown in **Figure 7.10**. The current routes are also narrow and directly adjacent to the traffic lanes, making them quite dangerous to use especially if the footpath gets crowded.

Figure 7.10: Current state of cycle lanes on Kinsale Road

The overall experience of a cyclist using these routes are that the network is disjointed and difficult to use especially for inexperienced cyclists or those not familiar with the environment. Cyclists are often forced to join fast moving traffic lanes and must crossroads in search of a continuous route.

Figure 7.11 shows the 10 and 20-minute catchment area from the development site. The 10-minute catchment area reaches to the City Centre to the north and the UCC Campus to the northeast, Tramore Valley Park to the east, Togher to the wet and all the business and industrial parks to the south. The 20-minute cycle catchment includes the majority of Cork City. To the south this catchment reaches Cork Airport. There is more than 113,000 people living within this catchment area.

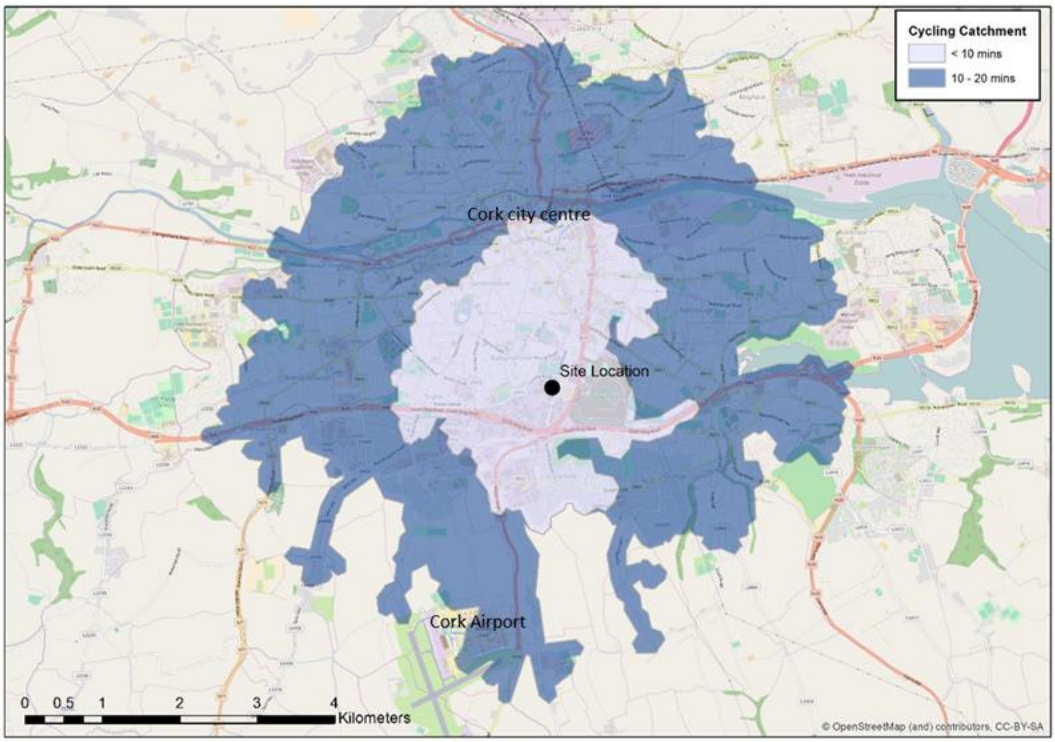


Figure 7.11: Cycling Catchment | not to scale

7.3.4 Proposed Cork Cycle Network

Significant improvement of the cycle route network is proposed for Cork City by CMATS. The proposed cycle route network used the Cork Metropolitan Cycle Network Plan 2017 as a starting point, by retaining most of the routes planned, although some additional routes were added. The proposed cycle network includes primary, secondary and greenway cycle routes.

Primary cycle routes cater for expected high cycle demand and these routes are direct and connects major destinations to one another.

Secondary cycle routes supplements primary routes and provides connections from residential and areas of employment to the primary network. These routes may be full cycle lanes, off road routes, shared bus lanes, or traffic calmed areas and cycle demand on these routes is expected to be lower.

Greenways are traffic free or low trafficked routes and comprise of routes through parks, routes next to Rivers or repurposed rail tracks.

Figure 7.12 shows the proposed cycle route network proposed within the vicinity of the proposed development.

A primary cycle route is proposed along Kinsale Road. This route forms part of a strategic route linking Cork Airport to the south, via cycle routes on the N27 to the City Centre via Kinsale Road, Douglas Road and a variety of other routes. This route would be a great asset for the proposed development due to its strategic connection it provided to both the Airport and the City Centre. It however also

provides access via the wider proposed primary network to University College Cork, various hospitals, schools, shopping areas and other services.

A network of greenways is proposed to the south of the proposed development to take advantage of the natural open areas and available park lands. Two east west greenways are proposed within the vicinity of the site including the Tramore River Walk which follows the river and provides a direct link into Tramore Valley Park, and a second greenway to the south of the N40 which follows the alignment of an abandoned railway track. A north south greenway is also proposed along the eastern boundary of Tramore Valley Park which also provides linkage between the two east west greenways.

Connecting the Tramore River Walkway Greenway to Tramore Valley Park via a route underneath the N27 is challenging and due to the current low overhead and flooding issues.

As part of the Grange Road to Tramore Valley Park Road Improvement Scheme, an overbridge connection over the South Link Road (N40) for the Tramore Valley Greenway is now underway.

The greenways and Tramore Valley Park will provide important amenity facilities to the future residents of the proposed development, and it would be vital to ensure that the primary cycle route on Kinsale Road is connected to these facilities and that there are no barriers to gain access to these facilities by future pedestrians and cyclists. It is understood that funding has been approved in principle for a link from Mick Barry Road to Tramore Valley Park.

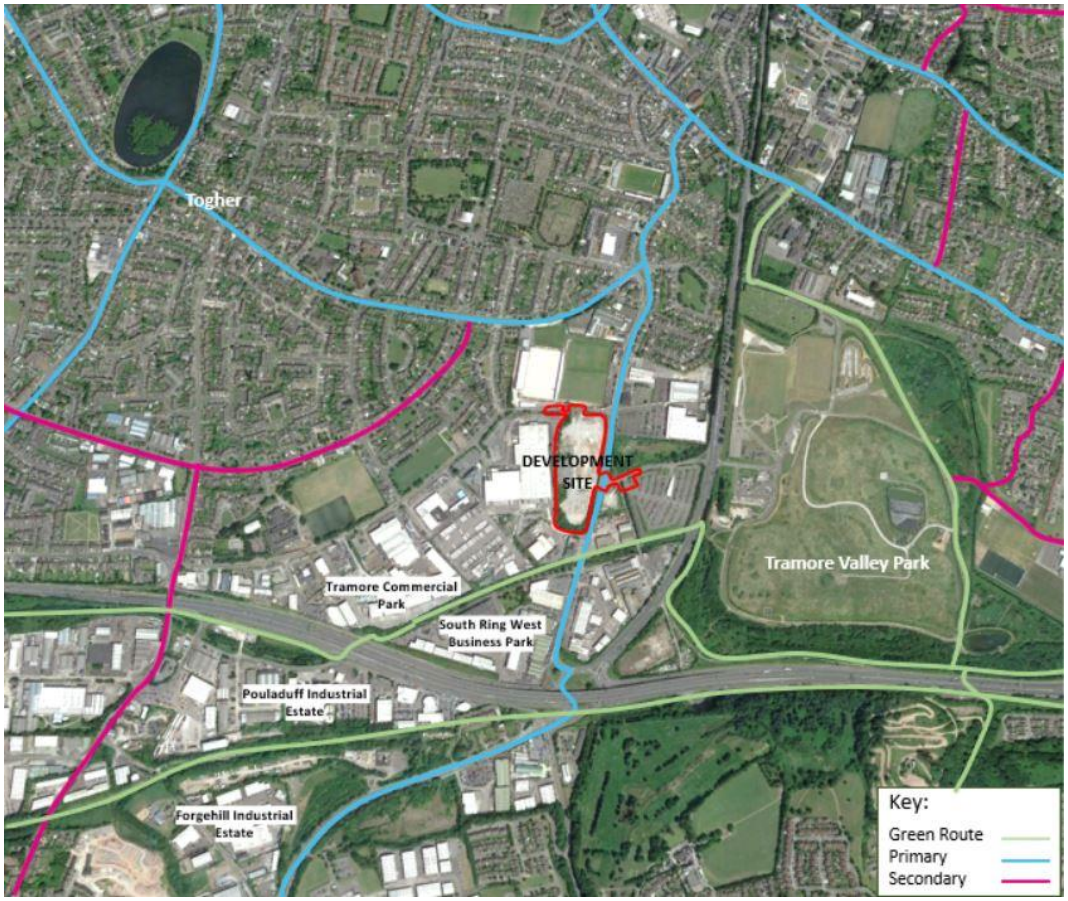


Figure 7.12: Proposed Cycle Network by CMATS within the vicinity of the site | not to scale

As complementary measures to increase the future uptake in cycling, CMATS proposes that the Cork Bikes and similar bicycle sharing schemes are expanded, where demand is sufficient. The proposed development is expected to increase demand for cycling and justifies the consideration of providing facilities within the development.

In addition, CMATS supports cycle parking to be incorporated in new development schemes. As will be outlined in the next chapter of this report, cycle parking is provided as part of the scheme in accordance with local development plan standards and the parking proposed are in secure locations. Other measures to promote parking is also discussed within this report.

7.3.5 Public Transport Existing environment

The proposed development is located to the south of Cork city centre. There are no bus services currently directly serving the development site, however there are a number of bus routes in close proximity to the proposed site. They are presented in **Table 7.2** and **Figure 7.13**.

Table 7.2: Bus Routes

Route No.	Route Name	Frequency during AM peak (08:00-09:00)		AM peak Capacity	Frequency during PM peak (17:15-18:15)		PM peak Capacity
213	Patrick Street – Black Ash Park via South Mall	10 mins	7	630	5-10 mins	7	630
203	Lehenaghmore – City Centre – Farranree	20-25 mins	3	270	20 mins	4	360
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	60 mins	1	90	60 mins	1	90
206	Grange Dunvale – Grand Parade/South Mall	30 mins	5	450	30 mins	5	450
219	Cork Institute of Technology – Mahon Point/City Gate	60 mins	1	90	60 mins	1	90
209A	St. Patrick Street - Ballyphehane	60 mins	1	90	60 mins	1	90

It takes less than 5 minutes to walk from the Black Ash Park and Ride on Mick Barry Road to the development. There is an existing footpath that connects the bus stop to the development site and at the junction of Mick Barry Road to Kinsale Road traffic signals are available which provides pedestrian phasing in the signal cycle.

It takes less than 10 minutes to walk from the bus stop on Tramore Road and less than 20 minutes from Evergreen Road and South Douglas Road to the proposed development.

Figure7.13: Available Bus Routes | not to scale

Figure 7.14 presents the one-hour public transport catchment. The figure shows that it possible to travel by public transport anywhere in Cork City and even to locations beyond like Carrigaline and Brooklodge. However, most of the journeys will include one or two transfers from one bus route to another.

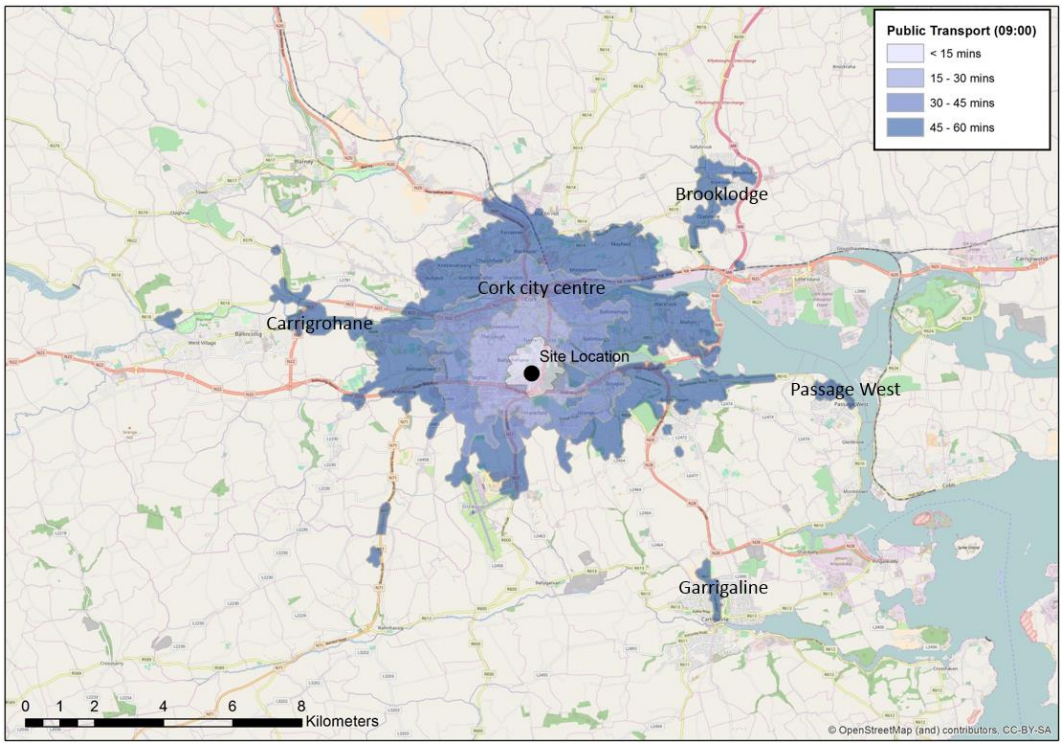


Figure 7.14: Public Transport Catchment (arrival at 09:00) | not to scale

7.3.6 Bus Connects Proposals

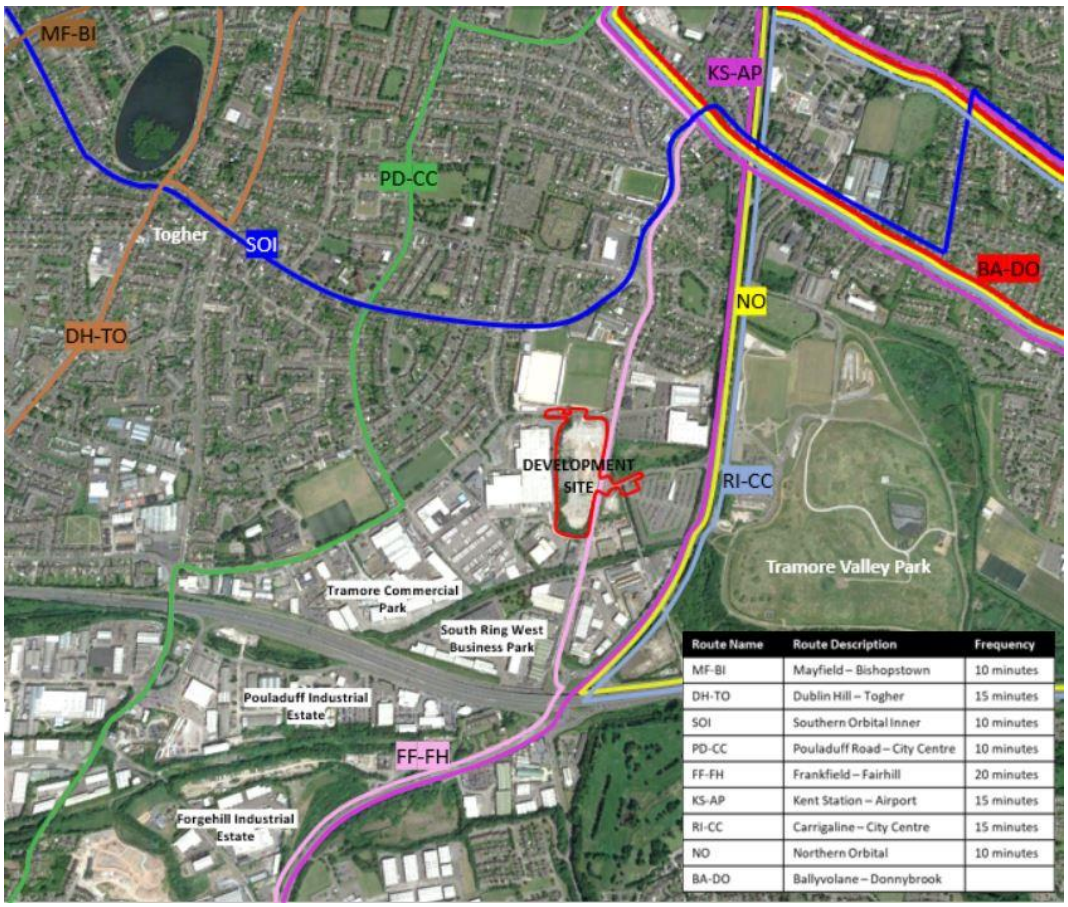
CMATS proposes to enhance the Cork City Bus network by implementing the Bus Connects Network. The Bus Connects programme will include an increase in cross city, and radial bus routes, more bus priority, the incorporation of new bus vehicles, higher bus frequency and improved interchange between bus routes and interchange with railway services.

The proposed Bus Connects infrastructure within the vicinity of the development site is shown in **Figure 7.15**.

There are three proposed bus routes within close proximity of the development site. The Frankfield to Fairhill Bus Connects route, which is north south route through the City Centre, following along Kinsale Road and will directly serve the proposed development. Towards the north, this route will run parallel with a variety of other Bus Connects services linking into the City Centre and the opportunity will be created for interchange to other services. Towards the south the route connects to the Kent Station to Airport route and opportunity to interchange is provided.

The Carrigaline and Ringaskiddy to City Centre Bus Connects routes are also close to the development site by following the N27. A pedestrian link was recently provided on the south side of Mick Barry Road linking Kinsale Road junction to the Black Ash Park and Ride. This link is expected to be further improved once a Cork City Council funding approved project to provide enhanced pedestrian facilities along Mick Barry Road to link Tramore Valley Park is provided.

BusConnect routes are indicative, and specialists have been appointed by the NTA to carry out route determination and finalise the routes. At this point in time the location of bus stops along the routes have not been determined as well as how the proposed bus routes within the vicinity will link to the Black Ash Park and Ride. The development of these plans will occur during 2021 and 2022 and stakeholders such as major land overs will be consulted during this process.



Route Name	Route Description	Frequency
MF-BI	Mayfield – Bishopstown	10 minutes
DH-TO	Dublin Hill – Togher	15 minutes
SOI	Southern Orbital Inner	10 minutes
PD-CC	Pouladuff Road – City Centre	10 minutes
FF-FH	Frankfield – Fairhill	20 minutes
KS-AP	Kent Station – Airport	15 minutes
RI-CC	Carrigaline – City Centre	15 minutes
NO	Northern Orbital	10 minutes
BA-DO	Ballyvolane – Donnybrook	

Figure 7.15: Proposed Bus Connects Network by CMATS | not to scale

7.4 Existing Traffic Volumes

Due to Covid 19 travel restrictions, it was not possible to carry out traffic counts within the vicinity of the development. This issue was discussed with the Cork City Council Roads and Transport Department, and it was agreed that 2019 traffic counts, supplemented by 2017 traffic counts can be used to create a baseline and future year traffic scenarios for the proposed development.

The 2017 traffic counts were carried out by Tracsis plc Traffic and Data Services and was carried out on 12 February 2017. The AM peak hour was 08:00 to 09:00 and the PM peak hour 17:15 to 18:15. The traffic counts included all vehicle classes.

The 2019 traffic counts were carried out by NDC on 19 April 2019. The AM and PM peaks were similar to that of the 2017 count.

The location of the traffic counts that was carried out is shown in **Figure 7.16** Traffic counts were carried out at five locations in 2017 and at four locations in 2019. The traffic count sets overlap at four of the locations and therefore the traffic volumes for the two data sets can be compared to one another.

Figure 7.162: Traffic Count Locations | not to scale

7.4.1 2017 & 2019 Traffic Count Volume Comparison

Table 7.3 shows a comparison of the AM peak traffic volumes of the 2017 and 2019 traffic data sets. Considering all traffic on the road network within the vicinity of the proposed development, the 2017 and 2019 traffic volumes only differ with a margin of 2%, which is minor. There are pronounced differences on some of the movements on the roads for instance on the N27 Northbound at Junction 1where traffic volumes reduced by 18% or at the N27 Southbound at Junction 1 where traffic has increased by 14%.

The proposed development is however expected to have the most impact on Kinsale Road. Considering the difference in traffic volumes on this road it is generally below 10% except for the Kinsale Road southbound at Junction 2.

The most pronounced difference in percentage is at Junction 3 on the Mick Barry Westbound approach, where traffic has increased by 83%. However, this change is from a very low base of 18 vehicles and therefore this difference is insignificant considering traffic overall.

It is therefore concluded that the two sets of data are compatible with each other, and that one set can be used to complete the other. To establish a 2021 base year, it is proposed that the 2019 counts are taken as the base and that the 2017 Junction 5 (Kinsale Road / Tramore Road) traffic is added to it to complete the network. To ensure a robust analysis, it is recommended that a TII growth rate is applied to the 2017 traffic volumes to achieve a more robust baseline.

Table 7.3: AM peak 2017 & 2019 Traffic Volume Comparison

Junction	Approach	2017	2019	Variation	%
1	N40 Westbound	1,965	1,929	-36	-2%
	N40 Eastbound	1,386	1,388	2	0%
	N27 Northbound	961	784	-177	-18%
	Kinsale Road Southbound	220	239	19	9%
	N27 Southbound	1,779	2,025	246	14%
2	Kinsale Road Southbound	267	235	-32	-12%
	Kinsale Road Northbound	942	893	49	-5%
3	Kinsale Road Southbound	508	529	21	4%
	Kinsale Road Northbound	869	825	-44	-5%
	Mick Barry Road Westbound	18	33	15	83%
4	N27 Southbound	1,627	1,848	221	14%
	N27 Northbound	1,591	1,569	-22	-1%
	Mick Barry Road Eastbound	254	297	43	17%
Total		**12,387**	**12,594**	**207**	**2%**

Table 7.4 shows a comparison of the PM peak traffic flows. Overall, there is only a difference of -3% on the road network. However, there are significant differences on most of the junction approaches, the most severe on Mick Barry Road, where there is a significant increase in traffic in the 2019 data set. The majority of differences on Kinsale Road where the development will have the most impact is increases in traffic in 2019. Therefore, it is recommended that the 2019 traffic data set is used as the base and supplemented by 2017 traffic.

To establish a 2021 base year, it is proposed that the 2019 counts are taken as the base and that the 2017 Junction 5 (Kinsale Road / Tramore Road) traffic is added to it to complete the network. To ensure a robust analysis, it is recommended that a TII growth rate is applied to the 2017 traffic volumes to achieve a more robust baseline.

Table 7.4: PM peak 2017 & 2019 Traffic Volume Comparison

Junction	Approach	2017	2019	Variation	%
1	N40 Westbound	1,965	1,407	-558	-28%
	N40 Eastbound	1,386	1,059	-327	-24%
	N27 Northbound	961	290	-671	-70%
	Kinsale Road Southbound	220	424	204	93%
	N27 Southbound	1,779	2,659	880	49%
2	Kinsale Road Southbound	267	337	70	26%
	Kinsale Road Northbound	942	592	-350	-37%
3	Kinsale Road Southbound	508	762	254	50%
	Kinsale Road Northbound	869	757	-112	-13%
	Mick Barry Road Westbound	18	47	29	161%
4	N27 Southbound	1,627	1,952	325	20%
	N27 Northbound	1,591	1,010	-581	-37%
	Mick Barry Road Eastbound	254	679	425	167%
Total		12,387	11,975	-412	-3%

7.4.2 2021 Base Year

The 2021 base year traffic volumes for the local road network within the vicinity of the proposed development is shown in **Figure 7.17** and **Figure 7.18.** To arrive at the 2021 base year annual growth rates provided in *Table 6.1 Link Based Growth Rates: Metropolitan Area Annual Growth Rates of Transport for Ireland (TII)'s Projected Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, May 2019* was used. The growth rates applied were the central growth rates as outlined in **Table 7.5** below:

Table 7.5 Annual Growth Rates Applied

Metropolitan area 2016 – 2030	Light Vehicles	Heavy Vehicles
Cork	1.0169	1.0294

7.4.2.1 2021 AM Peak Hour Traffic

The 2021 AM peak traffic is shown in **Figure 7.17**. The national roads within the vicinity (N40 and N27) carries high volumes of traffic between 1,500 and to over

2,000 vehicles per hour. Kinsale Road is also a busy road with 800 to 900 vehicles northbound towards the City Centre during the AM peak and over 500 southbound. The left turning movement onto Mick Barry Road is high, at almost 300 vehicles. Traffic flow on this road is more than 200 vehicles per direction, indicating that there is some road capacity on this road. Tramore Road is also a busy road with 400 – 500 vehicles an hour in each direction.

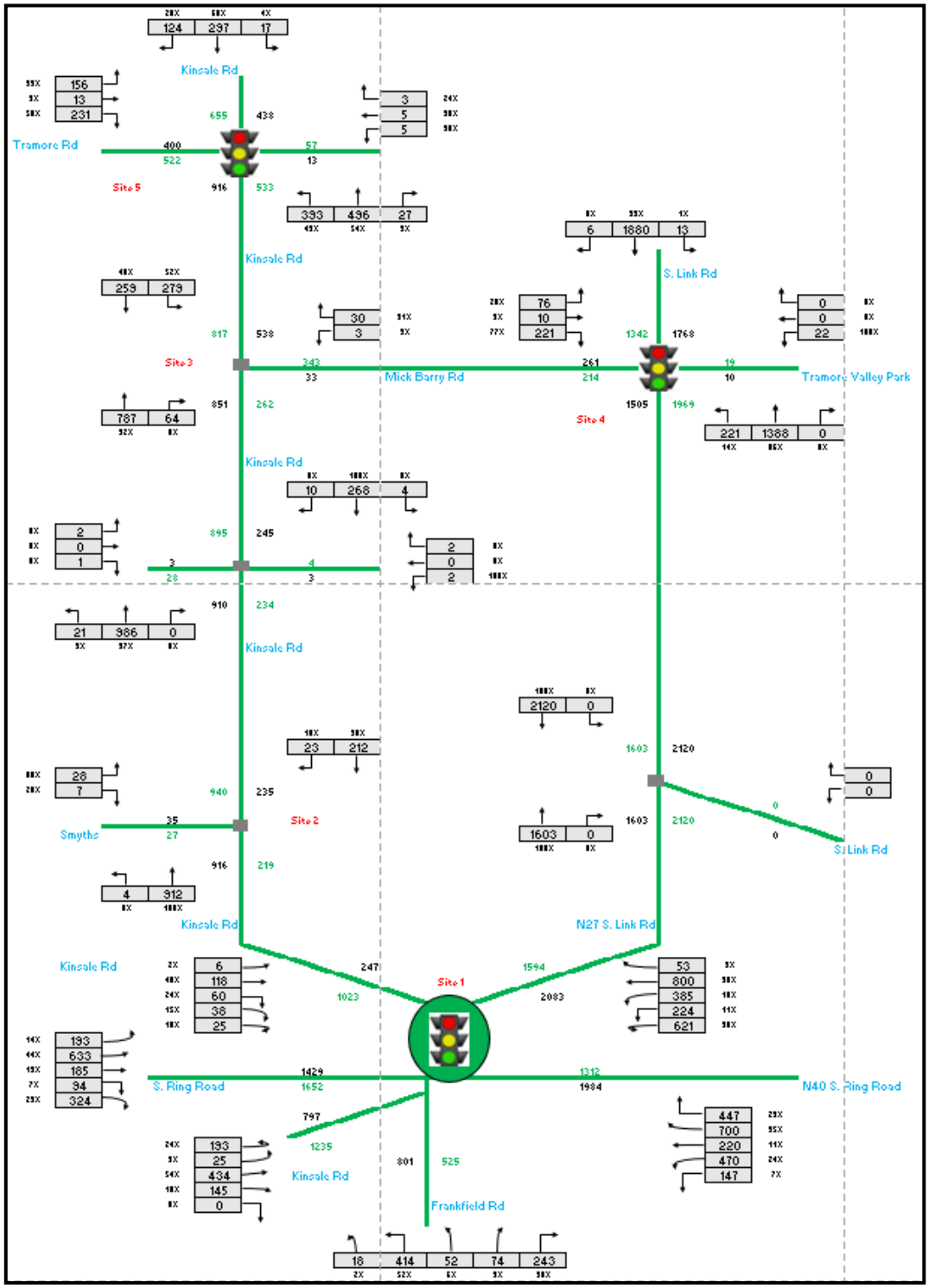


Figure 7.17: 2021 Traffic volumes on Road network during AM Peak

7.4.2.2 2021 PM Peak Hour Traffic

The 2021 PM peak hour traffic is shown in **Figure 7.18.**

Similar to the AM peak, the national roads including the N40 and the N27 carries the highest traffic volumes in the local road network surrounding the proposed development. Traffic on the N40 is just under 2,000 vehicles per hour in each direction, while traffic on the N27, exceeds 2,000 vehicles per hour in the southbound direction.

Northbound and southbound traffic on Kinsale Road within the vicinity of the development site is around 700 vehicles per hour per direction. Eastbound traffic on Mick Barry Road is high at almost 700 vehicles of which the majority turns right at the junction with the N27.

Tramore Road remains busy during the PM peak period with more than 500 vehicles travelling eastbound and over 300 westbound.

The proposed development is expected to have little impact on the national road network considering the high volumes of existing traffic that currently uses them. Some impact is expected on the local junctions and the accesses to the development.

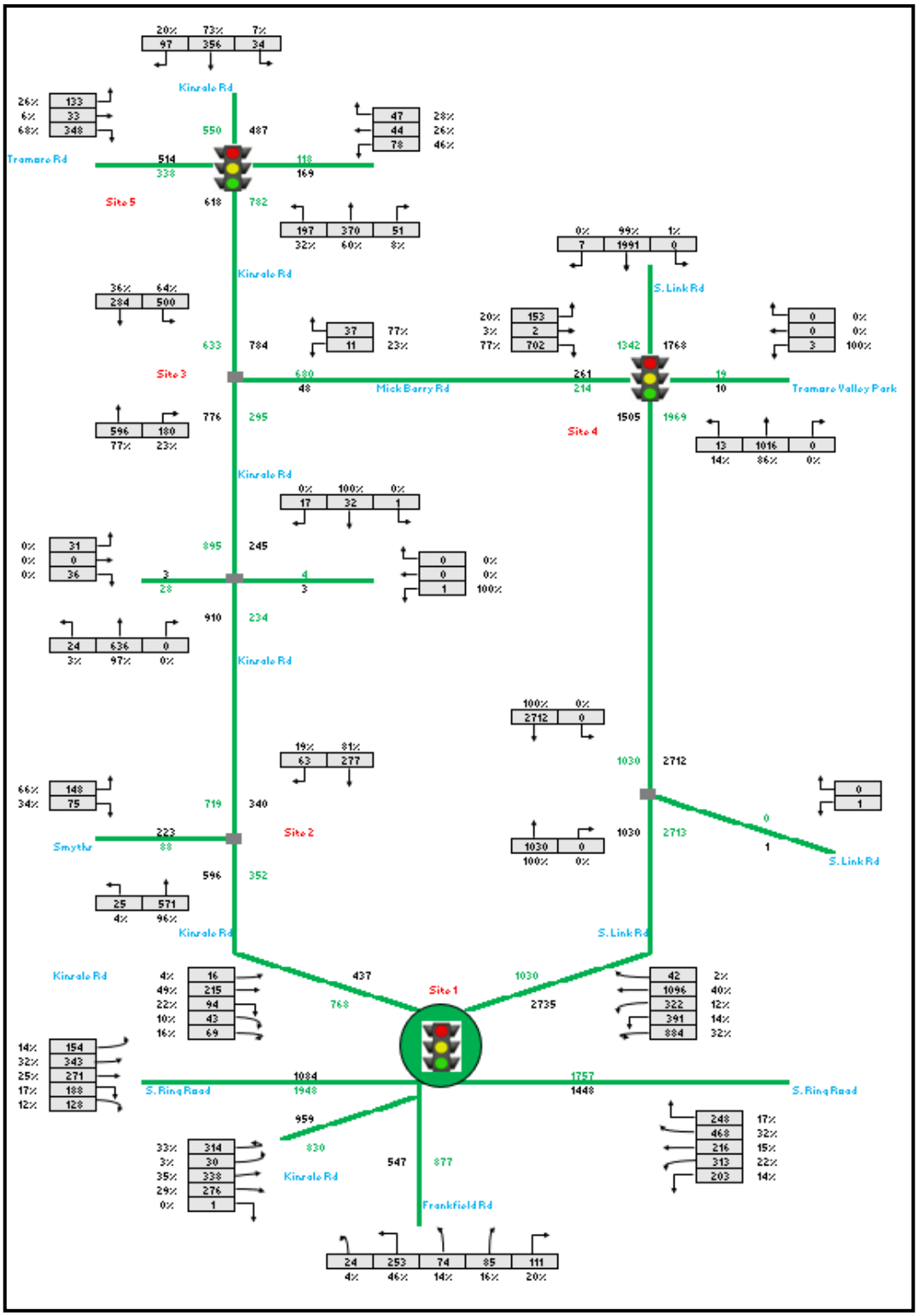


Figure 7.18: 2021 Traffic volumes on the road network during PM Peak

7.5 Characteristics of the Proposed Development

Figure 7.19 and Figure 7.20 show the proposed development plan of the site. Strategic Housing Development (SHD) is proposed to be located on a 3.39 ha site on the corner of Kinsale Road and Tramore Road.

The proposed development will provide 609 no. residential dwellings including:

- 561no. apartments and
- 48no. townhouse apartments

The residential units will include:

- 189no. 1-bed dwellings;
- 338no. 2-bed dwellings;
- 48no. 3-bed dwellings; and
- 34no. 4-bed dwellings.

The development will be supplemented by ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M and N and a standalone coffee kiosk) varying in height from 1 to 15 floors. All of the dwellings proposed in Blocks E and F will consist of Build to Rent apartments, which will also include at ground level the following:

- 289sqm crèche with ancillary outdoor play area;
- 547.5 sqm community hub facility;
- 550sqm gym;
- 218sqm retail unit; and
- 272sqm café;
- A 100sq.m. stand alone single storey coffee kiosk will also be provided.

209 no. shared car parking spaces (including EV charging points) will be provided on surface and within an under-croft carpark; and 1,145 no. bicycle parking spaces will be provided within dedicated external and internal cycle stores) and 21 no. motor cycle spaces.

The proposed development will also include the provision of private, communal and public open space (including all balconies and terraces at all levels); internal roads and pathways; pedestrian access points; hard and soft landscaping; signage; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction; an upgrade to the existing access from Tramore Road.

The applicant will submit a separate planning application for the development of a primary health care centre in due course. The health care centre does not form part of this application; however, the traffic and transportation assessment does take the impact of this land use into account. The primary health care centre will be located within Block K, which is located in the north-western corner of the development site.

Figure 7.19: Proposed Development Plan (Level 1) | not to scale

Figure 7.20: Proposed Under Croft Car Park (Level 0) | not to scale

7.5.1 Proposed Development Breakdown

The proposed development will be a predominant residential development (SHD) complemented by local services**. Table 7.6** provides a breakdown of the proposed land uses in the development. The proposed local services are provided predominantly for the use by residents of the development. The availability of these local services is expected to reduce the number of trips made by residents.

Although these services will be primarily used by residents, these land uses may attract a small number of external trips and this assessment makes some allowance for this.

Table 7.6: Proposed Development Breakdown

Proposed Land Use	Area / No of Units
Coffee Kiosk	100m^2
Gym	550m^2
Cafe	272m^2
Retail	218m^2
Creche (63 child spaces)	289m^2
Community Facilities	547.5m^2
Residential	609 dwellings

The development will consist of 11no. buildings (plus a coffee kiosk including the number of dwellings as outlined in **Table 7.7**. The majority (561 no. of the dwellings) will be apartments while there will also be 48no. townhouses.

Table 7.7: Residential units per building block

Residential Block	No. of Dwellings
B	90
C	116
E	115
F	142
G	10
H	8
I	8
J	69
L	18
M	6
N	27
Total	**609**

The residential breakdown of the 609 units is provided in **Table 7.8**. The overall majority of dwellings are one and two-bedroom units.

Table 7.8: Residential Breakdown

Dwelling Type	1-bed	2-bed	3-bed	4-bed	Total
No of Units	189	338	48	34	609

7.5.2 Pedestrian Access

One of the major features of the development is the provision of a town centre square located in the northern part of the site. This will be a landscaped area with trees, vegetation, seating and other street furniture providing a local community centre. Within this area the crèche, gym, retail unit, café, coffee kiosk, and residential community facilities will be located. The town centre plaza will be connected to the residential blocks by internal pedestrian routes. These routes

further connect to three internal parks situated between the buildings. These parks include multifunctional space with play areas, seating, gardens and planting. These spaces are interconnected and accessible to residents living within the development.

Where the internal pedestrian routes cross the vehicular routes, the surfacing of the vehicular route is altered to alert drivers of pedestrians potentially crossing.

The development will also be highly accessible from the public roads. A wide north south, tree lined boulevard links the town centre to a wide paved area along the northern boundary of Tramore Road. The paved area will be lined with avenue. A live building frontage will be provided featuring the café and outside seating adjacent to the building. The town centre will also be linked directly to Kinsale Road with a wide pedestrian route running between the first two buildings on the northern part of the site.

Footpaths will be provided along all sides of the residential buildings which links into the communal spaces and the spine routes through the site.

As part of the scheme, a linear park is proposed along the eastern boundary of the site adjacent to Kinsale Road as shown in **Figure 7.19**. This area will be a wide green strip with amenity grass and trees providing a soft edge between the residential buildings and Kinsale Road. A 3.0m wide footpath and a meandering 2.0m cycle lane will be provided within the linear park, providing pedestrians and cyclists travelling north south on Kinsale Road a pleasant environment removed from traffic.

Overall, the majority of the open and public space on the site is designed to accommodate pedestrians who will have right of way and priority within the site. Vehicular traffic is limited and is expected to be light since a low number of parking spaces will be provided.

The design of the site is in line with prevailing transportation and planning policy which promotes sustainable travel patterns and limited dependence on private vehicles.

7.5.3 Vehicular Access

Two access points will be provided for the site as shown in **Figure 7.19**. The existing access off Tramore Road will be reconfigured to allow a two-way road link following a north south route along the rear (western) boundary of the site. Perpendicular parking spaces will be provided off this route. Two internal junctions are provided off this is route. The northern junction links to another internal road that provides the access to the under-croft parking (as shown in **Figure 7.19**) and the second junction links the north south route to an east west route through the centre of the site which provides a new direct access off the Kinsale Road / Mick Barry Road junction. The two accesses off the public road are therefore connected with one another. Parallel parking spaces are provided along the central east west internal route.

It is the intension for the Kinsale Road access to primarily serve the residential development and for the Tramore Road access to serve the Primary Care Centre

(subject to a separate planning application). There are however no restrictions for traffic to use either one of these accesses however the road network is designed in such a way where it would be natural for residential traffic to rather use the Kinsale Road access and for the Primary Care Centre facility to use the other.

Provision is also made for the central east west internal route to continue further west and to provide access to the Musgrave site adjacent, should this property ever be redeveloped in the future. This will provide alternative routes for vehicles and especially pedestrians and cyclists.

Various surfacing will be used on the internal routes to reduce the dominance of the vehicular route, to create shared space for various modes of transport and to reduce vehicular speed along these routes.

7.5.4 Proposed Car Parking

7.5.4.1 National Policy

The Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities published by the Department of the Environment, Community and Local Government, December 2015, states that "as a benchmark guideline for units, one car parking space per unit should generally be required. However, car parking provision should be reduced or avoided in very accessible areas such as central business districts and a confluence of public transport systems. Car parking requirements for apartment schemes should generally be expressed as maximum car parking standards and should exceed 1 space per apartment only in more suburban contexts, to a maximum of 1.5 spaces per apartment dwelling".

The National Planning Framework – 2040 has recognised that many of the urban planning standards are more appropriate to green field developments and that increased flexibility is required in urban infill and brownfield development sites. The National Planning Framework recognises that the application of universal standards for car parking may not be applicable in all circumstances and that a performance-based approach would be more appropriate. National Policy Objective 11 states the following:
"In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria enabling alternative solutions that seek to achieve well-designed high quality and safe outcomes in order to achieve targeted growth and that protect the environment."

The Sustainable Urban Housing: Design Standards for New Apartments; Guidelines for Planning Authorities 2018, as amended provide for updated guidance on apartment developments in response to the National Planning Framework.

A key inclusion in the draft guidelines is the acknowledgement of the importance of strategic brownfield sites in existing urban areas in close proximity to existing public transport facilities. The guidelines identify locations in cities and town that may be suitable for apartment development having regard to the following:

1. Central and / or Accessible Urban Locations

Generally suitable for small to large scale (will vary subject to location) and higher density development (will also vary), that may wholly comprise apartments, and includes:

Sites within walking distance (i.e. up to 15 minutes or 1,000-1,500m of principal city centres, or centrally located 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.

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 or where such services can be provided.

The proposed development is located within 1km of a variety of business parks and industrial zones. Cork City is also located 2km to the north of the proposed development and a high-quality transit corridor will link the site to the City Centre. The Black Ash Park and Ride is located within 250m of the development site and this facility and the bus routes serving it have spare capacity to accommodate the development.

The Guidelines also note that in category 1, Central and / or Accessible Urban Locations, car parking provision may be wholly eliminated or substantially reduced. The guidelines state:

“In larger scale and higher density development, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be wholly eliminated or substantially reduced. This may apply in very accessible areas such as in or adjoining city cores or at a confluence of public transport systems”.

These locations are most likely to be in cities, especially in or adjacent to city centres, or centrally located employment locations. This includes 10 minutes walking distance of DART or Luas stops or within 5 minutes walking distance of high frequency (min 10-minute peak hour frequency) bus service”.

All prevailing planning policy, on national, regional and local level targets a significant drop in car dependency in Cities and is in support of developments that are strategically located to take advantage of capacity along public transportation corridors and those that promote walking and cycling.

7.5.4.2 Car Parking Standards

The Cork City Development Plan 2015 – 2021 provides maximum residential parking to be provided as per **Table 7.9** (Table 16.8 Car Parking Standards, Zone 3).

Table 7.9: Cork City Development Plan 2015 – 2021 Residential Car Parking Requirements

Dwelling Type	Zone 3	No. of Units	Maximum Parking Spaces Required
1-2 Bedroom)	1 plus 0.25 visitors parking	527	659
3-3+ Bedroom	2 plus 0,25 visitors parking	82	185
Total		**609**	**844**

The Draft Cork City Development Plan 2022-2018 requires slightly lower residential car parking rates as per **Table 7.10**.

Table 7.10: Cork City Development Plan 2022 – 2028 Residential Car Parking Requirements

Dwelling Type	Zone 3	No. of Units	Maximum Parking Spaces Required
1-2 Bedroom)	1	527	527
3-3+ Bedroom	2	82	164
Total		**609**	**691**

The proposed development includes for a total of 209 parking spaces all of which will be assigned to residents of the scheme. This allocation of parking represents a parking rate of 0.34 spaces per dwelling. This parking ratio is aligned with smarter travel policy and will attract tenants who want to use alternative travel modes particularly as the development site is well located in terms of existing and future (Bus Connects) public transport access and many local facilities (i.e. shops, schools, community facilities, etc.) are located nearby. In addition, the proposed development also provides a range of services on site including retail, a gym, café, health care and community facilities which reduce the need for longer distance travel.

A car sharing company GoCar, or similar will have access to some car parking spaces located within the basement car parks. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents' access to a car without the need for a personal car, and forms part of the measures included for in the Mobility Management Plan for the development.

The provision of a car sharing scheme within the development will meet the needs of the residents and ensures that sustainable transport targets are met, especially the percentage of daily commuting trips carried-out by private car.

There is precedent for parking provision set at the above ratio in the Cork Area and as the Government works through its programme in terms of our climate emergency objectives there will be a growing need to reduce the number and dependency on parking in our urban centres.

The following table (**Table 7.11**) presents the parking ratios from a number of Strategic Housing Development applications. The Albert Quay development, with a similar parking ratio to the proposed scheme was granted planning permission by An Board Pleanála in February 2020.

Table 7.11: Parking Ratios – Strategic Housing Development applications

Scheme	Units	Parking	Ratio
Albert Quay SHD, Cork	201 units	62 spaces	0.30
The Grange, Brewery Road	287 units	100 spaces	0.35
Stillorgan Leisure plex	232 units	95 spaces	0.41
Belgard Gardens, Tallaght	428 units	129 spaces	0.30
Swiss Cottage, Santry	112 units	34 spaces	0.30
Dulux Factory, Davitt Road	265 units	109 spaces	0.41
Cookstown, Tallaght	196 units	67 spaces	0.34

7.5.4.3 Parking Provision

Table 7.12 shows the proposed car parking provision for the development. Please note that the Primary Care Centre is not included in this planning application, however, this land use will form an intricate part of the development and the impact of this land use are considered in this planning application. A separate planning application will be submitted for the Primary Care Centre.

In total 309 car parking spaces will be provided for the scheme of which the majority will accommodate the residential component of the development.

A small number of spaces are provided for the local services. Since these facilities will mostly be utilised by local residents there is no need to provide the spaces in line with the Cork City development Plan standards.

Table 7.12: Car Parking Provision

	Maximum Car Parking Provision	Parking Provided	Comments	Size / Units
Residential	844 spaces	209 (21 spaces will be wheelchair accessible)	Provided at 0.34 spaces per dwelling unit 147 under croft and 62 surface car parking spaces	609
Creche	10 spaces	(10 of total spaces allocated to creche)	1 per 6 students therefore 10 bays are required 1	289m^2 63 kids
Café	13 spaces		1 space per 20 m^2	272m^2
Gym	11 spaces		No standards proposed. (Assume 1 per 50m^2	550m^2
Retail	20 spaces		20 spaces minimum The gym, retail and café use will be mostly used by local residents and primary care centre users.	218m^2
Primary Health Care Centre		98	Not part of this planning application 57 under croft and 41 surface car parking spaces	

[1] Maximum Car Parking Provision by Cork City Development Plan, 2015 to 2021

7.5.4.4 Electric Vehicle Parking

To encourage the use of Electric Vehicles, in line with Council and National Policy, developments shall provide Electric Vehicle Charging spaces as follows:

Residential developments - A minimum of one car parking space per ten residential units should be equipped with one fully functional Electric Vehicle Charging Point.

The proposed scheme will provide, 21 electric charging points within the residential units' basement. This number can increase as the popularity of electric cars increases.

7.5.4.5 Motorcycle Parking

Cork City Development Plan 2015 – 2021 proposes that 1 motorcycle parking space is provided for every 10 vehicle bays provided. Therefore, in total 21 motorcycle spaces will be provided.

7.5.5 Proposed Cycle parking

The Cork City Development Plan 2015 to 2021 requires cycle parking to be provided in line minimum standards. The provision of cycle parking is outlined in **Table 7.13.** The Cork City Development Plan 2015 to 2021 cycle parking standards requires that 729 spaces should be provided. It is however proposed to provide 1,145 cycle spaces for the proposed development. The proposed cycle parking provision will assist in achieving a greater mode share for active travel and is in support of promoting cycling and the use of cycle lanes as proposed in the CMATS and Cork Metropolitan Cycle Network Strategy.

Table 7.13: Cycle Parking Provision

	Size / Units	Cycle Parking Requirement	Size / Units	Cycle Parking Provision
Residential	609	0.5 per suburban apartment: 305 spaces 1 per unit in City Centre / Inner Urban Areas: 609 spaces	609	
Creche	289m^2 63 kids	1 per 25 children	3	
Retail Café Gym/Fitness	218m^2 272m^2 550m^2	1 space per 100m^2 1 space per 200m^2 1 space per 150m^2	2 2 4 2	
Primary Health Care Centre	0.5 spaces per consultation room	Not part of this planning application		

Total Parking Provided			620	1,145

7.6 Potential Effects

7.6.1 Do-Nothing Scenario

In the 'do nothing' scenario, where the proposed development does not get constructed, the existing situation will remain.

7.6.2 Construction Phase

7.6.2.1 Introduction

Chapter 5- *Construction Activities* of this EIAR, provides an outline of the general activities associated with the construction of the proposed development. Additionally, a Construction Environmental Management Plan (CEMP), which describes the minimum requirements that the contractors will be required to implement during the construction phase, is provided in **Appendix 5.1 in Volume 4**. A Construction Traffic Management Plan (CTMP) is included in the CEMP.

The construction of the proposed development will be completed using a combination of construction methods and in a number of stages. Construction will be undertaken using internationally accepted methods. The likely stages of construction are as follows:

- Stage 1 – Site Clearance, Access and Construction Compounds
- Stage 2 – Utility Diversion
- Stage 4 – Foundation Construction and Earthworks
- Stage 5 – Building Construction
- Stage 7 – Building Outfitting
- Stage 8 – Completion of works

Based on best indications to date, the assumed construction phasing for the development is outlined in **Table 7.14.** The development phases are spatially shown in **Figure 7.21**.

Four construction phases are envisaged for the proposed development after enabling works, which is expected to take between 2 - 4 months. For purposes of this analysis, the worst-case scenario is assumed i.e. the longest time frame is assumed in order to provide a robust analysis.

Construction Phase 1 includes the northern portion of the site, located on the corner of Tramore Road and Kinsale Road. It includes two residential blocks (Blocks E and F) and all of the local services to be provided for the development. These services will therefore be available for the first residents to move in and from the start reduce the need to travel to other locations to avail of these services.

Based on a worst-case scenario, this development phase is expected to be completed in 2025 which will be the opening year for Phase 1. **Figure 7.21** shows that it is proposed for Phase 1 that both the Tramore Road and the Kinsale Road accesses are opened. Having both accesses operational provides more flexibility in accommodating both the development and construction traffic.

Construction phase 2 includes two blocks C and G and another 113 units expected to be completed in 2027. Construction phase 3 includes three blocks J, B and H which represents another 180 units expected to be completed in 2029.

The final construction phase (phase 4) will include the last two residential blocks A and K including 175 units which is expected to be completed in 2031.

Table7.14: Assumed Construction Phasing Plan

	Duration	Development	Size / units	Future Horizon Year
Site Enabling Works	2 - 4 months			2022
Phase 1	2.5 – 3.5 years	Primary Care Centre (as part of a separate application) Gym Café Retail Creche Coffee Kiosk Residential Blocks E & F Ancillary Site Development Works (Incl. underground services, pavement upgrade works, surface car parking, landscape works etc.)	7,767m^2 550m^2 272m^2 218m^2 289m^2 100m^2 257 units	2025 Opening Year of Development
Phase 2	2 – 2.5 years	Residential Blocks C & G Ancillary Site Works	126 units	2027
Phase 3	2.5 – 3.5 years	Residential Blocks J, H, B Ancillary Site Development Works (Incl. underground services, pavement upgrade works, landscape works – Meadow 2 etc.)	167 units	2029
Phase 4	1.5 – 2.5 years	Residential Blocks L, L, I, N & M Ancillary Site Development Works	59 units	2031

		(Incl. underground services, pavement upgrade works, landscape works – Meadow 1 etc.)		
Project Completions	3 – 6 months			2031

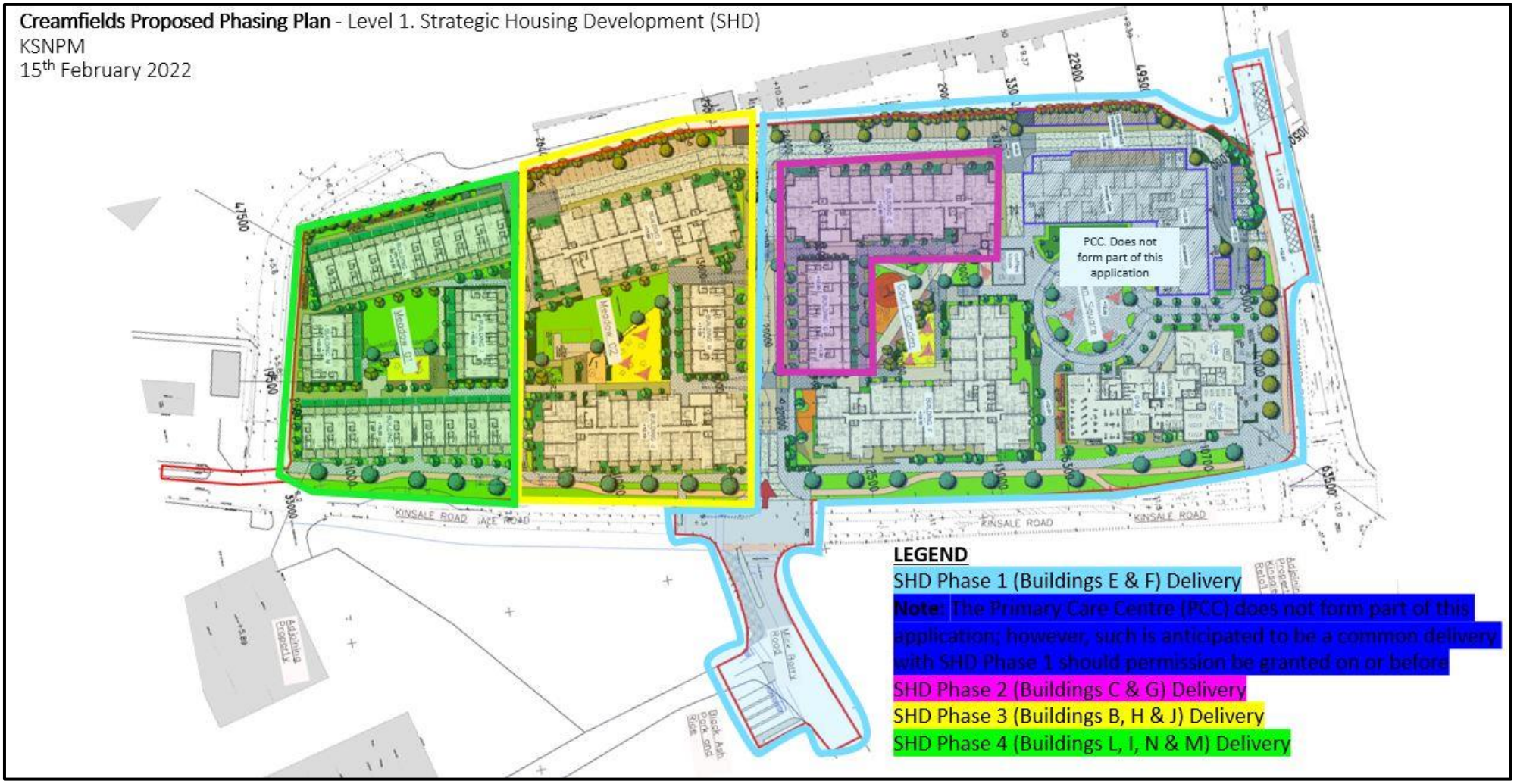


Figure 7.21: Assumed Construction Phases | not to scale

7.6.2.2 Temporary Road Closures

There will be no road closures during the construction phase. It is proposed to provide construction access to the site through the existing access on Tramore Road and to provide a temporary access at the Kinsale Road / Mick Barry Road junction. This will allow construction traffic to circulate in one direction and to avoid conflicting movements.

7.6.2.3 Construction Traffic Volumes

The level of construction traffic associated with the proposed development will vary over the course of the construction programme.

The construction phasing is the best guess now and may change subject to internal and external factors that may develop. The current estimation suggests that Phase 1 will take 2.5 years to complete and each of the subsequent phases 2 years to complete.

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth. In 2025 therefore there will be traffic associated with first residential blocks occupied by residents and the functional primary health care facility and construction traffic associated with Phase 2.

By 2030, which corresponds to the Opening Year +5 it has been assumed that both development phases 1 and 2 will be completed and occupied and that phase 3 will be under construction. Traffic associated with the construction of this phase will need to be considered in the trip generation for the 2030 assessment scenario. In 2040, the entire development will be in place and therefore no construction traffic associated with the development will be on the road network.

Heavy and Light Goods Vehicles

The movements of HGV's and LGV's 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.

The fit-out and landscaping works are expected to be the most intensive from a construction vehicle perspective. During this time, it is estimated that approximately 250 HGV and LGV vehicles will travel to the site per week (i.e. a total of 500 two-way vehicle movements).

Assuming a 5.5 day working week, this would equate to a daily total of 46 HGV/LGV vehicles travelling to the site (a total of 92 two-way movements).

Allowing for an increase to account for any miscellaneous deliveries, it is proposed to increase this figure to a total of 50 vehicles per day (i.e. 100 two-way movements). Based on experience on previous construction projects it is estimated that 33 of the 50 vehicles will be HGV's, with the remaining 17 expected to be LGV's.

Heavy vehicles are expected to have an evenly spread distribution profile starting early in the morning throughout the day towards the evening.

Assuming HGVs is not arriving early or late in the day, and only within an 8-hour period of the day, it is estimated that on average a total of 4 HGV's and 2 LGV's arrive and depart the site (a total of 6 vehicles) in the peak periods on the local road network. This represents 8 HGV and 4 LGV trips per hour.

To ensure that a robust assessment is carried out a stress test scenario will be carried out for construction traffic by assuming that there are 50% more HGVs and LGVs arriving and departing during peak hours. This therefore represent 6 HGVs and 3 LGVs arriving and departing (a total of 9 vehicles) in the peak periods on the local road network. This represents 12 HGV and 6 LGV trips per hour.

Workforce

The most intensive phase of construction for workforce numbers is also the fit-out and landscaping phases, when a total of 250 construction personnel are expected to be on site per day.

Due to the site benefiting from bus services in the vicinity and 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.

Therefore by assuming 75% of staff will arrive by car and a car occupancy of 1.2 it is calculated that a total of 156 vehicles travelling to the site on a daily basis for construction workers. Allowing a 10% increase to account for miscellaneous trips increases this to 172 vehicles per day at the site.

Construction hours are expected to be from 08:00-18:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. This can be done by agreeing with Cork County Council that site personnel should arrive before or after peak hour traffic. The prevailing peak hours should be determined closer to the time of construction by carrying out new link counts or by reviewing traffic data collected by permanent counting stations on the N40 and the N27.Based on the above it has been assumed that between 20 to 25%) (22.5%) of the construction personnel trips (38 vehicles) arrive on site during the morning peak and depart the site during the evening peak on the local road network, respectively. Allowance is also made for the off-peak direction

during each peak hour period to account for instance for a contractor leaving the site during the AM peak due to unforeseen circumstances.

To ensure a robust analysis, 50% more construction traffic is added to reflect a stress test analysis.

Total Construction Traffic

Based on the envisaged construction programme, construction traffic needs to be considered in the 2026 Opening Year and 2031 Opening Year +5 Years scenarios. The construction traffic includes both light & heavy vehicle traffic as well as contractors with their workforce. The construction traffic that will therefore be taken into account by this assessment is summarised in **Table 7.15.**

Table 7.15: Estimated Construction Traffic during peak hours

Assessment Scenario	HGV Trips		LGV Trips		Contractor / Workforce Trips	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
2025 Opening Year	6	6	3	3	57	7
2025 Opening Year + 5 Years	6	6	3	3	7	57
2025 Opening Year + 15 Years	-	-	-	-	-	-

Trip Distribution

It is expected that LGV and HGV traffic will approach the development site from either the east via N27 and Mick Barry Road or the south via N40 and Kinsale Road.

In both the 2025 Opening Year and the 2030 Opening Year plus 5 Year assessment scenarios, the only access available into the site is the Tramore Road access. Therefore, all development and construction traffic will be assigned to this access.

7.6.3 Operational Phase

7.6.3.1 Introduction

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 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 this scheme, 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 scheme (as opposed to a trip rate for vehicles only) – this allows for a more representative trip rate to be developed for the scheme;
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 scheme is expected to generate; and
3. Trip generation rates are only provided for the residential component of the development and for the primary health care facility as background traffic. The remainder of the land uses serving the development, are not expected to generate significant additional trips as these facilities are primarily expected to serve the local residents on site.

The Central Statistics Office (CSO) Small Area Population (SAP) statistics were reviewed for the local area. For the residential component of the development, a total of 6 relevant zones were identified and reviewed as shown in **Figure 7.22**

Figure 7.22: CSO SAP zones selected for residential land use evaluation | not to scale

The SAP information for these zones is based on Census 2016 data, and provides data on existing travel habits from the site, including mode share, departure times and distances to work, etc.

4. The modal split information for the zones was then applied to the total 'person trips' that the scheme is expected generate, with the vehicle mode share used to determine the total number of vehicular trips to and from the site at peak periods; and
5. The CSO SAP statistics for the Electoral District containing the development site and a number of adjoining sites were reviewed to determine the origins and destinations for traffic travelling to and from the site, in order to apply this traffic distribution to traffic leaving and returning to the site at peak times.

7.6.3.2 Trip Generation by TRICS 7.4.4

Firstly, as outlined above the potential traffic generated by the proposed development has been calculated by examining the TRICS 7.4.4 online database. The trip rates calculated for the proposed residential development at peak hours

are presented in **Table 7.16** below. Note that the trips presented below are for the development peak hours of 08:00-09:00 and 17:00-18:00, as per TRICS.

Table 7.16: Person Trip Generation Rates – Residential Units

Residential	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	0.095	0.339	0.339	0.232
Two Way	0.434		0.631	

All trips are expressed in 'Person Trips' per unit
Source: TRICS

The person trip generation for the residential component of the development based on TRICS is shown in **Table 7.17** to **Table 7.19** below:

Table 7.17: Person Trip Generation for Residential Component Opening Year

Residential 609 units	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	23	81	81	55
Two Way	103		136	

Table 7.18: Person Trip Generation for Residential Component Opening Year +5 Years

Residential 609 units	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	50	180	180	123
Two Way	230		303	

Table 7.19: Person Trip Generation for Residential Component Opening Year +15 Years

Residential 609 units	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	67	239	239	164
Two Way	306		403	

The person trip generation rates for the proposed primary health care centre development at peak hours for all the assessment scenarios are shown below (**Table 7.20 and 7.21**). This land use component is not part of the planning application but are considered as background or latent traffic. It is the client's aspiration to apply for this part of the development concurrently and therefore the trips generated by this development is included in the traffic assessment carried out in the remainder of the report.

Table 7.20: Persons Trip Generation Rates – Primary Health Care Centre

Primary Health Care Centre	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	0.725	0.122	0.415	0.518
Two Way	0.847		0.933	

All trips are expressed in trips per 100m^2

Source: TRICS

The trip generation for the primary health care centre is shown below in **Table 7.21**. Since the entire primary health care centre is constructed in the opening year, the trip generation for the following assessment scenario years stay the same.

Table 7.21: Person Trip Generation – Primary Health Care Centre

Primary Health Care Centre (7,767m2)	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	56	9	32	40
Two Way	66		72	

Although the ancillary land uses including the creche, gym, retail, coffee kiosk and community centre will primarily be utilised by the residents occupying the development, there wouldn't be any restriction for visitors to use these facilities. Therefore, it must be recognised that there might be an element of external trip generation involved in the use of this facilities. This element is expected to be small, and it not expected to be similar to a singular land use elsewhere. The trips assumed for these land uses is mostly expected to be trips on foot or bicycle. Very limited parking is provided for these facilities, so car trips will be limited.

7.6.3.3 Mode Split

The mode split for the small area population zones selected for reviewing the residential travel characteristics within the environment is provided in **Figure 7.23Error! Reference source not found.**.

Currently 35.5% of residents living within the selected zones are car drivers and an additional 2.4% are van drivers, bringing the total car trips to 37.9%. 19.7% are car passengers which most probably represents educational trips i.e., students being dropped off at school. This is probably an over representation of this mode of transport as all school trips are recorded in the Census and therefore this mode makes up a disproportionate size of the total trips. To remediate the possible over representation and to ensure a robust assessment, it is proposed to assume a higher car driver base of 50% for purposes of analysis.

More than a quarter (26.5%) of trips are made on foot which already indicates the willingness of people to walk to destinations and just over 4% of the population cycle. Current public transport uptake is 7%. The provision of the Bus Connects network in Cork City is expected to increase the public transportation use within the area, especially with the proposed Bus Connect route following along Kinsale Road.

In 2016, 0.7% of residents indicated that they mainly work from home. However, it is expected that the long term impact of Covid 19 would be an increase of this number as working from home has become the norm for a lot of people which is expected to last. In support of this transport trend, the recently published National Remote Work Strategy acknowledges that a long-term shift has occurred in Ireland and that this shift that was planned to be implemented in decades, happened in days. One of the key actions of this plan is to mandate that home and remote working should be the norm for 20% of the public sector. Recently, (published 20 August 2021) the Tanaiste and Minister for Enterprise, Trade and Employment Leo Varadkar TD announced that as part of a strategy a new law will be introduced to give workers the right to request to remote work. It is the objective to give people a choice to work from home.

TII also published a document "Alternative Future Demand Scenario" July 2021. This document states that it is estimated that up to 20% of the workforce could potentially work from home in an effective and efficient manner if they had the opportunity to do so and that it was estimated that travel demand on a typical workday across all travel modes could potentially be reduced by 8% if a blended model of home/office work was adopted for the cohort of people who could potentially work from home.

For purposes of analysis of the proposed development, the following assumptions are made:

- Walking will remain at the existing level of 26.5% until the new footpath next to Kinsale Road is provided. It is assumed that this facility will only be available in 2030. From this point onwards it is assumed that walking will conservatively increase to 30%, although in reality this percentage could be higher;
- Cycling will also remain at existing levels of 4.3%. However, the substantial cycle route network and the cycle facility adjacent to Kinsale Road is expected to increase the cycling modal share in 2030, where it is assumed that cycling will increase to at least 7%;
- Public transport will remain at the existing level of 6.9% until 2030, where it is assumed that Bus Connects and the bus corridor adjacent to Kinsale Road will be available. Due to the huge investment in Bus Connects to increase the bus mode of transport, it is assumed that the bus mode share will double to 14% in 2040, and in 2030 that half of this mode share increase is achieved;
- It is assumed that remote working will have a long-term impact on modal share based on the governments drive to encourage working from home and the TII's publication on this matter. For purposes of this assessment, it is assumed that remote working will have an impact on mode share. Although the TII publication estimates a possible 8% modal share for remote working, for purposes of this analysis it is conservatively assumed that up to 2030 this mode share would only be 4% but as technology in this regard improves 7% is assumed for 2040;
- The increase in all of the above modes of transport will therefore reduce car driver mode share as follows:
    - 2025 Opening Year 50.0%
    - 2030 Opening + 5 Years 39.8%
    - 2040 Opening + 15 Years 29.8%
- The assumed decrease in the car driver mode split is conservative to ensure a robust assessment and in reality, if CMATS and other initiatives are successfully implemented, the reduction in car-based traffic could potentially be much higher.

Applying the mode share assumptions outlined above to the person trip generation provided by TRICS for the residential development component results in the vehicle trip volumes displayed in **Table 7.22 to Table 7.24**.

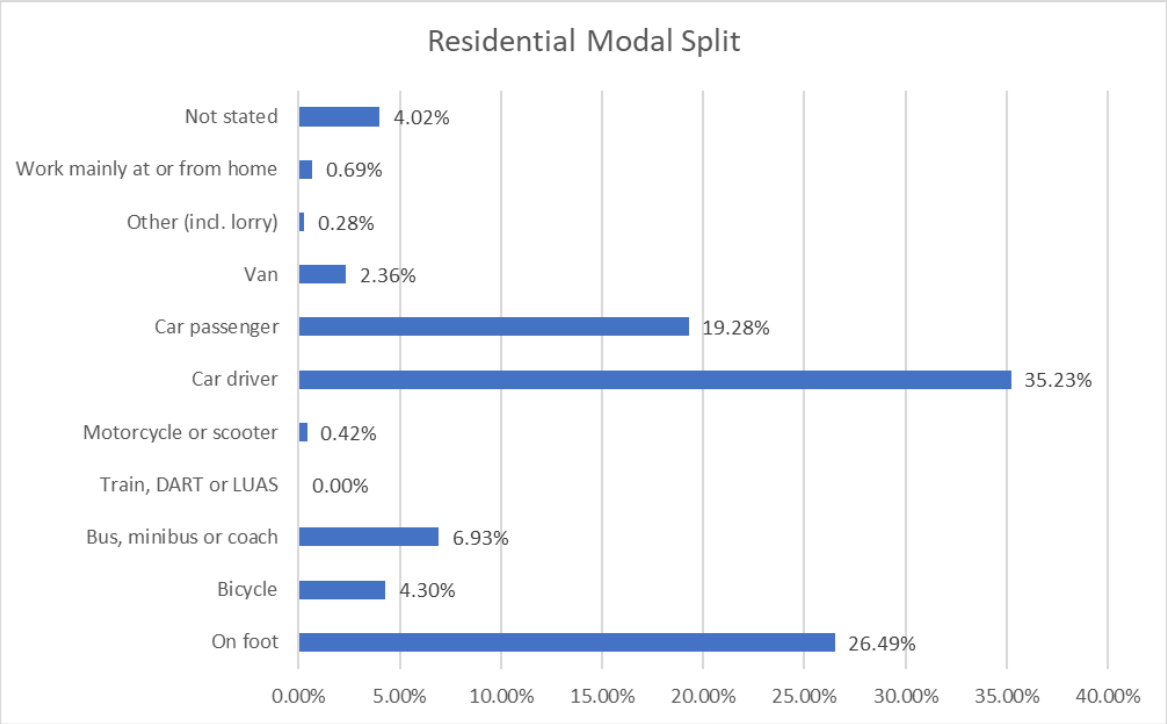


Figure 7.23: Mode share for Residential use in the vicinity of the development | Source: 2016 Census Small Area Population Data

Table 7.22: Vehicle Trip Generation for Residential Component Opening Year

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	11	40	40	28
Two Way	51		68	

Table 7.23: Vehicle Trip Generation for Residential Component Opening Year +5 Years

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	20	72	72	49
Two Way	92		121	

Table 7.24: Vehicle Trip Generation for Residential Component Opening Year +15 Years

Residential 609 units	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Vehicle Trips	20	71	71	49
Two Way	91		120	

Applying the mode share assumptions outlined above to the person trip generation provided by TRICS for the primary health care development component results in the vehicle trip volumes displayed in **Table 7.25 to Table 7.27.**

Table 7.25: Vehicle Trip Generation – Primary Health Care Centre Opening Year

Primary Health Care Centre	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	25	4	14	18
Two Way	29		32	

Table 7.26: Vehicle Trip Generation – Primary Health Care Centre Opening Year plus 5 Years

Primary Health Care Centre	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	20	3	11	14
Two Way	23		25	

Table 7.27: Vehicle Trip Generation – Primary Health Care Centre Opening Year plus 15 Years

Primary Health Care Centre	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	15	2	8	10
Two Way	17		18	

Table 7.28 to Table 7.31 below show the vehicle trips generated by the ancillary land uses including the creche, retail, gym and coffee kiosk. 18 car parking spaces are allocated to serve this land use. Based on a car parking trip rate of 1 vehicle per hour the total trip generation for these land uses is expected to be 18 vehicles in and 18 out. To ensure a robust assessment, it is assumed that this trip generation will be maintained during all the assessment years.

Table 7.28: Vehicle Trip Generation – Ancillary Land Uses Generation Opening Year

Creche, gym, retail (pharmacy) and coffee kiosk	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	18	18	18	18
Two Way	36		36	

The total vehicle trip generation for the development for the various assessment scenarios are displayed in **Table 7.29** to **Table 7.31**.

Table 7.29: Vehicle Trip Generation – Total Trip Generation Opening Year

Total Trip Generation	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	54	62	72	64
Two Way	116		136	

Table 7.30: Vehicle Trip Generation Opening Year plus 5 Years

Total Trip Generation	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	58	93	101	81
Two Way	151		182	

Table 7.31: Vehicle Trip Generation –Opening Year plus 15 Years

Total Trip Generation	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
Trip Rate	53	91	97	77
Two Way	144		174	

7.6.3.4 Traffic Distribution

The CSO 2016 travel data can also be used to determine the traffic patterns within a local area by determining the trip destinations from selected Electoral Districts. Knowing the most likely destinations that local residents within the vicinity of the site currently travels to, the development trips can be assigned to the local road network according to this distribution.

According to the analysis of the data, the majority of traffic is expected to travel north on Kinsale Road towards Cork City and destinations to the north of it. 30% of traffic has destinations towards the west, using Tramore Road. The majority of these trips are short trips to the local employment centres in Ballyphehane and Bishopstown.

The trips going south, using the N40 and N27 includes a range of destinations such as the Airport, Carrigaline, Kinsale but it also includes destinations due to the strategic nature and attractiveness of the N40 including locations such as Mahon, Midleton, and Ballincollig.

Table 7.322: Trip Distribution Patterns as per CSO 2016 Data

Route	
N40 / N27 south	23%
Kinsale Road north	37%

Mick Barry / N27 north	10%
Tramore Road	30%

Source: 2016 Census Electoral District Data

Traffic generated by the proposed development were assigned to the road network according to the above trip generation outlined above in **Table 7.32**.

In both the 2025 Opening Year and the 2030 Opening Year plus 5 Year assessment scenarios, the only access available into the site is the Tramore Road access. Therefore, all development traffic were assigned to this access.

7.6.3.5 Impact on the Local Network

Introduction

The impact of 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 six junctions, both without and with the proposed development:

1. N40 / Kinsale Road / N27
2. Kinsale Road (south) / local access
3. Kinsale Road / Mick Barry Road
4. Mick Barry Road / N27
5. Kinsale Road / Tramore Road
6. Tramore Road Site Access

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 of the proposed development will be constructed and fully occupied during the year 2025 and this also includes the opening of the primary health care centre. The impact on the local road network has been assessed for the opening year (2025) the interim year of five years after opening (2030), and the opening year +15 years (2040) by which time it is envisaged that the development will be fully constructed.

The traffic analysis is based on the traffic counts to which annual growth rates were applied to arrive at 2021 as a base year and also to arrive at the future assessment years of 2025, 2030 and 2040. These growth rates are in accordance with the Transport Infrastructure Ireland Project Appraisal Guidelines for Link-Based Traffic Growth Forecasting, published in 2019 as outlined earlier in this report.

During discussions with Cork City Council, it was agreed that this TTA will consider planning application 2140353, by applicant Denis McBarron. The development is for 134 no. residential units, various retail and a 158 no. bed hotel.

The trip generation of the latent development was taken into account and added to the background traffic in the assessment years.

The trips expected to be generated by the development according to TRICS, to which the existing and future mode share was applied were assigned to the local network in line with the trip distribution observed in the vicinity according to CSO Census travel data and the availability of access to the development.

Link Flow Assessment

Table 7.33 shows the link flows on the road network in the opening year. The analysis shows that the development will have an insignificant impact on the national roads including the N40 and the N27. The development is expected to have a minor impact on Kinsale Road by adding between a 1 and 4% traffic increase on this road.

The most significant impact is on Tramore road, where the interim access of the development will be, where a 6% traffic flow will occur during the AM peak and an 8% increase during the PM peak periods. This increase however represents approximately 60 additional vehicles in both directions.

Table 7.33: 2025 Opening Year – Two Way Link Flows

Link	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
N27 south of N40	2214	2214 (+0.00%)	1950	1950 (+0.00%)
N27 north of N40, south of Mick Barry Road	4008	4011 (+0.07%)	4098	4101 (+0.08%)
N27 North of Mick Barry Road	3667	3676 (+0.22%)	3455	3465 (+0.29%)
N40 east of N27	3590	3605 (+0.44%)	3489	3508 (+0.53%)
N40 west of N27	3358	3370 (+0.35%)	3301	3311 (+0.30%)
Kinsale Road south of Mick Barry Road	1215	1241 (+2.12%)	1167	1198 (+2.60%)
Kinsale Road south of Tramore Road	1579	1630 (+3.23%)	1523	1590 (+4.38%)
Tramore road, west of Kinsale Road	1006	1060 (+5.44%)	927	992 (+7.03%)
Kinsale Road, north of Tramore Road	1190	1231 (+3.48%)	1128	1177 (+4.33%)

For the 2031 Opening Year + 5 Years, the traffic impact on the national road network will also be insignificant while a 2-5% increase in traffic is expected on the Kinsale Road and an 11% increase is expected on Tramore Road during the PM peak period (**Table 7.34**).

Table 7.34: 2030 Opening Year + 5 Years – Two Way Link Flows

Link	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
N27 south of N40	2393	2393 (+0.00%)	2106	2106 (+0.00%)
N27 north of N40, south of Mick Barry Road	4333	4337 (+0.11%)	4425	4429 (+0.09%)
N27 North of Mick Barry Road	3967	3977 (+0.26%)	3733	3747 (+0.37%)
N40 east of N27	3880	3901 (+0.54%)	3770	3794 (+0.66%)
N40 west of N27	3630	3647 (+0.48%)	3564	3584 (+0.57%)
Kinsale Road south of Mick Barry Road	1314	1348 (+2.57%)	1261	1302 (+3.25%)
Kinsale Road south of Tramore Road	1708	1787 (+4.67%)	1644	1744 (+6.07%)
Tramore road, west of Kinsale Road	1088	1154 (+6.07%)	1001	1077 (+7.61%)
Kinsale Road, north of Tramore Road	1285	1340 (+4.23%)	1217	1283 (+5.41%)

In the 2041 Opening Year plus 15 Years scenario, the background traffic increases on the road network and the use of sustainable transport modes increases. These trends are expected to even have a less significant impact on the road network. This will result in a less than 5% impact on Kinsale Road and less than 6% impact on Tramore Road (**Table 7.35**).

Table 7.35: 2040 Opening Year +15 Years – Two Way Link Flows

Link	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
N27 south of N40	2620	2620 (+0.00%)	2305	2305 (+0.00%)
N27 north of N40, south of Mick Barry Road	4746	4751 (+0.09%)	4842	4846 (+0.07%)
N27 North of Mick Barry Road	4350	4359 (+0.22%)	4086	4100 (+0.32%)
N40 east of N27	4250	4270 (+0.47%)	4127	4150 (+0.57%)
N40 west of N27	3977	3993 (+0.42%)	3899	3918 (+0.49%)
Kinsale Road south of Mick Barry Road	1440	1472 (+2.24%)	1379	1418 (+2.83%)
Kinsale Road south of Tramore Road	1871	1948 (+4.12%)	1798	1895 (+5.39%)
Tramore road, west of Kinsale Road	1194	1256 (+5.16%)	1095	1166 (+6.48%)
Kinsale Road, north of Tramore Road	1407	1459 (+3.68%)	1331	1394 (+4.73%)

Junction Assessment

The impact of the 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. Therefore, junction analysis is only carried out on key junctions on the local road network.

The impact on the following five key junctions presented below:

- Kinsale Road / Mick Barry Road
- Kinsale Road / Tramore Road
- Tramore Road Access
- N40 / N27 junction and
- N27 / Mick Barry junction.

Results are presented in terms of Ratio of Flow to Capacity (RFC), measured as a percentage, and Mean Max Queue Length, measured in PCUs.

Kinsale Road / Mick Barry Road

This is a traffic signal operated junction and currently has three approaches. For purposes of analysis, it was assumed that the junction will operate as a four legged junction for all development phases. The assessment was also based on the existing junction capacity i.e. the alteration of the junction to accommodate the BusConnects route on Kinsale Road was not included.

This is a traffic signal operated junction and currently has three approaches. It is proposed to provide access from this junction to the development site which will form the westbound approach to it. This will only occur at the opening of development phase 3 which is expected to open in 2029. The traffic signals will be reconfigured to accommodate the new traffic arm. A bus Connects route is proposed along Kinsale Road. The site design has assumed that additional lanes will be provided along this corridor and that the vehicle lane and the existing left and right turning lanes at this junction will be maintained. Therefore, the current traffic capacity of the junction will not be altered.

Junction analysis is provided below for the 2021 base year and the three future year assessment scenarios (**Table 7.36 to Table 7.39**).

This junction currently (2021) operates well within capacity. This junction will operate as a three-legged junction and then as a four legged junction from 2025 onwards. The junction continues to operate within capacity during all the future year scenarios.

Table 7.36: Kinsale Road /Mick Barry Road – 2021 Base Year Traffic Analysis Results

Approach Arm	AM Peak		PM Peak	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	21%	4.7	32%	6.5
Mick Barry Rd	31%	1.2	43%	1.7
Kinsale Rd (S)	62%	18.9	72%	13.9

Table 7.37: Kinsale Road / Mick Barry Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	23%	5.2	24%	5.4	36%	7.1	40%	8.2
Mick Barry Rd	34%	1.3	39%	1.6	47%	1.9	52%	2.2
Kinsale Rd (S)	68%	22.4	69%	23.0	75%	16.4	76%	17.3
Site Access	N/A	N/A	32%	1.6	N/A	N/A	22%	1.1

Table 7.38: Kinsale Road / Mick Barry Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	25%	5.7	27%	6.0	40%	8.1	47%	9.7
Mick Barry Rd	37%	1.4	42%	1.9	52%	2.2	57%	1.5
Kinsale Rd (S)	73%	26.4	74%	27.1	78%	19.2	79%	20.7
Site Access	N/A	N/A	57%	3.0	N/A	N/A	39%	2.0

Table 7.39: Kinsale Road / Mick Barry Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	28%	6.3	29%	6.8	45%	9.2	54%	12.2
Mick Barry Rd	41%	1.9	45%	2.1	56%	2.5	55%	2.5
Kinsale Rd (S)	81%	32.9	81%	33.7	82%	23.8	80%	24.6
Site Access	N/A	N/A	57%	3.0	N/A	N/A	39%	2.1

Kinsale Road / Tramore Road

This is a signalised junction with turning lanes. The proposed Bus Connects route will also follow through this junction on the north- and southbound approaches but for purposes of analysis the existing capacity of the junction was assumed. This junction will accommodate construction traffic from the start of the project and will also accommodate development and construction traffic during the 2025 Opening and the 2030 Opening plus 5 years.

The results, by comparing the base scenario to the base plus development scenario, show that in 2025 the development and construction traffic will have a minor impact on the operation of this junction (**Table 7.40 to Table 7.43**).

Less development traffic will use this junction once the second access on Kinsale Road at the junction with Mick Barry Road is in place.

Junction analysis is provided below for the 2021 base year and the three future year assessment scenarios.

This junction currently (2021) operates within capacity on all of its approaches. In 2025, the junction is expected to operate at or close to capacity in the 'without development traffic' scenario. The proposed development traffic will have a minor impact on the operation of the junction by increasing the RFCs by a few percentage points and increasing the vehicle queuing very slightly (less than one vehicle).

Background traffic growth is expected to deteriorate the operation of the junction further in the 2030 and 2040 scenarios. The impact of the development traffic remains minor at this junction for these traffic scenarios.

Table 7.40: Kinsale Road / Tramore Road – 2021 Base Year Traffic Analysis Results

Approach Arm	AM Peak		PM Peak	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	39%	2.1	81%	15.1
Kinsale Rd (S)	87%	10.5	81%	15.9
Retail Park (E)	9%	0.4	78%	5.9
Kinsale Rd (S)	91%	31.2	81%	17.7

Table 7.41: Kinsale Road / Tramore Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	99%	22.0	103%	30.4	88%	18.4	92%	22.3
Kinsale Rd (S)	95%	14.7	100%	19.7	88%	19.2	92%	21.2
Retail Park (E)	11%	0.5	11%	0.5	85%	7.1	89%	8.0
Kinsale Rd (S)	99%	45.9	103%	63.2	88%	21.2	93%	24.9

Table 7.42: Kinsale Road / Tramore Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	107%	38.5	112%	51.5	95%	25.4	100%	35.3
Kinsale Rd (S)	102%	25.5	112%	51.9	95%	23.4	97%	25.7
Retail Park (E)	13%	0.6	13%	0.5	92%	9.2	101%	13.3
Kinsale Rd (S)	107%	84.7	113%	122.1	96%	28.1	101%	39.2

Table 7.43: Kinsale Road / Tramore Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	118%	70.4	123%	84.2	104%	44.4	110%	65.1
Kinsale Rd (S)	112%	54.2	120%	77.2	104%	35.8	105%	39.0
Retail Park (E)	15%	0.7	15%	0.7	100%	13.3	105%	17.1
Kinsale Rd (S)	117%	151.7	123%	189.1	104%	48.8	110%	72

Tramore Road Site Access

The Tramore Road site access will be a priority junction allowing one lane to enter and exit the proposed development. The Tramore Road approach to the junction with Kinsale Road is busy with traffic queuing occurring along the road. Therefore, to allow site traffic exiting the site to join the traffic on Tramore Road, it is recommended that a yellow box is provided on Tramore Road at the access junction.

Junction analysis is provided below for the three future year assessment scenarios (**Table 7.44 to Table 7.46**). The junction is currently not operational (there is currently no activity on site) and therefore no junction analysis could be carried out for 2021.

The junction analysis for the future year assessment scenarios shows that the junction is expected to operate well during peak periods including the 2015 opening year scenario where this junction will be the only junction serving the proposed development.

Table 7.44: Tramore Road Site Access – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak + DEV		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Site Access	8%	0.1	12%	0.1
Tramore Rd (W)	4%	0.1	3%	0

Table 7.45: Tramore Road Site Access – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak + DEV		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Site Access	8%	0.1	11%	0.1
Tramore Rd (W)	4%	0.1	3%	0

Table 7.46: Tramore Road Site Access – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak + DEV		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Site Access	8%	0.1	10%	0.1
Tramore Rd (W)	4%	0.1	3%	0

Mick Barry Road / N27 South Link Road

This junction operates as a signal operated junction and the traffic analysis shows that currently the junction is operating within capacity (**Table 7.47 to Table 7.50**). Background and development traffic will cause the junction to operate at a higher RFC percentage and slightly increases vehicle queue length. However even with the increase of traffic, the junction is still expected to operate within capacity. The change in operation between the with and without development traffic scenarios is very marginal and therefore considered to be insignificant.

Table 7.47: Mick Barry Road / N27 South Link Road – 2021 Base Year Traffic Analysis Results

Approach Arm	AM Peak		PM Peak	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	57%	3.2	74%	8.6
N27 N	47%	7.8	64%	12.1
Tramore Valley Park	28%	1.1	4%	0.1
N27 S	56%	10.1	54%	8.9

Table 7.48: Mick Barry Road / N27 South Link Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	59%	3.4	60%	3.5	72%	8.9	73%	8.9
N27 N	51%	8.9	51%	8.9	74%	14.3	74%	14.9
Tramore Valley	32%	1.3	32%	1.3	4%	0.1	4%	0.1
N27 S	62%	11.9	62%	11.9	63%	11.3	63%	10.8

Table 7.49: Mick Barry Road / N27 South Link Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	64%	3.7	65%	3.9	78%	10.3	79%	10.3
N27 N	54%	10	56%	10.1	80%	17.1	80%	16.5
Tramore Valley	35%	1.4	35%	1.4	5%	0.2	5%	0.2
N27 S	66%	13.6	67%	13.7	68%	12.2	68%	12.6

Table 7.50: Mick Barry Road / N27 South Link Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	70%	4.4	71%	4.6	86%	12.3	86%	12.7
N27 N	61%	11.6	61%	11.6	87%	21.1	87%	21.1
Tramore Valley	40%	1.7	40%	1.7	5%	0.2	5%	0.2
N27 S	73%	16.3	73%	16.3	74%	14.1	74%	14.1

N40 South Ring Road / N27 South Link Road

This junction is a major gyratory providing access on and off two national roads and also provides access to Kinsale Road. The base traffic scenario shows that the except for the Kinsale Road approach, all other approaches are operating at or close to capacity (**Table 7.51 to Table 7.54**).

The future year scenarios show that this junction is expected to continue to operate over capacity as background traffic grows. Adding the development traffic to the junction virtually makes no difference to the operation of the junction

Table 7.51: N40 South Ring Road / N27 South Link Road – 2021 Base Year Traffic Analysis Results

Approach Arm	AM Peak		PM Peak	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	99%	21.6	101%	29.8
N40 South Ring WB	103%	50.9	101%	29.2
N40 South Ring EB	96%	17.5	89%	11.7
N27 Kinsale Road	53%	3.8	73%	5.4

Table 7.52: N40 South Ring Road / N27 South Link Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	108%	39.4	108%	39.4	111%	54.1	111%	54.1
N40 South Ring WB	112%	107.1	113%	109.5	110%	64.5	110%	64.9
N40 South Ring EB	104%	29.4	104%	30.4	97%	15.9	97%	16.2
N27 Kinsale Road	59%	4.4	62%	4.7	82%	10.9	84%	11.9

Table 7.53: N40 South Ring Road / N27 South Link Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	117%	61.5	117%	60.4	119%	81.5	119%	82.0
N40 South Ring WB	122%	171.9	123%	175.6	118%	107.8	118%	95.5
N40 South Ring EB	117%	58.6	113%	49.6	104%	25.2	105%	26.7
N27 Kinsale Road	63%	5.0	68%	5.5	89%	13.9	93%	16.3

Table 7.54: N40 South Ring Road / N27 South Link Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	128%	90.6	128%	90.1	131%	119.5	131%	118.4
N40 South Ring WB	139%	266.9	139%	268.4	130%	168.8	130%	119.4
N40 South Ring EB	123%	75.9	124%	76.7	114%	43.3	112%	40.3
N27 Kinsale Road	69%	5.8	73%	6.5	97%	20.4	100%	42.8

7.6.4 Decommissioning Phase

The decommissioning phase will involve the removal of the structures in segments. Decommissioning works will be less extensive than construction works. For these reasons, the impact of traffic associated with the decommissioning works will be less than that associated with the construction works. Effects are predicted to be temporary and slight.

7.7 Mitigation Measures and Monitoring

7.7.1 Mitigation Measures

7.7.1.1 Construction Phase

A Construction Traffic Management Plan has been prepared and is included with this application. The Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase. This will include provision of mobility management measures, wheel washing facilities, noise reduction measures, etc.

The CTMP provides details of intended construction practices for the development, including:

- A one way in and out system will be developed where construction traffic enters the site at the Tramore Road access and exits at the Kinsale Road access;
- Location of materials compound(s) including area(s) identified for the storage of construction refuse;
- Location of areas for construction site offices and staff facilities;
- Details of site security fencing and hoardings;
- Details of on-site car parking facilities for site workers during the course of construction;
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;
- Measures to obviate queuing of construction traffic on the adjoining road network;
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works;

- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
- Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
- Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil; and
- Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.

7.7.1.2 Operation Phase

The traffic signals at the junction between Kinsale Road and Mick Barry Road will have to be reconfigured to accommodate the new traffic arm. The impact of the development on the operational phase will be non significant. There is however a concern that vehicles exiting the proposed development will struggle to enter the vehicle queues during peak hour periods. To mitigate this impact it is proposed that yellow boxes are provided on Tramore Road opposite the access to ensure that there is space for vehicles exiting the site to join the vehicle queue on Tramore Road.

To limit the number of cars visiting the proposed development, limited car parking spaces are provided for the development to operate with. This is a measure that would encourage residents and other users of the site to make use of public transport, walking and cycling.

Generous pedestrian walkways are provided on the ground floor level of the proposed development. These walkways connect buildings with one another through landscaped areas. The site is highly permeable from both Kinsale Road and Tramore Road to further encourage walking and cycling as viable modes of transport.

The buildings on the site have been set back along Kinsale Road to provide generous space to accommodate wide walking and cycling routes along the length of the road and to accommodate the future BusConnects route currently proposed.

Cork City Development Plan 2015-2021 Objective 5.3: Travel Plans states that planning applications for new developments shall include a Travel Plan / Mobility Management Plan (MMP) or a Travel Plan Statement.

Following the occupation of the residential dwelling units, a detailed Mobility Management Plan will be prepared. At this stage, it is not possible to prepare a full MMP as there is no management body for the operation of the development available yet. It is however important to set out the aims and potential contents of such a Plan. This section outlines therefore the framework on which an MMP for the development will be based upon once the development is operational.

MMP Manager/ Co-ordinator

A mobility Manager / Travel Co-ordinator will be appointed at the development by the management company. It is envisaged that the management company will oversee the implementation of the Mobility Management Plan including the Mobility Manager and can update the plan regularly following feedback from staff and residents of the development once occupied.

The duties of the Mobility Manager will include inter alia:

- Conducting travel surveys at regular intervals once the development is completed and operational. These surveys will provide detailed and up-to-date information on travel habits which can be used to develop new strategies that encourage travel by alternate modes;
- Implementation of various schemes / plans aimed at encouraging the uptake od more sustainable means of travel;
- Acting as an information point;
- Negotiating with public transport companies and other service providers;
- Setting up and administering registers for particular measures such as taxis if the need arises;
- Branding of the plan; and
- Ongoing promotion and marketing of the plan through various mediums.

Travel Surveys

Six months after the first phase of the development is fully operational, a travel survey will be carried out to establish travel trends within the complex and to identify measures to further promote access by alternative means. This will allow baseline travel patterns to be established, targets to be set and be a forum for staff to comment on any issues relating to their commute.

Transport Information

Information on sustainable travel options for residents will be provided to the following locations, amongst others:

- Cork City Centre;
- University College Cork;
- Cork Airport;
- Tramore Commercial Park;
- Pouladuff Industrial Estate;
- Lehenaghmore Industrial Estate;
- Ballycurreen Industrial Estate;
- Cork Airport Business Park;
- Douglas Shopping Centre; and

- Ringaskiddy.

A transport pack will be provided to each resident and will include the following information:

- Bus routes operating in Cork;
- Nearly bus stops;
- Buses operating from Black Ash Park and Ride;
- Intercity and regional bus and train services;
- GoCar locations and information;
- Taxi services;
- Travel time to certain destinations around the city via bus, bike, walk, taxi and general cost, and health benefits; and
- Public Transport TaxSaver Scheme and Cycle-to-Work Scheme for employees, etc.

Cycle and Pedestrian Facilities

The development site has good pedestrian and cycle connectivity to existing and the future networks proposed within the vicinity of the development. It is possible to gain access from the development to Kinsale Road at five locations along the site boundary ensuring that residents can choose the shortest route to connect to the broader network. Along Tramore road the site is virtually fully permeable and public realm spaces are proposed to make the use of spaces on site inviting and attractive.

The Mobility Manager will continue to promote cycling through various schemes and promotions which may include:

- Bike to Work Week;
- Cycle safety training;
- Site visits from trained mechanics to check / repair bikes;
- Discounts on bikes and accessories from various stores;
- On-site pool bike scheme; and
- Provision of high visibility vests.

The Mobility Manager will also investigate the possibility of setting up a ‘buddy cycle database’ where people choosing to begin cycling to and from work can get in touch and travel with more experienced cyclists with the aim of increasing confidence and safety. Further schemes such as the Cycle to Work Scheme will also be continually promoted bat the development.

Similarly walking will also be promoted through various schemes such as the Pedometer Challenge, as part of the Smarter Travel to Workplace programme.

Bicycle Parking

The proposed development includes a large number of bicycle parking bays (1,145 spaces) and these spaces will be actively managed by the facility management team to ensure any abandoned bikes are removed and recirculated. The MMP coordinator will also facility feedback from the cycle community to identify any improvements which can be implemented on site to improve cycle usage.

Car Parking Management

Restricting access to car parking has the greatest impact on reducing travel by private car and encouraging use of alternative travel means.

The current proposal includes the provision of 209 car park spaces. The car parking spaces included in the development will be actively managed by the facility management team. Spaces available will be offered as an option with the purchase of an apartment / townhouse. The number of spaces available for purchase will be limited. Spaces for purchase will be proportionately available to the number of residential units available in each development phase. Parking will include wheelchair accessible spaces and car sharing spaces.

Car Sharing

The Mobility Manager will ensure that car sharing would be promoted via schemes such as encouraging the use of existing car sharing services, an action which forms part of the Smarter Travel Workplaces programme. Residents will be able to avail of this service in order to get in contact with other people who are travelling to and from similar destinations with the aim of sharing the costs and increasing the number of people travelling as passengers.

The car sharing company GoCar, or similar will have access to some car parking spaces located within the basement car parks. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents' access to a car without the need for a personal car. The Mobility Manager will liaise regularly with the car sharing service provided to ensure the needs of the residents are being met in this regard.

Taxis also provide an opportunity for people who require the flexibility of car travel while also removing the requirement to commute by car. Information on local taxi services will be provided and the possibility of negotiating deals/discounts with providers will also be investigated by the Mobility Manager.

Bus Use

The Mobility Manager will encourage and facilitate the use of the numerous existing bus facilities operating in the local area and any future services that may come on-stream, particularly Bus Connects. Timetables and information on routes, ticket prices etc. will be kept on hand at all times and made available.

The Mobility Manager will also promote and distribute information on any special tickets available such as tax-saver tickets, integrated ticket systems etc. on an

ongoing basis. All information will be updated on a regular basis, with workers/residents being informed of any changes/disruptions to services.

The Mobility Manager will also keep in contact with all bus service providers working in the area with the aim of improving/creating new services locally where possible. Furthermore, the possibility of having local service providers set up onsite at various times in order to promote their services and any special offers available will also be investigated.

Use of Technology

Recent advancements in technology present a number of additional opportunities in relation to encouraging positive modal shift. As part of this MMP residents will be informed of a variety of potentially useful tools including the following:

The NTA / TII Journey Planner – Available on the NTA website and as a downloadable app, the journey planner provides a comprehensive list of travel options available from any origin/destination point in the country. Most notably, this is not limited to a single mode of travel and includes routes which consider multiple modes and multiple public transport services while also providing details such as journey times and distances for each option.

Public Transport Providers – Each of the major public transport providers, including Dublin Bus, Bus Éireann and Irish Rail, now have their own dedicated app that can be downloaded to a smartphone and/or tablet. These contain detailed information on all services offered including timetables and also allow for real time up-dates on changes or disruptions to services.

RealTime Ireland – An application available for download to smartphones and tablets, this app provides real time arrival and departure listings for a range of public transport options from major rail stations to individual bus stops. This app also links with the aforementioned NTA Journey Planner to provide a compressive travel planning tool.

The above are just a few examples of the services available which would be of significant use in promoting more sustainable means of transport. The availability of such services will be promoted amongst residents and employees on a regular basis and information on any new services that become available will also be provided.

7.7.1.3 Decommissioning Phase

The mitigation measures, described above for the construction phase, updated to reflect best practice at the time, will be implemented for the decommissioning phase.

7.7.2 Monitoring

7.7.2.1 Construction Phase

The effectiveness of the construction traffic management plan will be continually monitored to ensure the effects on traffic flows and road users on the surrounding road network are minimised and additional mitigation measures are introduced as required to assist where necessary. The monitoring regime will consider all modes of traffic including pedestrians, cyclists and public transport.

7.7.2.2 Operation Phase

A critical part of any MMP is ongoing monitoring by the management company. It is proposed that an initial evaluation of the operation of the plan will take place 6 months into its operation. The plan will be appropriately adjusted at that stage based on the results.

The MMP will be monitored and regularly reviewed on a minimum yearly basis with regular travel surveys being carried out. The plan will be refined based on experience, new data and consultations with respective stakeholders.

7.7.2.3 Decommissioning Phase

The monitoring measures described for the construction phase, updated to reflect best practice at the time, will be implemented for the decommissioning phase.

7.8 Cumulative Effects

Planning applications on the Cork City Council and An Bord Pleanála data bases were reviewed to identify substantial developments within close vicinity of the development that may cause a cumulative effect. No substantial development has been identified within the vicinity of the development.

However during a meeting with Cork City Council Department of Transport, it was noted that a substantial planning application is expected to be submitted at a site located south of the N40. The transportation assessment takes the impact of this development into account to ensure that a robust analysis is carried out.

In addition, the impact of the proposed Primary Care Centre was also taken into consideration in the assessment by regarding it as latent development and therefore forms part of the background traffic.

7.9 Residual Effects

7.9.1 Construction Phase

The residual effects of the construction works are predicted to be not significant as construction traffic to and from the site will be temporary and carried out in accordance to the robust CTMP. The CTMP will ensure that effects on the local road

network during construction are minimised. This CTMP will be updated by the Contractor, prior to the commencement of construction.

All areas where temporary works are required will be restored to their existing condition.

7.9.2 Operational Phase

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.

The proposed development however strategically located within Cork City being close to a vast number of employment, shopping and community facilities within walking and cycling distance. The development is also located within 2km of the Cork City centre. Locating high density residential development within close proximity of employment, shopping and community facilities contributes to an improved city form by reducing the need for long distance travel and also contributes to increase the viability of existing and planned public transport within the area.

7.9.3 Decommissioning Phase

The decommissioning phase will require less extensive works than the construction phase but will nevertheless require similar mitigation measures. Residual effects, similar to the construction phase, are predicted to be not significant.

7.10 References

- Smarter Travel, A sustainable Transport Future 2009
- National Cycle Policy Framework 2009 – 2020
- Design Manual for Urban Roads and Streets, Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government, 2013
- Southern Regional Spatial and Economic Strategy
- Cork City Council Development Plan 2015 – 2021
- Draft Dork City Development Plan 2022 – 2028
- Cork Metropolitan Area Transport Strategy (CMATS)
- Cork Metropolitan Area Cycle Network Plan
- TII Traffic and Transport Assessment Guidelines
- TRICS 7.4.4 database
- CSO Small Area Population statistics

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 (NO_x), 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[23] 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.

[23] 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[24] 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:

- establish limit values and alert thresholds for concentrations of certain pollutants,
- provide for the assessment of certain pollutants using methods and criteria common to other European Member States,
- ensure that adequate information on certain pollutant concentrations is obtained and made publicly available and
- provide for the maintenance and improvement of ambient air quality where necessary.

The limit values established under these regulations relevant to the assessment of the proposed development 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

[24] 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[25] 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[26].

8.2.2.2 Climate

National

The *Climate Action and Low Carbon Development (Amendment) Act 2021*[27] 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[28], 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)[29]. 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)[30], which was published in December 2012. The aim of the NCCAF is

[25] TA Luft (2002) *Technical Instructions on Air Quality*.
[26] EPA (2006) *Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*
[27] 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]
[28] 2030 targets for EU Member States as per EU Effort Sharing Regulation.
[29] National Adaptation Framework (January 2018), Planning for a Climate Resilient Ireland
[30] National Climate Change Adaptation Framework (December 2012), Building Resilience to Climate Change

to 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*[31] 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)[32] 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;

[31] Climate Action Plan, Government of Ireland 2021. Available at: https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/
[32] 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[33] were used to determine the baseline air quality for the years 2017 – 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[23]. 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.

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

[33] EPA (2020) Annual Air Quality Reports, Available: https://www.epa.ie/publications/monitoring--assessment/air/ [Accessed January 2022]

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.

Operational Phase

The TII guidelines[23] 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.

8.2.4.2 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 (end of Phase 1), for the opening year +5 years (end of Phase 2), for the opening year +10 years (end of Phase 3) and for the opening year+15 years ('the design year' and end of Phase 4).

As outlined in **Chapter 7** *Traffic and Transportation*, the impact of 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 five junctions including the site access road, both without and with the proposed development:

- Kinsale Road / Mick Barry Road
- Kinsale Road / Tramore Road
- Tramore Road Access
- N40 / N27 junction and
- N27 / Mick Barry junction.

Refer to **Figure 8.1.** for the location of these roads in relation to the proposed development.

Potential effects on Annual Average Daily Traffic as a result of the proposed development have been outlined in **Section 8.4.** Refer to **Chapter 7** *Traffic and Transportation* for further details.

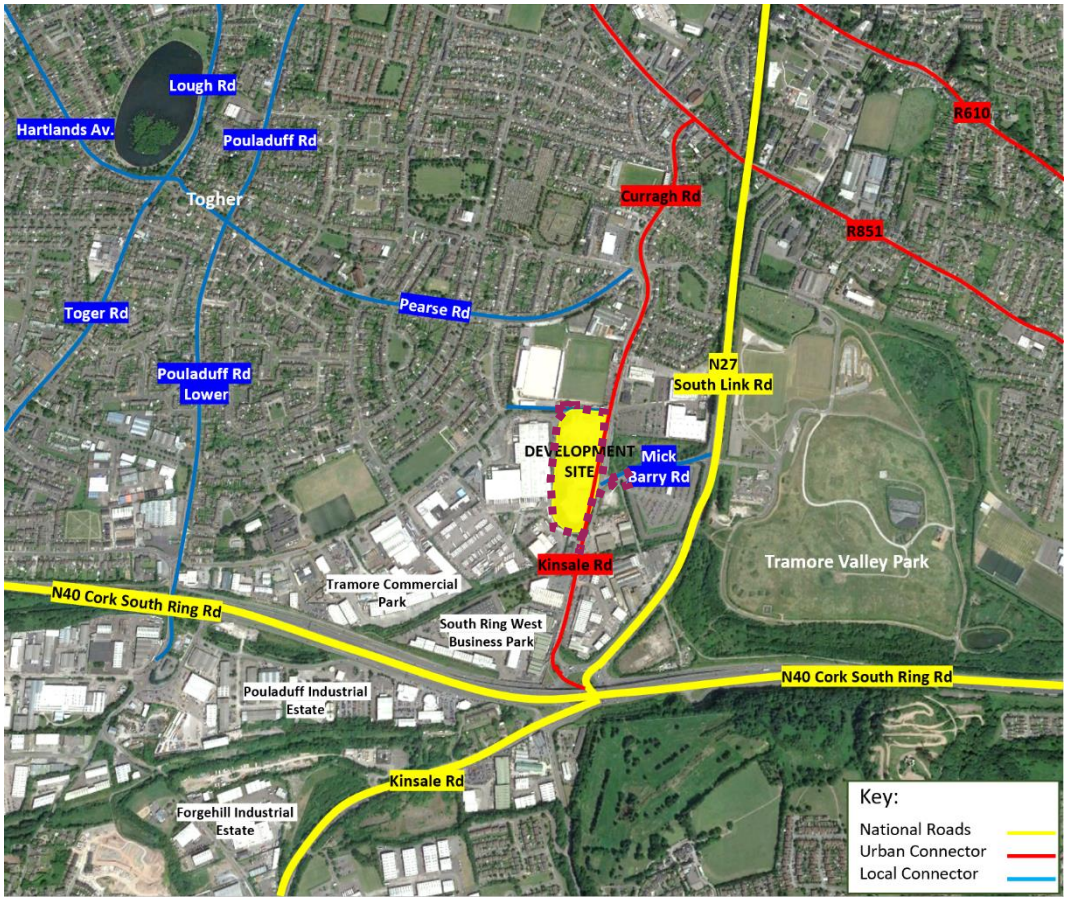


Figure 8.1: Main road junctions and link flows in relation to the proposed development site | not to scale

8.2.4.3 Climate

Carbon Emissions

In line with the Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities[34] (hereafter referred to as the 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:

- *"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"*
- *"demonstrate what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents."*

[34] 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)*

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, materials used, landscape, waste management, health and well-being, management, and transport.

Wind

A wind comfort assessment has been carried out to include Computational Fluid Dynamics (CFD) analysis, wind impact assessment and establish mitigation measures. This analysis informs the landscaping and public realm elements of the project, ensuring for example that seating is located in areas of low wind impact. The Wind Microclimate Study report is included in the planning application documentation.

Daylight and Sunlight

In addition, a Daylight and Sunlight Analysis has been carried out in line with the Urban Development and Building Height Guidelines for Planning Authorities (2018)[35] and Apartment Guidelines[34]. This report has been included as part of the planning application documentation for the proposed development.

[35] Department of Housing, Local Government and Heritage (2018). *Urban Development and Building Height Guidelines for Planning Authorities*.]

8.3 Baseline Environment

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 – 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 ($\mu g/m^3$)	Annual Average NO_x ($\mu g/m^3$ NO_2)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average $PM_{2.5}$ ($\mu g/m^3$)	8-hour average CO ($\mu g/m^3$)
2017	26.6	63.9	13.8	5.7	340
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	16.0	33.8	13.0	7.1	413.3
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 other sites 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[36] records air quality at several monitoring stations within proximity to the proposed development site. These include stations at South Link Road (Station 56) and Heatherton Park (Station 10)[37], 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.**

South Link Road (Station 56)

The South Link Road site is located on the south side of Cork City, at the Cork City Council Civic Amenity Site (former Kinsale Road Landfill), approximately 300m east 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), 43.33 µg/m³ (O_3), 2.68 µg/m³ (SO_2) and 0.3 mg/m³ (CO), all of which are below the 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 the Cork City Council Civic Amenity Site (former Kinsale Road Landfill) and approximately 900m northeast 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 $PM_{2.5}$.

[36] www.airquality.ie
[37] At the time of reporting this monitor was offline for maintenance since 4th January 2022

Table 8.7: Air quality data from Heatherton Park, South Link Road and Ballyphehane| Source: EPA (www.airquality.ie) and Cork City Council (www.corkairquality.ie)

Monitoring Station	2021 Average PM_{10} ($\mu g/m^3$)	2021 Average $PM_{2.5}$ ($\mu g/m^3$)	2021 Average NO_2 ($\mu g/m^3$)	O_3	SO_2	2021 Average CO ($\mu g/m^3$)
Heatherton Park *Note 8*	11.6	7.9	-	-	-	-
South Link Road *Note 9*	18.3	-	15.79	43.33	2.68	300

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).

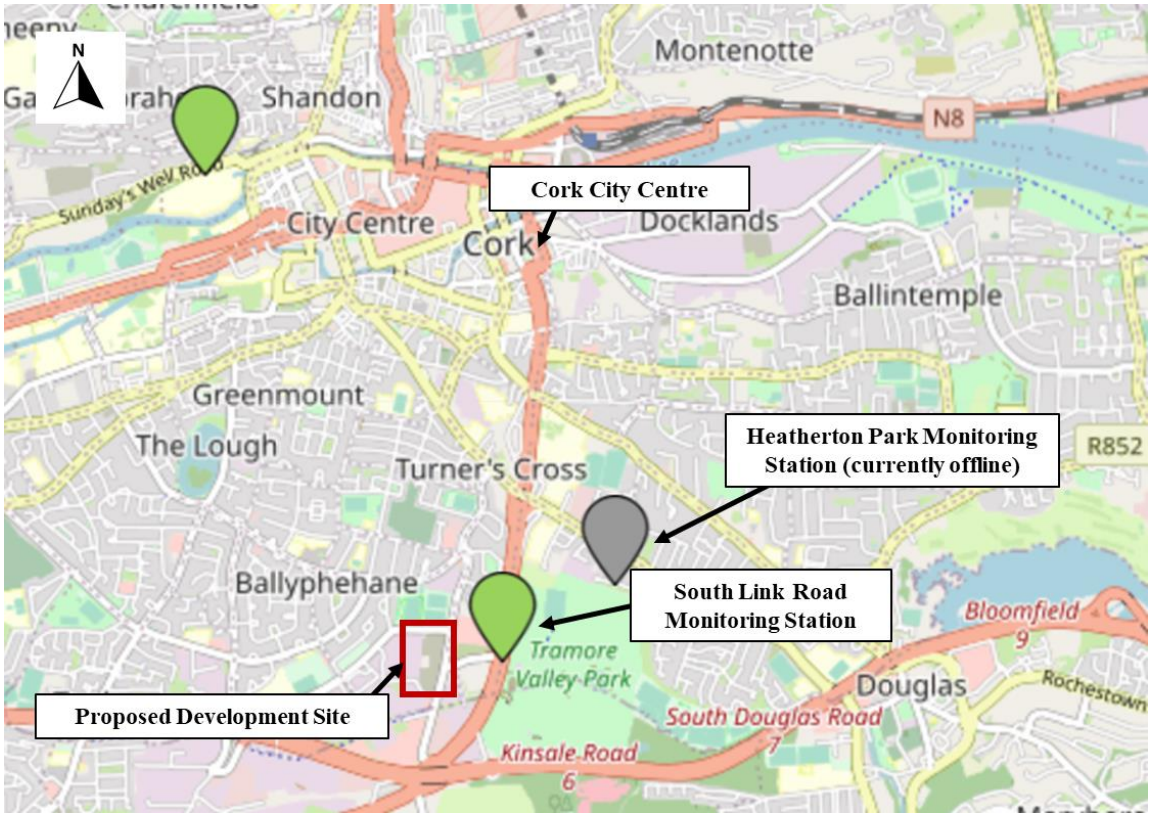


Figure 8.2: National Ambient Air Quality Network monitoring stations within proximity to the proposed development site | not to scale | Source: EPA www.airquality.ie |

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[38] and installed them at locations across Cork City[39]. The sensors use laser particle counters to provide real time measurement 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 the Ballyphehane air quality sensor as seen in **Figure 8.3.**

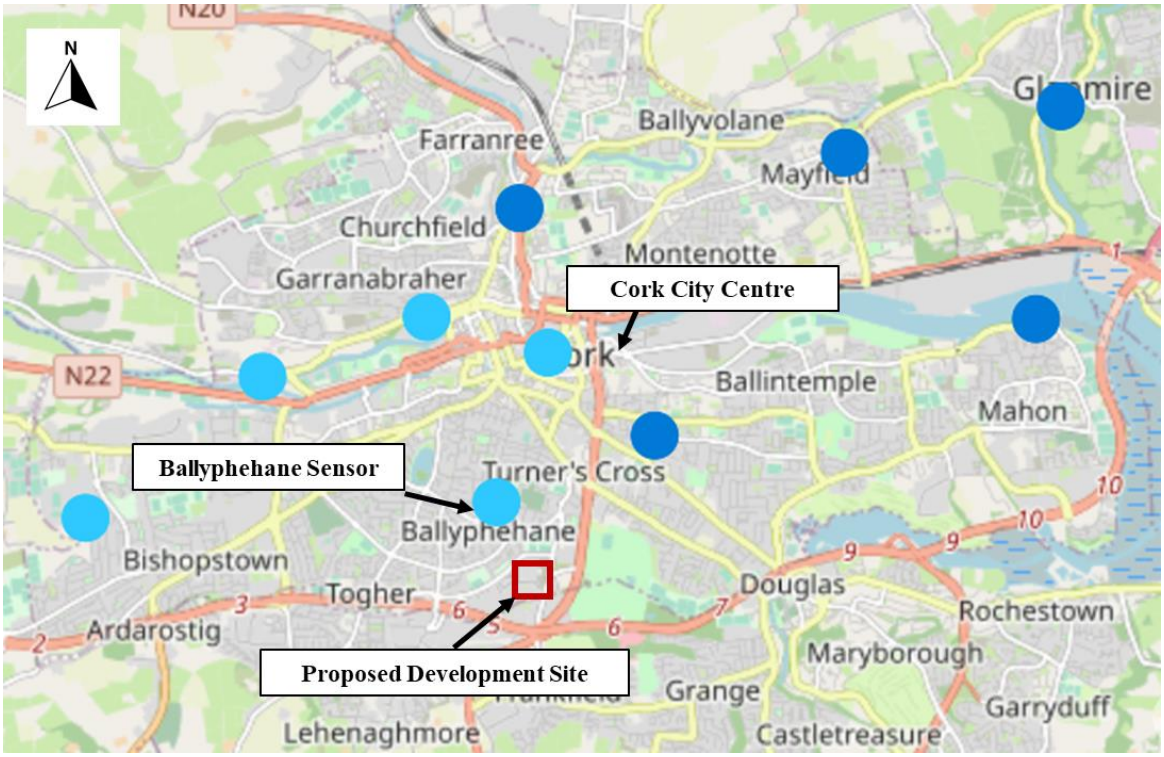


Figure 8.3: Cork City Council air quality sensors near the proposed development site | not to scale | Source: www.corkairquality.ie |

Ballyphehane

The monitoring sensor located in Ballyphehane records measurements of $PM_{2.5}$. Based on data outlined in **Figure 8.4**, overall air quality in the Ballyphehane area is classified as *Good* and within the $PM_{2.5}$ range of 1-10 µg/m³ for 2021. Some exceedances have occurred throughout the year which are indicated as *Moderate* (in the range of 36-53 µg/m³; indicated as dark blue in **Figure 8.4**) and *Acceptable* (in the range of 11-35 µg/m³; indicated as yellow in **Figure 8.4**).

[38] https://www2.purpleair.com/
[39] www.corkairquality.ie

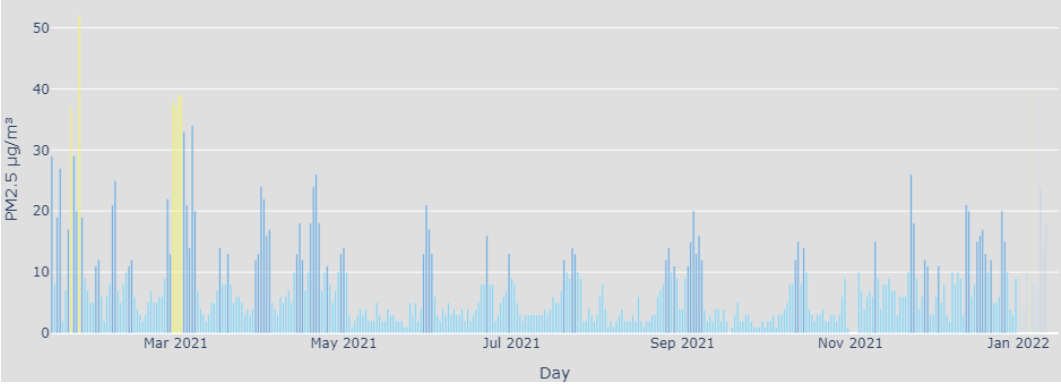


Figure 8.4: Ballyphehane daily $PM_{2.5}$ air quality data Q2-Q4 2021 | source: www.corkairquality.ie

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[40], the index value for monitoring stations identified in Cork City (**Figure 8.2**) has been classified as *Good* (Index value 1; green).

8.3.2 Climate

8.3.2.1 Macro Climate

The EPA published a report[41] 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.

[40] January 2022
[41] 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

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 3.5km south 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[42].

- The annual mean temperature is 10.03ºC.
- The annual mean rainfall is 1305.17mm.
- The annual mean wind speed is 9.86 knots.

[42] Met Eireann Data. Available at: https://www.met.ie/climate/available-data/historical-data [Accessed January 2022]

8.4 Potential 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

It is anticipated that the construction of the proposed development will be carried out in five sequential phases: a site enabling works phase (approximately 2-4 months) followed by four main construction phases (as described in **Chapter 4** *Construction Strategy*). An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth.

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' (dwellings and college) in terms of air quality, include the following:

- Musgrave Park and Sundays Well RFC, located to the north of the development site (within 50m);
- Musgrave Retail Partners Ireland, located west of the development site (within 50m);
- Turners Cross Retail Park, located to the east of the site (within 50m); and
- Black Ash Park & Ride, located to the east of the development site (within 100m).

Most properties surrounding the proposed development site are commercial developments that are involved primarily in the retail, sport and public transport trades. There are no hospitals, schools or places of worship within 100m of the site boundary at present. Cork Mosque and Coláiste Stiofáin Naofa (CSN) College of Further Education are located approximately 570m and 630m, respectively, southwest of the proposed development. Due to their distance from the site, it is unlikely that these will be affected by the proposed development.

Other sensitive properties are located in the area also beyond 50m of the site. As the works are over 50m from these properties, no significant effect is likely, with standard mitigation in place.

Following completion of construction of Phase 1, new sensitive receptors will be present on site during subsequent construction Phases 2-4, including residential Blocks E and F, a crèche, retail units, a town square and a Primary Care Centre (subject of a separate planning application). During construction Phases 2-4, 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.

Asbestos and Contaminated Lands

Asbestos Containing Materials (ACMs) were identified in a previous asbestos survey and during standard geo environmental sampling undertaken as part of site investigation works at the proposed development site. A formal asbestos audit will therefore be undertaken prior to any demolition and excavation works.

It is likely that further instances of asbestos may be found on site during construction. It is possible that disturbance of ACMs on site could cause asbestos fibres to be released into the ambient environment. Due to the hazardous properties of asbestos all ACMs will be bagged, stored and removed from site by licenced contractors. In addition, 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 population.

Further details on the asbestos 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 ACMs during construction activities.

Construction Traffic Emissions

The proposed development is anticipated to be constructed in five sequential phases: a site enabling works phase (approximately 2-4 months) followed by four main construction phases (as described in **Chapter 4** *Construction Strategy*). 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 200, with a peak of up to 250 personnel at the most intensive fit-out and landscaping phases. **Chapter 7** *Traffic and Transportation* estimates that a total of 46 Heavy / Light Goods Vehicles and 172 vehicles for construction workers will be travelling to the site on a daily basis during construction phase.

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 10%. **Figure 8.1** illustrates the traffic monitoring locations used in the assessment in relation to the proposed development.

Odours

The proposed development will include the construction of a dedicated below ground foul network system which will collect and convey all foul water generated by the development, as described in the *Site Infrastructure Report* (Ref. 252666-ARUP-XX-XX-RP-C-0001) included with this planning application.

Significant odour effects are not predicted to occur during the construction phase. Any potential odours associated with the construction of this system will be non-significant and short-term.

8.4.3 Operational Phase

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, Phase 3 and Phase 4. Completion of the proposed development is planned for 2031.

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**.

Air Quality

Operational Traffic Emissions

The Link Flow Assessment analysis carried out as part of this EIAR, (Refer to **Chapter 7** *Traffic and Transportation)* has shown that operation of the proposed development will have an insignificant impact on national roads, including the N40 and the N27. The development is expected to have a minor impact on Kinsale Road by adding between 1 and 4% traffic on this road. The most significant impact is on Tramore road, with approximately 60 additional vehicles in both directions. The Annual Average Daily Traffic (AADT) values associated with the operation of the proposed development will increase by less than 5%, and as outlined in **Section 8.2.4** the TII guidelines specify that pollutant concentrations should be calculated at receptors located adjacent to roads where operational traffic increases by 5% or more. Therefore the associated impact on air quality is predicted to be not be significant.

Odours

A dedicated below ground foul network system will be constructed to collect and convey all foul water generated by the development, as described in the **Site Infrastructure Report** (Ref. 252666-ARUP-XX-XX-RP-C-0001) included with this planning application. While foul water from Block E will be discharged to a diverted combined sewer via gravity, all remaining foul water runoff must first be discharged to a centrally located pumping station where foul water will be stored before being discharged to the combined sewer. The pumping station will be located within the public realm area adjacent to Blocks B, I and J.

During the operational phase, there is the potential for odours to arise from this foul water containment within the site. In the event odours are detected it is predicted they will have a slight to moderate medium to long-term impact on the site, in the absence of mitigation measures, due to the presence of sensitive receptors within the development boundary.

Climate

Carbon Emissions

As outlined in the Building Life Cycle Report, a Building Energy Rating (BER) certificate will be provided for each apartment, duplex apartment and duplex townhouse, which will provide detail of the energy performance and carbon emissions associated with each of the dwellings. It is proposed to target a BER Rating for each apartment of A2. This will equate to the following emissions:

A2 – 25-50 kWh/m^2/yr. with CO_2 emissions approx. 10 kgCO_2/m^2/yr.

Passive and active, energy and carbon emission reduction measures which will directly benefit occupants in terms of reducing operational costs have been proposed. These measures will result in a reduction in the consumption of fuel and the associated carbon emissions and operating costs, and include:

- **Building Fabric Efficiency:** The proposed development will incorporate a design to allow for reduced heat loss. This will be achieved through optimising air infiltration and maintaining a design air permeability target value of $3m^3/m^2/hr$.
- **Lighting Efficiency:** Energy-efficient lighting will be implemented throughout the development to achieve the appropriate light levels, as recommended by CIBSE[43]. The design of lighting systems shall ensure that lighting is only used when required, only in the specific area where lighting is needed.
- **Sanitary Ware:** The proposed development will include showers with a max flow rate at 3 Bar and a flow of no greater than 6 litres per minute. Bath volumes in the proposed development will be no greater than 150 litres.
- **Energy Labelled White Goods:** White goods provided by the developer will have a high energy rating.

In addition, the following Low Energy / Carbon and Renewable Energy Solutions are being considered for the proposed development:

6. Heat pumps

Space heating to each apartment/townhouse will be provided by Exhaust Air Heat Pumps (EAHP). The proposed exhaust air heat pump supplies low temperature hot water to the apartment/townhouse radiators. The heat pump will also provide hot water to a built-in water tank. The hot water is produced by a heat exchange with the extracted warm air from the apartment/townhouse wet rooms.

An alternative approach is the use of electric radiator using the Dimplex Electric system.

7. Condensing gas boilers

Condensing gas boilers are being considered in conjunction with renewable technologies as they have a higher operating efficiency than standard boilers. Condensing boilers utilize heat losses from the boiler exhaust flue gases to preheat the circulating heating water which typically results in an operating efficiency in excess of 90%.

Space heating to the community facilities (gym, café etc.) will be provided by a small central Low Pressure Hot Water (LPHW) system which will comprise of a high efficiency gas boiler, district heating network and panel radiators.

8. Mechanical ventilation heat recovery

Mechanical ventilation heat recovery (MVHR) will provide ventilation to each apartment. MVHR provides tempered external fresh air to occupied spaces and extract ventilation from rooms with “Bad Air” such as bathrooms, utility stores etc. Heat is recovered from exhaust air streams and transferred to the fresh air stream negating the requirements to use heating energy to heat incoming cold external fresh air.

[43] Chartered Institution of Building Services Engineers (CIBSE)

Mechanical ventilation to each apartment/townhouse will be provided by Exhaust Air Heat Pumps.

For mechanical ventilation to the community facilities (gym, café etc.), a high-efficiency heat recovery system will be employed on appropriate air systems to minimise associated energy use.

9. Photovoltaic (PV) panels

PV Panels are capable of generating direct current electricity from the sun's energy, which can then be converted to alternating current and used within the building. They are a "maintenance free" technology as there are no moving parts. They typically have a 20-year manufacturer's guarantee on electrical output and can be expected to operate effectively for 30 years or more.

Capital costs have also reduced significantly in recent years due to a worldwide increase in production levels. They are adaptable and scalable in that the amount installed can be selected to suit the budget available.

The energy balance for this high-density residential development means that the use of Exhaust Air Heat Pumps/PV panels or the Dimplex electric system/PV panels would be the most practical option for meeting compliance with the Near Zero Energy Building requirements and other regulations.

The use of the PV can also be used to supply energy back to the grid. The proposed development will incorporate the use of PV solar panels on the building roofs.

10. E-CAR Charging Points

Ducting will be provided from local distribution boards to designated E-Car charging car park spaces within the basement car park. This will provide the management company with the option of installing a number of E-Car charging points to cater future E-Car demand of residents.

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*.

Wind

The CFD study carried out has shown that under the assumed wind conditions typically occurring within Cork for the past 30 years:

- The development is designed to be a high-quality environment for the scope of use intended of each areas/building (i.e., comfortable and pleasant for potential pedestrian).

- The development does not introduce any critical impact on the surrounding buildings, or nearby adjacent roads.

Daylight and Sunlight

The Daylight and Sunlight Analysis report has concluded that the proposed development will:

- have a negligible and non-significant impact on the levels of daylight and sunlight availability in the surrounding existing properties and amenity spaces.
- produce an environment that allows for plentiful sunlight penetration into all the amenity spaces and the majority of south facing apartment windows, in addition to producing appropriate levels of diffuse daylight within the apartments themselves.

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 effects (contained in **Section 8.4**) includes for the implementation of 'standard mitigation', as stated in the TII guidelines[23]. This includes the following measures:

- 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 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**), will be 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 and car sharing schemes to reduce the reliance on private motor vehicles. These measures will contribute towards reducing potential traffic emissions as a result of the operation of the proposed development.

Odour

Due to the proposed pumping station's proximity to residential units (Blocks B, I and J) and public realm areas, the design has incorporated the following features to ensure minimal disturbance and odours during operation:

- The pumping station will be carefully located/configured to ensure the distance between access covers linked to the wet well and nearby dwellings is at least 15m. Covers will be double sealed to prevent odour escape.
- The landscaping design will consider the requirement for the pumping station to ensure the above ground features (e.g., control kiosk) are screened as best possible while still maintaining adequate access for operations/maintenance.
- The wet well will be circular and will incorporate steep benching to promote self-cleansing of the flow into the wet well and reduce the risk of solids settling out on the benching itself.
- The vent stack from the wet well will be taken to roof level of the nearest building and will be fitted with an activated carbon filter. Furthermore, an additional vent stack will be provided at the highest point on the gravity network and will similarly be vented to building roof level and fitted with a filter. It is anticipated that specialist design input will be sought to design the venting system.
- The pumps themselves will be 2 No. Flygt Concertor XPC configured duty/standby. This specific pump is proposed due its following features:
    - Self-monitoring functionality
    - Built in/automatic sump and pipe cleaning to reduce odour and maintenance
    - Automatic clog detection and integrated pump cleaning functions to ensure clog-free operation.
    - It can come with a smaller/simplified control kiosk design to reduce visual intrusion on surrounding landscaping.

The foul water scheme has been designed in line with Irish Water Code of Practice Section 5.11. It is intended this pumping station will be taken in charge by Irish Water.

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:

- A Building Energy Rating (BER) certificate will be provided for each apartment, duplex apartment and duplex townhouse, to provide detail of the energy performance and carbon emissions associated with each of the dwellings;
- Building Fabric Efficiency will be implemented to reduce heat loss;
- Energy-efficient lighting will be implemented;
- Max flow rates and volumes for showers and baths to reduce water consumption; and
- White goods provided by the developer will be have a high energy rating.

In addition, the following Low Energy / Carbon and Renewable Energy Solutions are also being considered for the proposed development:

- Use of Exhaust Air Heat Pumps (EAHP) to conserve energy;
- Condensing gas boilers which have a higher operating efficiency than standard boilers.
- Mechanical ventilation heat recovery to minimise associated energy use;
- Photovoltaic (PV) panels will be used to generate electricity and contribute towards the Near Zero Energy Building requirements and other regulations; and
- E-CAR Charging Points to cater future E-Car demand of residents.

Wind Microclimate

The following mitigation measures will be implemented, should predicted wind conditions exceed the threshold:

- Landscaping: the use of vegetation to protect buildings from wind;
- Sculptural screening (solid or porous): to either deflect the wind or bleed the wind by removing its energy; and
- Canopies and Wind gutters: horizontal canopies are used to deflect the wind and redirect the wind around the building and above the canopy.

Daylight and Sunlight Microclimate

The design, layout and separation distances of the building blocks have been designed to optimize the ingress of natural daylight/ sunlight to the proposed dwellings and provide good levels of natural light. This will reduce the running costs of the proposed development by reducing the reliance on artificial lighting.

8.6 Cumulative Effects

8.6.1 Primary Care Centre

Planning permission for a Primary Care Centre which will be located in the north-western part of the wider development site has been sought by Watfore Ltd from Cork City Council. It is anticipated that the provision of this Primary Care Centre will bring people to the town square.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both

through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

It is planned that the Primary Care Centre will be constructed during Phase 1 of the proposed Creamfields Residential Development, as outlined in **Chapter 5** *Construction Strategy*. The construction of this development will have an impact on the air quality and climate, due to the associated dust, traffic and potential odours. In cumulation with the proposed development, there will be a slight, short-term cumulative impact on air quality within the proposed development site and surrounding area during construction Phase 1.

Mitigation measures, as outlined in **Section 8.5, Chapter 5** *Construction Strategy* and **Appendix 5.1** *CEMP* will be incorporated into both designs to account for this cumulative impact.

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:

Several Road Improvement Schemes have been identified within the surrounding area of the proposed development site, which are currently at either planning/design or construction phase. These include:

- **Lehenaghmore Road Improvement Scheme**, which will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in Q3 2022.
- **Grange Road to Tramore Valley Park Pedestrian & Cycle Link**, which has commenced site clearance works and is expected for completion by early 2023.

Even if the construction phases of these projects coincide for a period of time with that of the proposed development, given their temporary nature, and with the implementation of mitigation measures, the likelihood of any significant cumulative effect on air quality and climate is low and short term.

No cumulative effects on air quality or climate are predicted to arise from the proposed development during the operational phase. Further details have been included in **Chapter 19** *Cumulative Effects*.

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 predicted during the construction phase.

8.7.2 Operational Phase

No significant impacts on air quality or climate are predicted 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 Assessment 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 multi-use units (primary care centre – subject to a separate planning application, and restaurant/café). 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 08:00 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 operation of the proposed development does not exceed 25% on any external road. On this basis, it is concluded that the change in traffic associated with the development will not be significant with regard to noise and vibration, and the associated impacts will not be significant. Further analysis relating to traffic movement is scoped-out.

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 Environment

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, as well as operations at the nearby commercial properties such as the Musgrave warehouse and logistics facility that adjoins the subject site, to the west.

The site is subject to strategic noise mapping by Cork City and County 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.

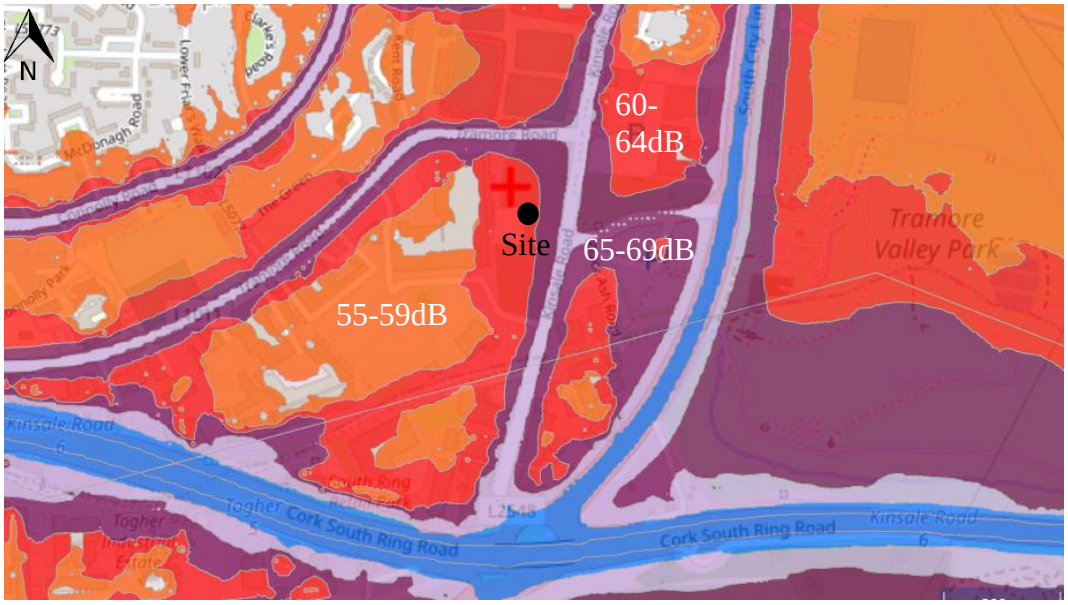

Figure 9.1 Noise Mapping for Roads near the Site | L_{den} | Strategic Noise Mapping, Round 3 | Cork City and County Councils [not to scale]

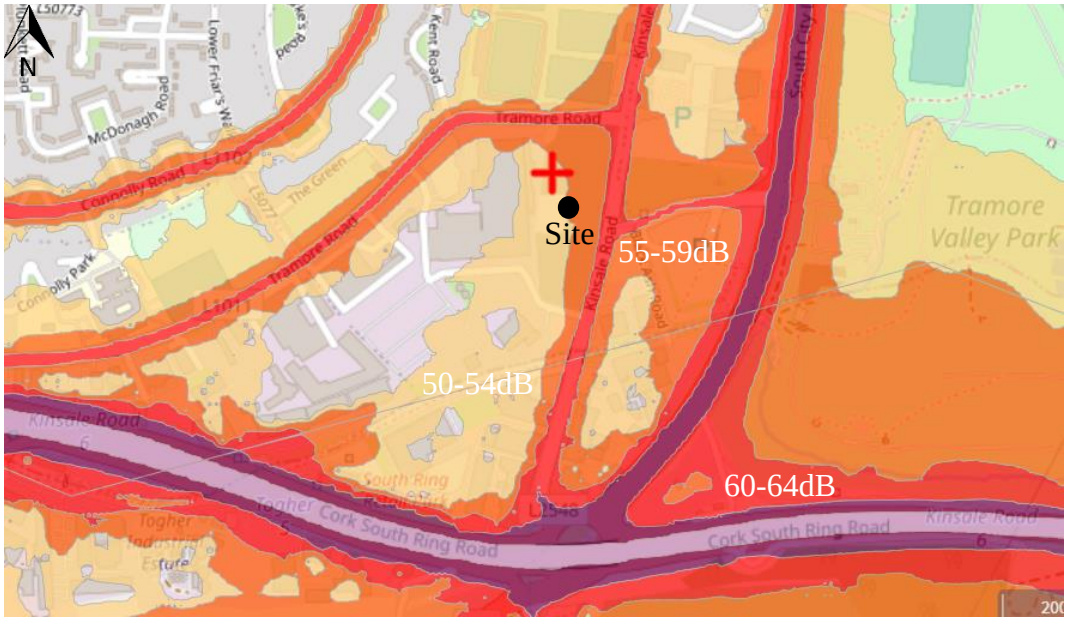

Figure 9.2 Noise Mapping for Roads near the Site | L_{night} | Strategic Noise Mapping, Round 3 | Cork City and County Councils [not to scale]

9.3.2 Baseline Noise Survey

A baseline noise survey was carried out at two locations within the subject site, and one location immediately south of the subject site on 04 and 05 October 2021. The monitoring locations NM1, NM2 and NM3 are indicated in **Figure 9.3**.

Figure 9.3 Noise Monitoring Locations | not to scale [background mapping © Microsoft Bing 2022]

Table 9.3 Noise Monitoring Location Details

Monitoring Label	Location	ITM Easting	ITM Northing	Comments
NM1	North-western part of Site	555, 317	598, 605	Traffic noise from vehicles on Tramore Road to the north predominated at this location. Air traffic noise was noted on one occasion with an overflight during the evening monitoring.
NM2	North-eastern part of Site	555, 308	598, 323	Traffic noise from the junction of Tramore Road, Kinsale Road and the retail park to the east predominated at this location. Significant siren noise was noted on one occasion during the evening monitoring.

Monitoring Label	Location	ITM Easting	ITM Northing	Comments
NM3	South of Site – Entrance to Musgrave Facility	555, 308	598, 323	The monitoring carried out at this location was during the busy early-morning period of truck movements at the neighbouring Musgrave facility. Significant levels of traffic noise were recorded here, principally from accelerating and decelerating trucks, with a truck horn noise peak noted on one occasion.

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 were dry, mild, with a light breeze. Temperatures ranged from 11 degrees Celsius in the afternoon to 9 degrees Celsius in the evening. The morning temperature at NM3 was 8 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

Figure 9.5 Noise Monitoring Location NM3

9.3.3 Recorded Noise Levels

The proposed development will be at the fringe of an urban area, adjacent to busy roads. Baseline noise levels are relatively high on the site, principally associated with road traffic. The strategic noise mapping illustrated in **Figures 9.1** and **9.2** correlates with the monitoring carried out at NM1 and NM2, the two noise monitoring locations within the site. 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 and time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A10} (dB)	L_{A90} (dB)
NM1 17:20-17:50	53.9	63.8	55.5	51.6
NM1 18:34-19:04	51.5	68.5	53.1	48.5
NM2 17:54-18:24	61.9	85.2	62.7	53.6

Table 9.5 Evening Noise Levels (19:00 to 23:00)

Location	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A10} (dB)	L_{A90} (dB)
NM1 19:06-19:21	53.0	63.7	54.5	50.7
NM2 19:23-19:38	58.1	65.7	60.8	53.8

Table 9.6 Night-time Noise Levels (23:00 to 07:00)

Location	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A10} (dB)	L_{A90} (dB)
NM1 22:54-23:09	46.1	62.7	48.1	43.6
NM2 23:12-23:27	50.9	63.6	54.6	45.0

Tables 9.4, 9.5 and 9.6 indicate that baseline noise levels on the subject site are generally relatively high across the site, which is to be expected at an urban location, adjacent to busy roads.

Early morning noise monitoring was also carried out at the off-site location, **NM3** to the south of the site, close to the entrance to the Musgrave facility that adjoins the subject site. Noise levels measured at this location are summarised in **Table 9.7**, and the noise levels recorded at this location reflect the frequent passage of heavy goods vehicles accessing and egressing the Musgrave facility.

Table 9.7 Off-site Morning Noise Levels (07:00 to 12:00)

Location	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A10} (dB)	L_{A90} (dB)
NM3 07:37-07:52	71.9	95.8	75.1	63.0

9.3.4 Sensitive Receptors

The key noise and vibration sensitive receptors that could be affected by the proposed development are:

- residences and commercial establishments[44] in the surrounding area; and
- the new residents within the site during the later phases of construction, and in the vicinity of the vehicular access to the neighbouring Musgrave facility.

Other potential sensitive receptors in the wider area, such as churches, Cork Mosque, schools and Tramore Valley Park are sufficiently distant from the site of the proposed development to be unaffected by noise and vibration from the proposed development.

[44] Commercial establishments are generally considered to be less sensitive than the likes of dwellings, schools, hospitals and amenity areas, but are addressed here as the proposed development is close to office workplaces in the Musgrave facility to the west of the subject site.

Figure 9.6 illustrates the sensitive receptors in the surrounding area – magenta dots indicate commercial establishments, and existing residences are indicated with yellow dots. Cyan dots are categorised by the myplan.ie website as 'unknown' and are considered to be equivalent to commercial for the purposes of this assessment.

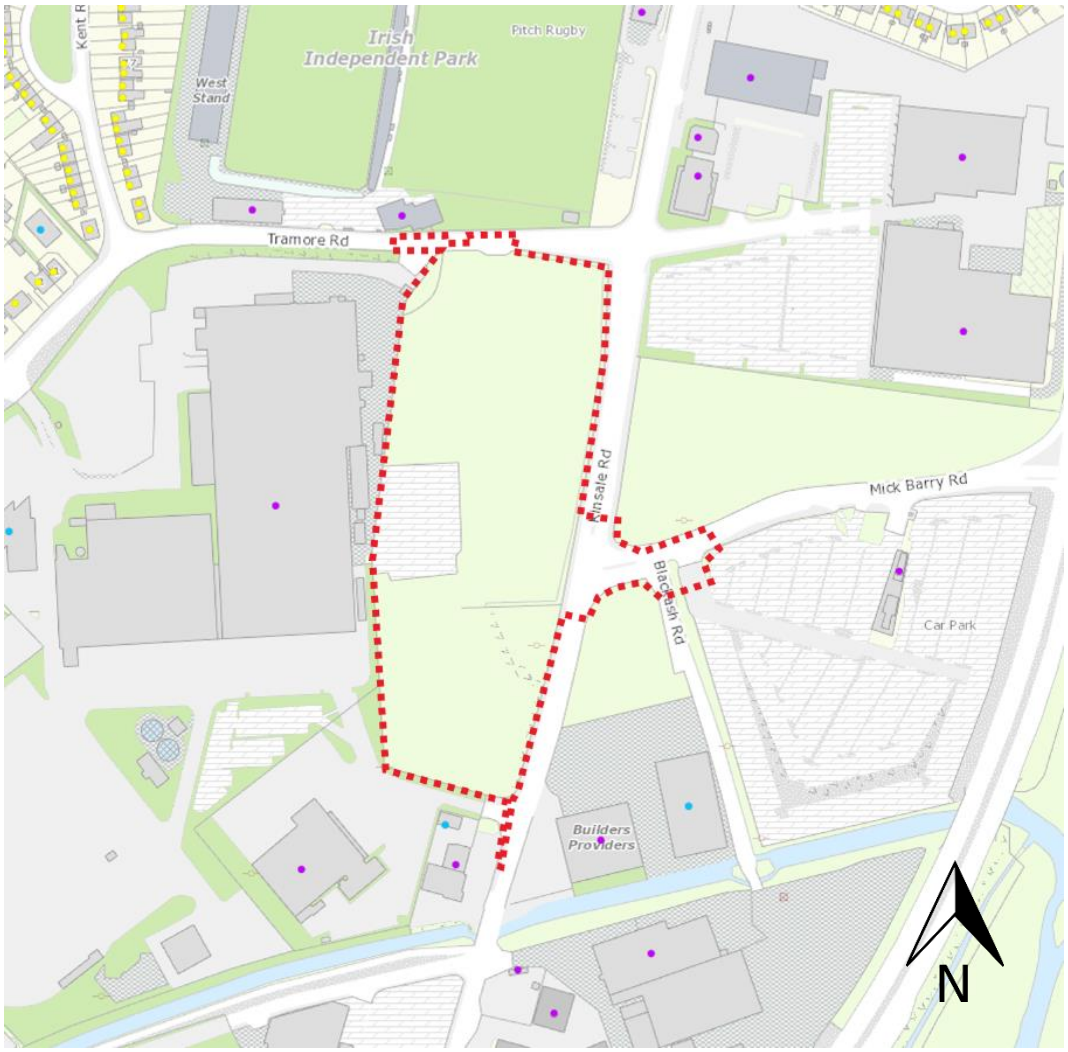

Figure 9.6 Sensitive Receptors for Noise and Vibration (Yellow, Magenta and Cyan Dots) | not to scale [source: myplan.ie]

The closest existing residential receptor is 140m from the site boundary at Kent Road to the northwest. The neighbouring Musgrave facility and Musgrave Park are commercial receptors, and they adjoin the site to the west and to the north.

9.4 Potential Effects

9.4.1 Do-Nothing Scenario

If the proposed development does not proceed, the noise and vibration environment near the site will continue to be dominated by traffic into the future.

9.4.2 Construction Phase

Noise and vibration will be generated intermittently during the construction phases, associated with the following activities, as described in detail in **Chapter 5** *Construction Strategy*.

- Site preparation and enabling works, including erecting perimeter hoarding 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 removal of the existing concrete ground floor slabs and foundations along with carpark surfacing.
- Construction of foul and surface-water drainage infrastructure and network.
- Excavation for foundations and construction of podium and building structures.
- Façade, fit-out and landscaping works.

As 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 was 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 scheme 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. **Tables 9.8**, **9.9** and **9.10** set out assumed plant items during the site preparation and construction phase.

The single noisiest activity planned will be the concrete breaking for removing the existing slabs and foundations on the site, and this will be carried out first, so is addressed separately in **Table 9.8**. Following this, given the planned phasing of construction, the closest sensitive receptors to the proposed development will be the early-phase buildings in operation while the later phases are under construction, as close as 10 metres from the 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. A number of practical construction scenarios were considered to establish a realistic combination of noise-generating construction equipment.

Table 9.8: Indicative Construction Noise Calculations during Breaking out of Existing Concrete Slabs and Foundations

Site preparation	Calculated (dB) LAeq, T at distance from works (m)			
	10 m (with hoarding)	30 m	60 m	120 m
Breaker Mounted on Wheeled Backhoe	80	81	75	69

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 9.9: 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 LAeq from all plant	**68**	**68**	**62**	**56**

Table 9.10: 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 LAeq 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 9.8**, **9.9** and **9.10**) indicate that at all sensitive residential locations, 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.

At the closest commercial receptors, the criterion will be exceeded intermittently for a period of up to a month during the initial concrete breaking activity. This will be a temporary slight to moderate impact at these locations, associated with activity that is typical for large-scale urban development of this type.

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.

9.4.3 Operational Phase

The following are potential noise sources during the operational phase of development:

- Additional traffic accessing and egressing the site;
- Plant and equipment operating on the site;
- Existing noise from traffic accessing and egressing the adjacent Musgrave facility impacting on future residents on the site.

No potential for significant vibration effects arising from the operation of the proposed development has been identified.

In relation to traffic generated by the proposed development, the predicted increase in annual average daily traffic (AADT) on the nearby public roads will be less than 25%. There will therefore not be any significant adverse effects on noise from traffic associated with the operation of the proposed development.

A range of mechanical and electrical plant and equipment will be required to service the proposed development in operation, including heating equipment, switch rooms, electrical sub-stations, pumps and vents. At the current preliminary design stage, this plant and equipment has not been specified in detail, but they will be located within the proposed buildings, and will be designed to meet CIBSE[45] guidelines for noise levels. There is no potential for operational noise and vibration from the site having adverse noise and vibration effects at the identified sensitive receptors.

As recorded in **Table 9.7**, the existing noise environment at the southern part of the site is dominated by truck movements associated with the operation of the neighbouring Musgrave facility, and consequently, noise levels here in the early morning are relatively high. This existing noise is not caused by the proposed development, and is therefore not subject to EIA in the conventional sense. Notwithstanding this, there is clearly a practical requirement for the design of the proposed development to respond to this environment to ensure appropriate residential comfort for future residents on the site.

As can be seen in **Figure 9.7** the southern facades of Buildings L, M and N are the closest elements of the proposed development to the Musgrave facility entrance.

[45] Guide B4 Noise and Vibration Control for Building Services Systems (2016)

Figure 9.7 Residential Units Closest to Musgrave Facility Entrance | not to scale [source: Reddy]

The proposed development has been designed to ensure that the lowest buildings are at this location, as they step up in height towards the northern part of the site. The number of sensitive receptors here has therefore been minimised as part of the design development, and the number of residential units that will require specific acoustic treatment to achieve appropriate comfort levels is consequently reduced.

The south-facing facades are shown in **Figure 9.8**.

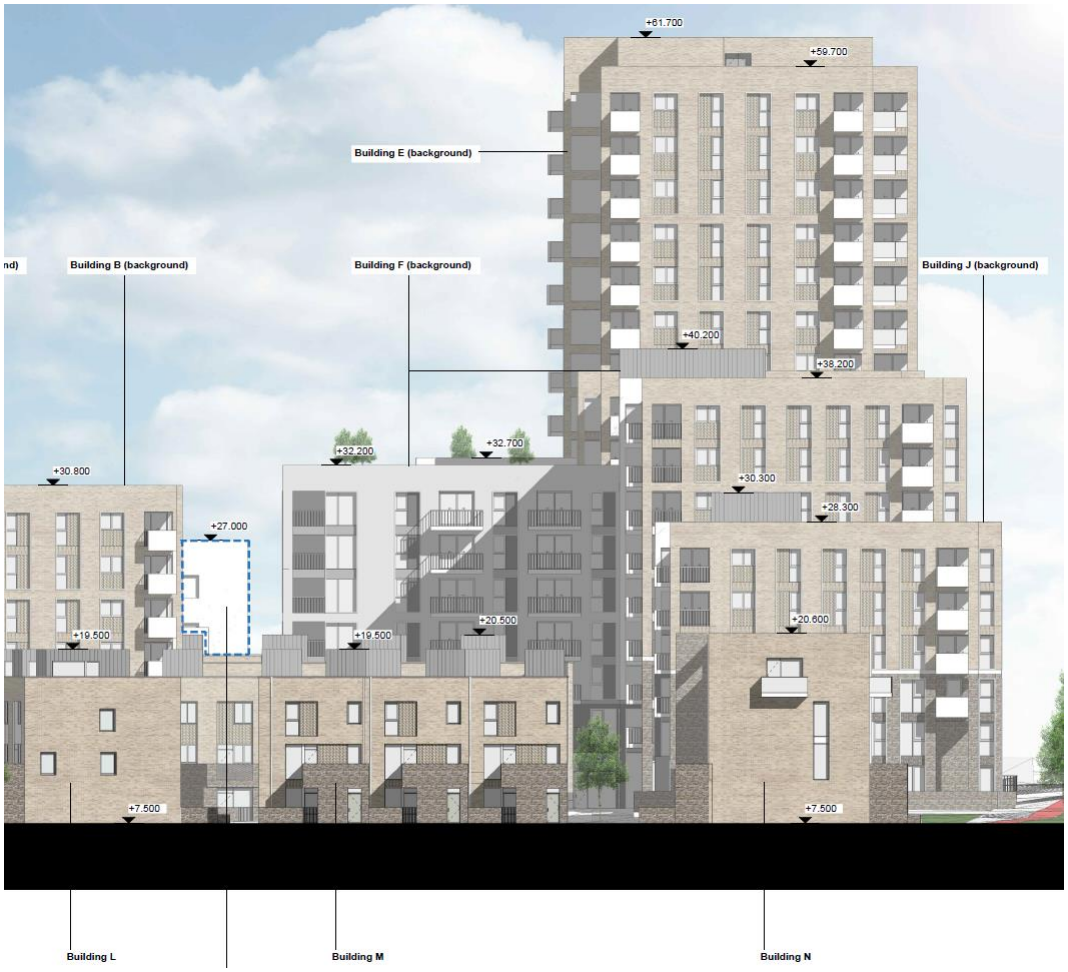

Figure 9.8 South-facing Facades | not to scale [source: Reddy]

For the residential units with glazed habitable rooms facing the Musgrave facility entrance, there is potential for significant exceedances of comfortable internal noise levels in the absence of mitigation at these locations, arising from the existing baseline noise environment.

For the buildings further north on the subject site, the combination of attenuation by distance, and the screening provided by Buildings L, M and N makes them less sensitive to the localised traffic noise at the Musgrave facility entrance.

9.4.4 Decommissioning Phase

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 above, but of a shorter duration. No significant adverse noise and vibration effects are predicted.

9.5 Mitigation Measures and Monitoring

9.5.1 Construction Stage Mitigation

The following section describes typical measures which will be employed to ensure the construction noise and vibration effects on the surrounding area are minimised both in intensity and duration.

The Contractor will be required to take specific noise abatement measures and comply with the recommendations of BS5228 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.

BS5228 advises the following, and these measures will be implemented where relevant and practicable:

- 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 will also be implemented, where relevant and 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; and
- Appointing of a site representative responsible for matters relating to noise and vibration.

9.5.2 Construction Stage Monitoring

The construction contractor will monitor levels of noise and vibration during critical periods and at sensitive locations for comparison with established limits and background levels.

9.5.3 Operational Stage Mitigation

Noisy equipment will be housed within acoustic enclosures which will limit noise breakout to atmosphere. Noise levels from operational plant will be minimised to remain within CIBSE guidelines.

To ensure comfortable internal conditions in the residential units on the southern boundary, it is likely that glazing with a minimum weighted sound reduction value (Rw) of 40dB will be required for habitable rooms facing south. This will be readily achievable with appropriate acoustic glazing at these locations, which will be designed and specified at the detailed design stage.

9.6 Cumulative Effects

9.6.1 Primary Care Centre

An application for planning permission for a Primary Care Centre (PCC), which will be located in the north-western part of the wider development site, is being submitted to Cork City Council by Watfore Limited in tandem with the lodgement of the proposed Strategic Housing Development consent application to An Bord Pleanála.

To provide a conservative assessment of construction activities, it has been assumed that the PCC will be constructed as part of the overall site development, and therefore the associated noise and vibration impacts described in this chapter include those associated with the PCC. No additional cumulative impacts on noise or vibration are predicted in the construction phase. In operation, the cumulative traffic generated by the operation of both developments will give rise to increases in traffic volumes on the neighbouring roads of less than 25%, and therefore no cumulative noise impacts are predicted.

9.6.2 Other Projects

No other plan or project has been identified which has the potential for cumulative noise and vibration effects in combination with the proposed development.

9.7 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 is envisaged.

9.8 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 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.

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 project, 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 and Hydrogeology***, Chapter 14** *Water***, Chapter 18** *Major Accidents and Disasters* and the Construction Environmental Management Plan (CEMP) **Appendix 5.1**.

This chapter was prepared by Carl Dixon MSc (Ecological Monitoring) and Dr. Sorcha Sheehy PhD (Ecology/ornithology). Fieldwork was carried out by Carl Dixon MSc and 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) 2006a);
- *Guidelines for the treatment of Otters prior to the construction of National Road Schemes (*National Roads Authority (NRA) 2006b);
- *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. At one stage in the design development there was a proposal to carry out works in the vicinity of the Tramore River. Inland Fisheries Ireland was consulted at that stage to establish any particular constraints or concerns relating to those works. Subsequently, it was established that these works would not be required, and there no works will be required along the Tramore River.

10.2.5 Categorisation of Baseline Environment

10.2.5.1 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.ie and
- National Biodiversity Action Plan 2017-2021 (NPWS 2017).

10.2.5.2 Site Surveys

Surveys were carried out on the 7 September 2020, 7 September 2021, 8 December 2021 and 15 February 2022. The survey area included all lands within the proposed development site boundary as outlined in **Figure 4.2**.

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. Invasive species were also recorded.
- 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).

10.2.5.3 General Landscape

The proposed development site is located on a brownfield site at the southern edge of Cork City within an area of mixed commercial, light industrial and residential developments. The site is located to the north of the Kinsale Road Roundabout and is bounded by Tramore Road to the north, Kinsale Road to the east, existing commercial developments to the south and the existing Musgrave Distribution Site to the west.

The site generally falls in a north to south direction from a high point of circa 12m at the Tramore Road entrance to 7.5m at the southern end of the site. The existing site is predominantly hardstanding. The site was previously a Milk Distribution Centre.

10.2.5.4 Designated Sites/Conservation Areas

10.2.5.4.1 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 10.2**.

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 the Tramore River (and Douglas River Estuary). 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	9.0km northeast
Special Protection Areas (SPA)		
Cork Harbour SPA	004030	2.3km north
Natural Heritage Areas (NHA) or proposed Natural Heritage Areas (pNHA)		
Cork Lough pNHA	001081	1.4km northwest
Douglas River Estuary pNHA	001046	2.6km east
Lee Valley pNHA	000094	4.0km northwest
Dunkettle Shores pNHA	001082	5.7km northeast
Blarney Bog pNHA	001857	7.1km northwest
Rockfarm Quarry pNHA	001074	7.8km northeast
Ardamane Woods pNHA	001799	8.8km northwest
Monkstown Creek pNHA	001979	8.9km southeast
Great Island Channel pNHA	001058	9.0km northeast
Owenboy River pNHA	001990	9.1km southeast

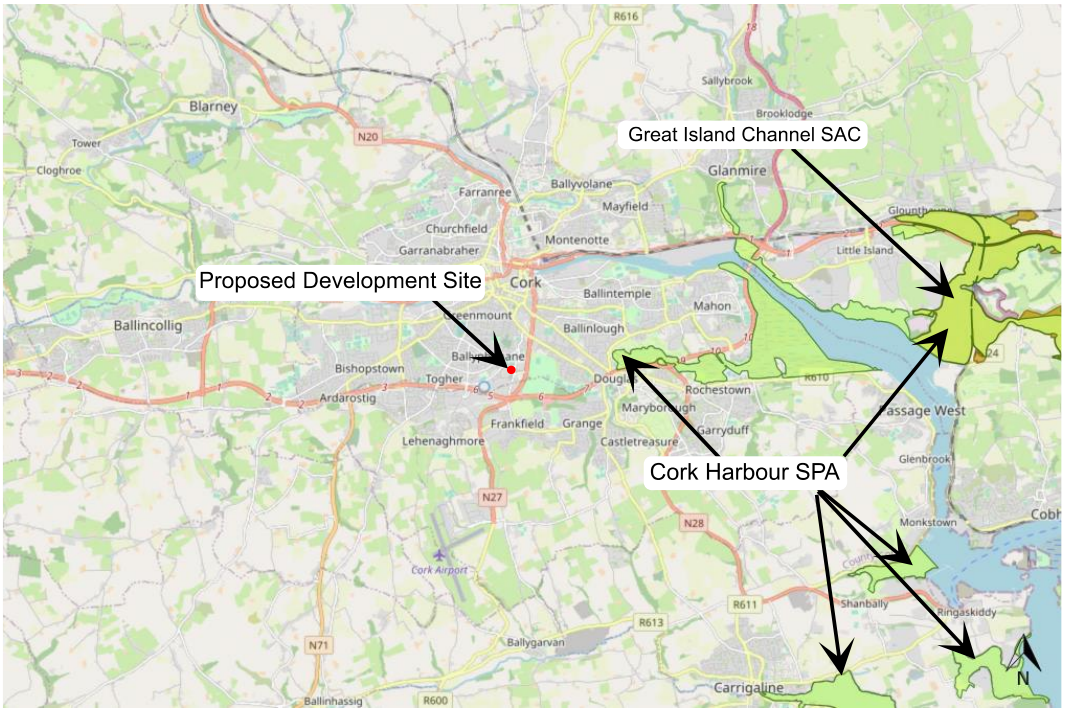

Figure 10.2 Natura 2000 sites within zone of influence of the proposed development site | Source: EPA envision mapping | Not to scale

Cork Harbour 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 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) report which has been submitted as part of this application (*Report in Support of Appropriate Assessment Screening and Natura Impact Statement (NIS) Creamfields Strategic Housing Development (SHD), Kinsale Road, Cork* (DixonBrosnan 2022). The conclusions of this report 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.

10.2.5.4.2 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 10.3.**

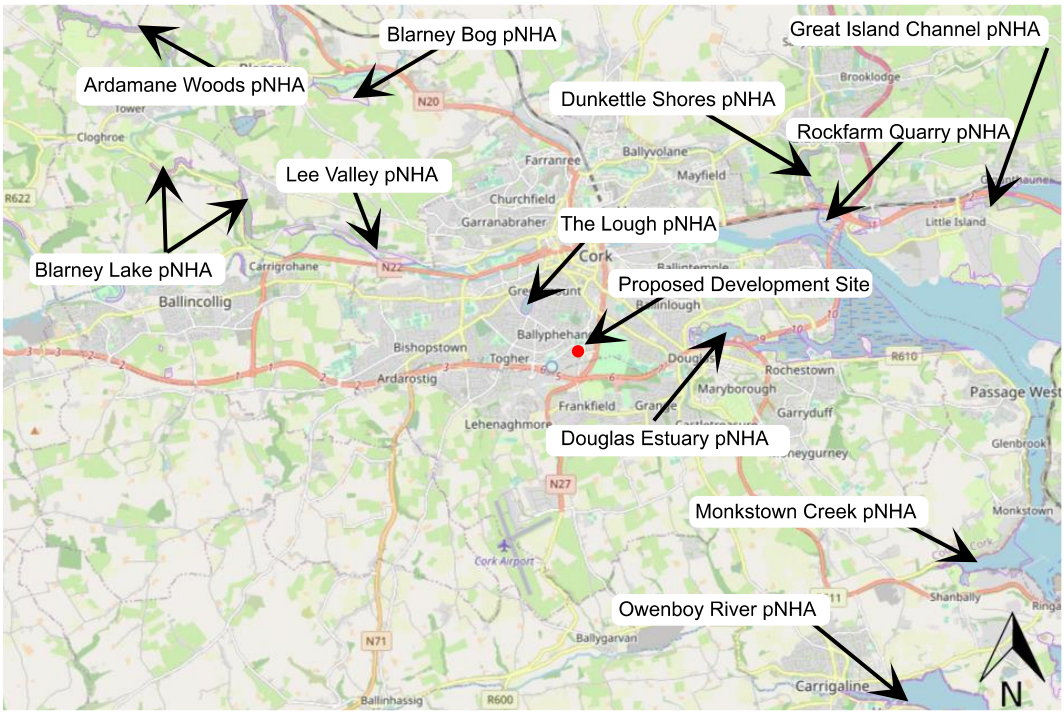

Figure 10.3 Natural Heritage Areas (NHA) in the vicinity of the proposed development site | Source EPA envision mapping | Not to scale

A number of pNHAs form part of the Cork Harbour complex; Douglas Estuary pNHA, Owenboy River pNHA, Monkstown Creek pNHA, Lough Beg pNHA, Dunkettle Shore pNHA and Great Island Channel pNHA. The Tramore River, into which surface water discharges from the proposed development site will be diverted, is hydrologically connected to the Douglas River Estuary pNHA (2.8km 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.

10.2.5.4.3 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.

10.2.5.4.4 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 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
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 Environment

10.3.1.1 Habitats

Habitat surveys were carried out on the 7 September 2020, 7 September 2021, 8 December 2021 and 15 February 2022. 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 10.4**. Site photographs are also included below.

Table 10.3. Habitats within and close to the proposed development site and their ecological value

Habitat	Comments	Habitat value (NRA Guidelines)
Buildings And Artificial Surfaces BL3/Recolonising Bare Ground ED3	Formerly an industrial site, it is now dominated by a concrete and gravel substrate. There are no structures remaining within the site. The site is becoming naturally recolonised by a mixture of early successional species and scrub. This has resulted in a mosaic of open, bare concrete and areas of recolonised habitat where vegetation cover exceeds 50%. Dominant species include Bramble *Rubus fruticosus*, Buddleia *Buddleja davidii,* Ragwort *Jacobaea vulgaris* and Colt's-Foot *Tussilago farfara*. Also common are Yellow-Wort *Blackstonia perfoliata*, Purple Toadflax *Linaria purpurea*, Ribwort plantain *Plantago lanceolata*, Red Valerian *Centranthus ruber*, and non-native escapees such as Hubei Anemone *Eriocapitella hupehensis.*	Local importance (Lower value)
Treelines WL2	Treelines occur on the external boundaries in a narrow strip less than 4m wide. Both native and introduced species occur. This habitat includes planted and maintained treelines or hedges interspersed with native species derived from natural recolonisation. Lawson Cypress *Chamaecyparis lawsonia* is the dominant species along the eastern boundary of the site. Willow *Salix* spp is widely distributed and Silver Birch *Betula pendula*, Hawthorn *Crataegus monogyna* and Norway Maple *Acer platanoides* are common within the western treeline. The understory includes non-native species including Firethorn *Pyracantha coccinea* and *Hydraggia* spp.	Local importance (Higher value)

	Although some of the trees such as Hawthorn and Willow are mature, there are no large mature or over-mature trees with the potential to be of value for roosting bats. The treelines occurring within the site are of local value for wildlife. These treelines can provide important habitats for local wildlife such as birds, insects, mammals and commuting routes and nesting habitat, especially within an urban setting.	
Treelines WL2/ Scrub WS1	Along the southern boundary of the site there is a wider section if treeline/scrub habitat. Willow is the dominant species with Downy Birch *Betula pubescens*., Hawthorn *Crataegus monogyna* and Norway Maple also present *Acer platanoides.* Scrub is common in the understorey including Gorse *Ulex europaeus* and immature Willow. Non-native species such as Buddleia *Buddleja davidii* and Himalayan Honeysuckle *Leycesteria formosa* are common and large sections are dominated by Japanese Knotweed *Fallopia japonica*.	Local importance (Higher value)
Depositing River FW1	The Tramore river is a small river and due to a low gradient has a relatively sluggish flow along most of its length. It has been extensively culverted. Emergent vegetation is common along its banks including Yellow Flag *Iris pseudacorus,* Common Reed *Phragmites australis* and native Willow *Salix sp.* The substrate is generally soft, with occasional weirs and riffle sections with rock substrate. Some areas of concrete riverbed also occur. The river has been extensively culverted. An electrofishing survey of the Tramore River was carried out in DixonBrosnan in 2014 (EIS Douglas Flood Relief Scheme (including Togher Culvert, Arup 2017) It recorded Brown Trout Salmo trutta, European Eel *Anguilla anguilla* and Three-Spined Stickleback *Gasterosteus aculeatus* within the main channel. Moderate numbers of Brown Trout were recorded where there was sufficient bankside cover; however long sections which were open and shallow were largely devoid of fish. It is considered improbable that Atlantic Salmon (listed on Annex II of the Habitats Directive) occur in the Tramore River due to poor water quality, limited channel size, lack of	Local importance (Higher value)

	holding pools, barriers to migration and limited spawning habitat. All three Lamprey species are listed on Annex II of the Habitats Directive. The presence of migratory lamprey species (Sea Lamprey *Petromyzon marinus* and River Lamprey *Lampetra fluviatilis*) is unlikely due to barriers to migration and limited spawning habitat. Brook lamprey *Lampetra planeri* could potentially occur within suitable areas of habitat. Although areas of silt suitable for juvenile lamprey were noted, no lamprey were recorded during the fish stock survey. Conditions are unsuitable for other Annex II species (i.e. Freshwater Pearl Mussel or White Clawed Crayfish *Austropotamobius pallipes*) or Annex 1 habitats (i.e. Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation). Grey mullet *Chelon labrosus* and Flounder *Platichthys flesus* both occur in the lower tidal sections of the Tramore River which is characterised by softer substrate with some areas of gravel.	

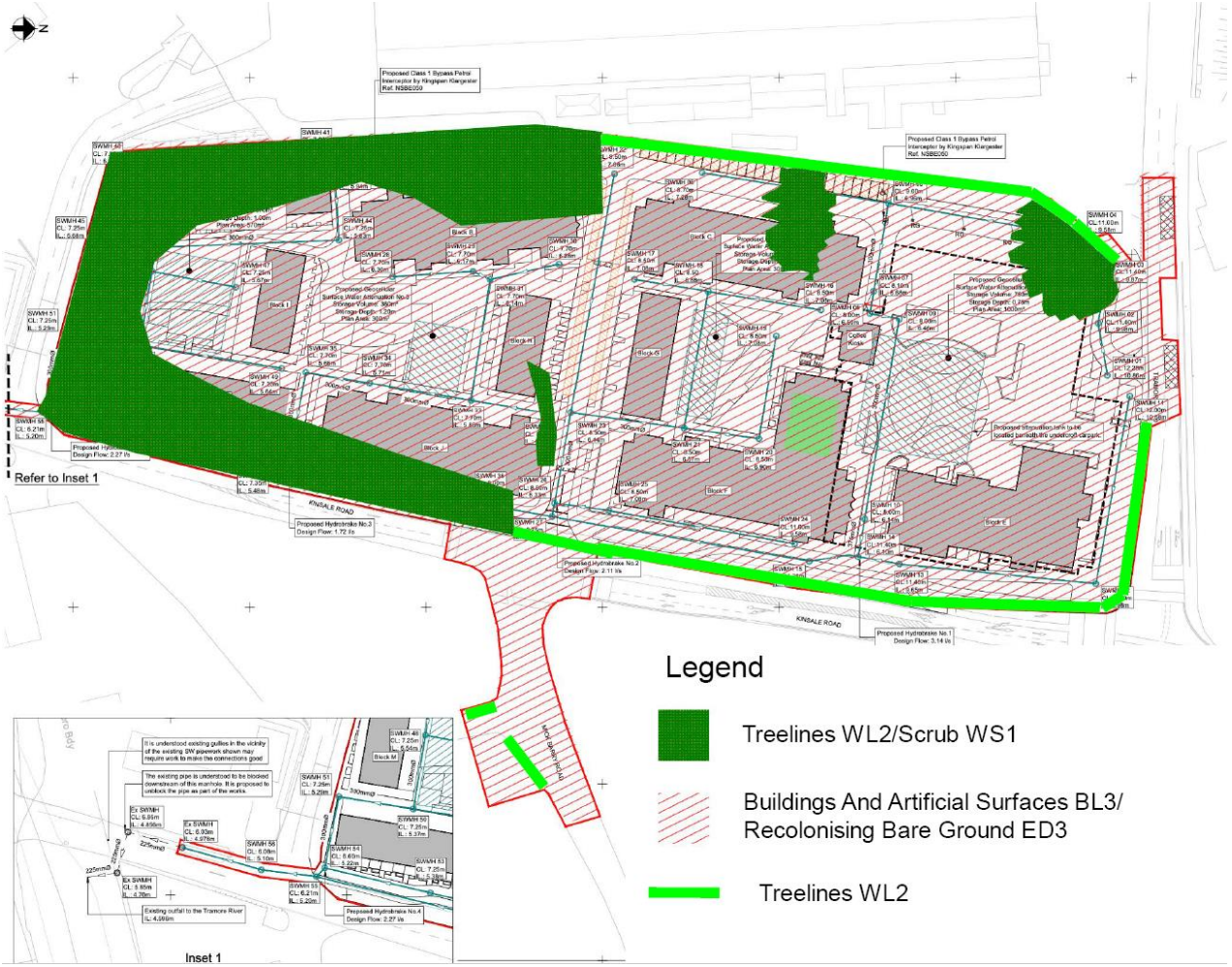

Figure 10.4. Habitats recorded within proposed development site

Photograph 10.1. View looking south from the northern part of the site.

Photograph 10.2. Treeline along eastern site boundary looking south

Photograph 10.3. Large stand of Japanese knotweed

Photograph 10.4. Scrub/wooded area in the southern part of the site.

10.3.2 Flora

The proposed development area lies within Ordnance Survey National Grid 10km square (hectad) W66. The National Biodiversity Data Centre (NBDC) online database provides data on the distribution of mammals, birds, and invertebrates within the 10km squares. Some 451flowering plants are listed by the NBDC as present in the hectad W66. **Table 10.4** lists threatened species, designations and 10km hectad.

The NBDC database lists one protected plant species within W66 i.e., Little-robin *Geranium purpureum*. This species is protected by the Flora Protection Order 2015 (S.I. No. 356 of 2015). Two threatened species i.e. Round-leaved Crane's-bill *Geranium rotundifolium* and Cornflower *Centaurea cyanus* have also been recorded in W66. No rare or protected plant species were recorded during the site survey and given the highly disturbed nature of habitats onsite, they are unlikely to occur.

Table 10.4. NBDC listed flowering and endangered flowering plants for hectad W66

Hectad	Flowering plant Species	Latin Name	Designations
W66	Little-robin	Geranium purpureum	Flora Protection Order (S.I. 356 of 2015) & Vulnerable
	Round-leaved Crane's-bill	Geranium rotundifolium	Endangered
	Cornflower	Centaurea cyanus	Regionally Extinct

Source NBDC database 30/11/21

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 W66 (**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 site boundary.

Table 10.5. NBDC records of high impact invasive species from W66

Species Group	Species Name
Bird	Canada Goose (*Branta canadensis*)
Flatworm (Turbellaria)	*Arthurdendyus triangulates*
Flowering plant	Canadian Waterweed (*Elodea canadensis*)
Flowering plant	Cherry Laurel (Prunus laurocerasus)
Flowering plant	Indian Balsam (Impatiens glandulifera)
Flowering plant	Japanese Knotweed (*Fallopia japonica*)
Flowering plant	Rhododendron ponticum
Insect – beetle (Coleoptera)	Harlequin Ladybird (*Harmonia axyridis*)
Terrestrial mammal	American Mink (*Mustela vison*)
Terrestrial mammal	Brown Rat (Rattus norvegicus)
Terrestrial mammal	Coypu (Myocastor coypus)
Terrestrial mammal	Feral Ferret (*Mustela furo*)
Terrestrial mammal	Raccoon (Procyon lotor)
Terrestrial mammal	Sika Deer (Cervus nippon)

Source: NBDC 30/11/21

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 within the proposed development site (**Figure 10.5**). 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.

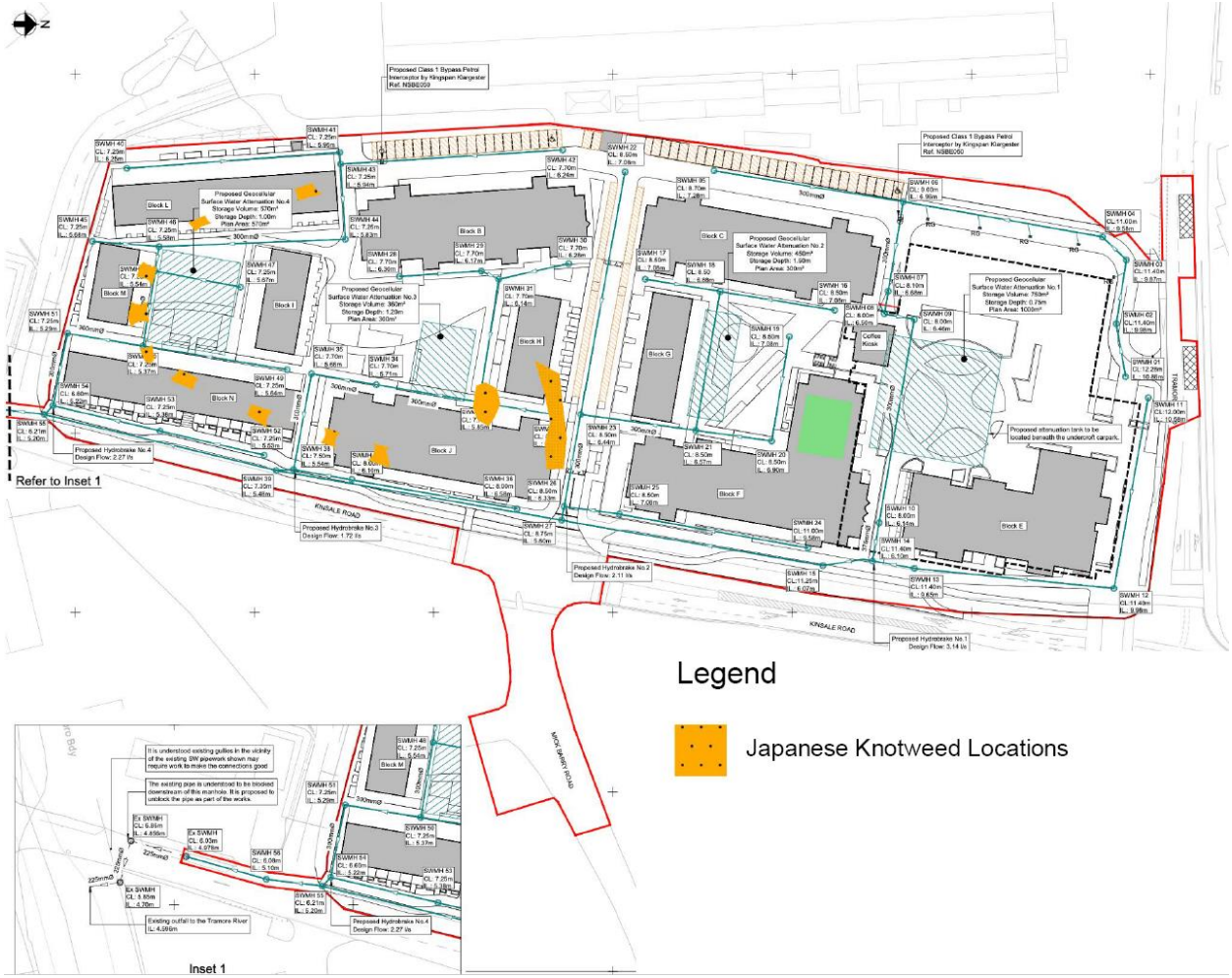

Figure 10.5. Japanese Knotweed locations at the proposed development site | not to scale

Two other invasive species Buddleia *Buddleja davidii* and Himalayan Honeysuckle *Leycesteria formosa* were also recorded in a scattered distribution throughout the site. Buddleia and Winter Heliotrope *Arctostaphylos luciana* were recorded along the Mick Barry Road at the east of the site. Buddleia and Himalayan Honeysuckle are considered medium impact invasive species by the NBDC. Winter Heliotrope is considered a low impact invasive species by the NDBC. These species 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). Buddleia and Winter Heliotrope are also 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; and are likely to be encountered during road schemes.

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 four of the nine Irish bat species listed in **Table 10.6**, have been recorded within W66.

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 16km 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 10km northwest of the proposed development site near Ballincollig (Clare Heardman and Danny O'Keeffe 2013).

Table 10.6. Presence of Irish bat species within hectad W66

Common name	Scientific name	Presence
Lesser Noctule	*Nyctalus leisleri*	Present
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Present
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Present
Daubenton's Bat	*Myotis daubentoniid*	Present
Natterer's Bat	*Myotis nattereri*	Absent
Brown Long-eared Bat	*Plecotus auratus*	Absent
Whiskered Bat	*Myotis mystacinus*	Absent
Lesser Horseshoe	*Rhinolophus hipposideros*	Absent
Nathusius's Pipistrelle	*Pipistrellus nathusii*	Absent

Source NBDC 30/11/21

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.

Legislation/Convention	Relevance to Irish bats
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.
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.

Bats also often use features such as hedgerows, treelines, woodland edges and waterways as commuting pathways between roosts and foraging areas. Sheltering vegetation, such as treelines and woodland, not only acts as cover from potential predators and the weather, but also provides structure for acoustic orientation and navigation. Sheltered areas also allow insects to gather and therefore support bat foraging.

No mature trees or buildings, with the potential to be used as significant bat roosting sites, have been recorded within the boundary of the proposed development. The habitats which dominate the proposed development, i.e., recolonising bare ground and artificial surfaces, are of low value for foraging bats. Linear features on the boundaries of the site, i.e., treelines/scrub are likely to provide foraging routes for bats.

10.3.4.1.1 Bat Emergence Survey

DixonBrosnan carried out bat activity/emergence surveys within the proposed development site. The purpose of the survey was to assess activity levels within and in proximity to the proposed development site.

Night-time bat surveys were carried out on the 7 September 2020 and 7 September 2021 using a Batbox Duet and Echo Meter Touch Bat Detector. The survey followed the guidelines set out in '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed)'* (Collins, 2016). The survey was carried out during suitable weather conditions for bats (air temperature >14°C approximately,

still conditions) and suitable time, starting before sunset and ending over 75 minutes after sunset.

Activity surveys on 7 September 2020 were focused on external boundaries and a survey was also carried out along the Tramore River which is the closest habitat of potential value for bats. No significant bat activity was recorded along the external site boundaries. Two Leisler's Bat overflew the site during the survey. No potential roosting habitat was identified. The proposed development site is located approximately 60m from the Tramore River. Bat activity surveys were carried out approximately 50m upstream and downstream of the bridge over the Kinsale Road on the Tramore River. It recorded foraging activity by Leisler's Bat, Soprano Pipistrelle and Daubenton's Bat.

On 7 September 2021, the bat survey focused on habitats within the proposed development site as well as on external boundaries. Bat activity levels were low to moderate, with foraging recorded by two species i.e., Common Pipistrelle and Leisler's Bat. Activity was concentrated in the southeast corner of the proposed development site, where vegetation is denser and provides better foraging habitat.

Common Pipistrelle are crevice dwellers. They use many features on and in a building but relatively rarely enter the roof void. Features used in summer include soffits, fascia's, barge-boards, weather boarding, between roof felt/membrane and tiles/slates, around window frames, in cavity walls, under hanging tiles and lead flashing. In winter, pipistrelle species may use cavity walls or crevices deep in solid walls.

Soprano pipistrelle is a habitat generalist although it tends to occur more often in the vicinity of broadleaved woodland. Lintott et al. (2014) found that in female soprano pipistrelles typically exploit woodlands which are well connected, with lower clutter, more mature trees and a lower edge to interior ratio. Habitat quality and the composition of the surrounding landscape appears to be less limiting to males (Lintott *et al.* 2014). Although generally found roosting in buildings the Soprano pipistrelle also roosts in tree holes and crevices.

Leisler's bats forage in a variety of habitats including over pasture, rivers, lakes, canals, forestry and around streetlights/flood lights, but they prefer open habitats and rivers or lakes (Vaughan *et al.*, 1997). Maternity colonies form in late spring/early summer, mainly in buildings but also occasionally in hollow trees. Hibernation records are scarce but most are from hollows and crevices in trees.

Daubenton's Bat feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water – feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.

No potential roosting habitat was recorded within the proposed development site or in immediate proximity to it. The treelines and scrub habitat at the site provide some foraging habitat for bats and are of low to moderate value for bats at a local level. Relatively high levels of bat activity were recorded along the Tramore River

which provides higher value habitat at a local level, however no potential roosting habitat will be affected.

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 W66 showed that Otter or signs of Otter have been recorded on 15 occasions, with the most recent record from March 2017. The NBDC list one record of Otter to immediate south of the proposed development site and Otter have been recorded on several occasions along the Tramore River.

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

of negligible value for Otter. An electrofishing survey of the Tramore River was carried out in DixonBrosnan in 2014 recorded Brown Trout, Three Spined Stickleback, and European Eel, which provide potential prey for Otters within the Tramore River but did not record signs of Otters (EIS Douglas Flood Relief Scheme (including Togher Culvert, Arup 2017).

A survey for Otters was carried out at the Tramore River on 8 December 2021. No signs of Otter were recorded within 150m of the outfall into the Tramore River associated with the public stormwater drainage network into which the proposed development will drain. Overall, the proposed development site is of negligible value for Otter but the Tramore River at the outfall location is likely to be of local value for foraging.

10.3.4.3 Other Mammal Species

Seventeen other species of terrestrial mammal have been recorded within hectad W66. Six of which are protected under the Irish Wildlife Act; namely Badger *Meles meles,* Red Squirrel *Sciurus vulgaris,* 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.

Badger have been recorded by NBDC on 61 occasions in hectad W66, with the most recent record from May 2017. No evidence of Badgers was recorded during the site surveys and the habitats noted within the proposed development area are considered of negligible value for this species.

10.3.4.3.2 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 noted within the proposed development area are considered of negligible value for this species

10.3.4.4 Birds

The National Biodiversity Centre online data base lists 118 species of bird recorded within grid square W66. Of these 118 species seven are listed under Annex I of the Birds Directive namely, Common Kingfisher (*Alcedo atthis*), Golden Plover (*Pluvialis apricaria*), Nightjar (*Caprimulgus europaeus*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*) and Ruff (*Philomachus pugnax*).

Bird surveys were carried out in conjunction with habitat surveys on 7 September 2020 and 7 September 2021. Birds during a site visit on 8 December 2021 were also recorded. During the survey, all birds seen or heard within the development site were recorded. Most 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. Bird species listed in Annex I of the Birds Directive (2009/147/EC) are considered a conservation priority. No Annex I bird species were recorded during the site survey. Species recorded within the site are shown in **Table 10.8**.

Table 10.8. Bird Species recorded during site visits

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
Alcedo atthis	Kingfisher	**X**		**X**
Corvus frugilegus	Rook			
Corvus monedula	Jackdaw			
Erithacus rubecula	Robin			
Fringilla coelebs	Chaffinch			
Fringilla coelebs	Chaffinch			
Parus caeruleus	Blue Tit			
Troglodytes troglodytes	Wren			
Turdus merula	Blackbird			
Turdus philomelos	Song Thrush			
Ardea cinerea	Grey Heron			

The surrounding landscape is dominated by mixed industrial and commercial use and there is limited semi-natural habitat in the immediate vicinity of the proposed development site. The proposed development site is dominated by recolonising bare ground with limited vegetation. Vegetation on the boundaries of the site and the early successional, seed producing species provide some feeding/nesting resources for birds. Site boundaries are dominated by a mixture of treelines and scrub.

Kingfisher *Alcedo atthis* which are listed on Annex 1 of the Birds Directive were not recorded along the Tramore River during bird surveys carried out in 2016/2017. (EIS Douglas Flood Relief Scheme (including Togher Culvert) (ARUP 2017)). Kingfisher was recorded flying downstream at the outfall location in December 2021. A survey of the Tramore River within 150m of the surface water outflow location did not find any potential nesting habitat for this species. Grey Heron *Ardea cinerea* was also recorded foraging along the Tramore River during the December survey.

Grey Heron, Little Egret *Egretta garzetta* and Mallard *Anas platyrhynchos* were recorded along the Tramore River in 2016/2017. Grey Heron is listed as a SCI species for the Cork Harbour SPA and Little Egret is listed on Annex I of the Birds Directive.

Overall, the proposed development site is of a local importance (lower value) for terrestrial bird species that are relatively common in the Irish countryside. No species of high conservation status were recorded within the proposed development site. More specialised species utilise the Tramore River which is considered of local importance (higher value) for birds.

10.3.4.5 Reptiles and Amphibians

According to records held by the NBDC, the amphibian species Common Frog (*Rana temporaria*) and Smooth Newt (*Lissotriton vulgaris*) have been recorded in hectad W66. No reptile species have been recorded in W66.

Common Frog is listed on Annex V of the EU Habitats Directive and is protected under the Wildlife Acts. The species was not recorded during the site visit.

The Smooth Newt is the only member of the Urodela (the tailed amphibians) found in Ireland. While commonly encountered near water bodies, adult newts are actually terrestrial, only returning to water bodies to breed. They tend to prefer habitats that offer protection from desiccation, such as long grass, woodland and scrubland. Newts will over-winter in refugia such as woodpiles and rotting logs, which offer them some protection from the elements.

There are no watercourses or wetland habitats within the proposed development site and this site is of negligible value for amphibian species.

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 (W66U).

Two threated invertebrate species has been recorded within W66U i.e., Large Red Tailed Bumble Bee (*Bombus (Melanobombus) lapidarius*) and Silky Snail (*Ashfordia granulata*). 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.

No rare or threated bryophyte species have been recorded within W66U i.e., mosses and liverworts. No notable species of bryophyte were recorded during site surveys.

10.4 Potential 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. 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 works areas would largely remain under the same management regime. No significant changes to the boundary habitats are likely to occur.

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

Habitat	Description/ Habitats Directive Annex I Status	Potential Impact in the absence of mitigation
Buildings And Artificial Surfaces BL3/Recolonising Bare Ground ED3	Local importance (Lower value)	Loss of small areas of low value habitat within proposed development site. Negative, Not Significant, Long-term impact
Treelines WL2	Local importance (Higher value)	All vegetation at the site will be cleared. Negative, Slight, Long-term impact
Treelines WL2/ Scrub WS1	Local importance (Higher value)	All vegetation at the site will be cleared.

Habitat	Description/ Habitats Directive Annex I Status	Potential Impact in the absence of mitigation
		Negative, Slight, Long-term impact
Depositing River FW1	Local importance (Higher value)	No direct impact on Tramore River. Indirect impacts discussed in Section 10.4.3.3.

As detailed above the loss of habitats classified as being of higher local value will have a slight impact in the absence of mitigation. There are no aquatic habitats located within the proposed development area. The habitats within the proposed development area have been significantly modified from their original state and are of low ecological value.

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. Two medium impact (NBDC) invasive species, Buddleia and Himalayan Honeysuckle and one low impact invasive species Winter Heliotrope were recorded within the proposed development area. There is potential during the construction phase for invasive species to be spread outside 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, Buddleia, Winter Heliotrope and Himalayan Honeysuckle are not listed under these regulations. In the absence of mitigation measures the effect of the proposed development on 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 works are localised and short-term and standard mitigation measures will be implemented to prevent any minor impacts on water quality from occurring. The impact on water quality and aquatic habitats will be Negative, Slight and short-term.

An asbestos survey, which was carried out as part of site investigation works at the proposed development site, identified asbestos containing materials (ACM) within soils predominantly to the south of the proposed development site. An asbestos audit will therefore be undertaken prior to any demolition and excavation works. Any asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

It is likely that further instances of asbestos may be found on site during construction. It is possible that disturbance of ACMs on site could cause asbestos fibres to be released into the ambient environment. Due to the hazardous properties of asbestos all ACMs will be bagged, stored and removed from site by licenced contractors. In addition, 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 population.

Further details on the asbestos identified within soils has been described in **Chapter 13** *Land and Soils.* Refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** *Construction Environmental Management Plan (CEMP)* for details on mitigation measures to be implemented for ACMs during construction activities.

Further details on the impact of proposed development on Natura 2000 sites is discussed in the NIS, 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 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 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.

The proposed development site is of low to moderate foraging/commuting value for local populations of Common Pipistrelle and Leisler's Bat. In the absence of mitigation, the loss of treeline and scrub habitat will have a negative, slight and long-term impact on local populations of these bat species Continuous treeline and hedgerow provide connectivity of the landscape 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 a treeline and scrub has the potential to impact on connectivity between valuable roosting and foraging grounds. However, while the habitat within the proposed development site has some connectivity to the habitat around the Tramore River, the lack of vegetation in the vicinity of the site means it does not connect directly to the Tramore River, to potential roost sites or other foraging habitat outside the proposed development site boundary. Therefore, while the treelines/scrub habitat at the site has moderate value as foraging habitat, it is of negligible value in terms of connectivity to bat foraging/roosting habitat outside the proposed development site boundary. The removal of linear boundary vegetation i.e., scrub and treelines will have a negative, slight and long-term impact on local populations of these 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. Site lighting will typically be provided by tower mounted 1000W metal halide floodlights which will be cowled and angled downwards to minimise spillage to surrounding properties. No light spillage will occur in respect of the Tramore River where relativity high levels of bat activity was recorded. Furthermore, construction works will largely be confined to daylight hours and therefore potential impacts on foraging bats during construction will be neutral, not significant, and short-term.

While Otter is known to occur south of the proposed development area, no suitable habitat for Otter is located within the footprint of the proposed development site. The closest point of the Tramore River, along which Otter are known to occur, is located 500m from the proposed development (Source NBDC). 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 e.g. Tramore River. Furthermore works will largely be confined to daylight hours and given the largely nocturnal

activity of this species, the impact on Otter is predicted to be neutral, not significant, and short-term.

It is noted that the surrounding landscape is already subject to high levels of disturbance from traffic and human activity and species currently utilizing the site are expected to be habituated to ongoing disturbance factors in these circumstances.

Surface water discharges during the construction phase will tie into the existing storm water drainage system. No significant risk of silt or hydrocarbon spillage into nearby aquatic receptors is predicted to occur during the construction phase of the proposed development. An asbestos survey, which was carried out as part of site investigation works at the proposed development site, identified asbestos containing materials (ACM) within soils predominantly to the south of the proposed development site. Further details on the asbestos identified within soils has been described in **Chapter 13** *Land and Soils.* Refer to **Chapter 5** *Construction Strategy* and **Appendix 5.1** *Construction Environmental Management Plan (CEMP)* for details on mitigation measures to be implemented for ACMs during construction activities. The impact on prey availability for Otter during construction will be insignificant. Therefore, the likely effect on Otter during the construction phase is predicted to be a slight to not significant, negative and short-term

No significant loss of habitat for other protected mammal species is predicted. Although the habitats to be directly affected may form part of the territories of various mammal species such as Hedgehog, they do not provide critical resources for these species. Overall, the construction phase of the proposed development is predicted to have a slight, negative, short-term effect on other mammal populations in the absence of mitigation measures.

10.4.3.6 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. Treeline/scrub habitats, within the site boundary provide nesting and foraging habitat for common birds.

Some displacement of feeding birds may occur during construction due to 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.

In general, the habitats within the proposed development area are utilised for feeding by a range of common bird species. Early successional plant species within recolonising bare ground habitat can potentially support seed eating bird species such as Goldfinch *Carduelis carduelis* and Chaffinch *Fringilla coelebs*.

However, the value of this habitat is likely to be limited by the high levels of traffic and activity in the vicinity of the site. It is noted that the lands surrounding the proposed development area are subject to high levels of disturbance and that, any birds which utilise these areas will have habituated to high levels of daytime disturbance. Noise levels within the site will be 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 short-term 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 slight, negative and short-term. Potential Effects on Other Fauna

The proposed development area is only likely to support common species. Given that the habitats which will be affected are relatively common in the surrounding landscape and, given the limited scale and short-term nature of the construction works, any effect on these species will be imperceptible, negative and short-term during construction.

10.4.4 Operation

10.4.4.1 Potential Effect on Habitats

No habitats of significant ecological value will be affected and the habitat value of new habitats created by landscaping of the site will improve over time. 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 3.17 l/s/ha. Overall, no significant impact on habitats will occur during operation.

10.4.4.2 Potential Effects from Non-native Invasive Species

One third schedule species (Japanese Knotweed) and two medium impact invasive species (Buddleia and Himalayan Honeysuckle) and one low impact invasive species (Winter Heliotrope) were recorded within the proposed development area. 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

It is proposed to construct a new dedicated surface water system to serve the proposed development. During operation surface water runoff from the site will discharge to the existing stormwater network on Kinsale Road, ultimately discharging to the Tramore River via an existing surface water pipe.

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 3.17 ls/ha. Attenuation will be provided to cater for those instances where the runoff generated on site exceeds the restricted run-off rate. It will be sized to cater for

storms up to and including the 1 in 100-year event + 10% allowance for climate change. Attenuation/SuDS measures will be provided, which may include the following:

- Below ground geocellular storage will be located beneath public realm areas/the under-croft car park.
- Permeable paving will be provided to car parking areas. Runoff from adjacent sealed hardstanding areas will be directed to drain towards the permeable paving areas.
- Soft landscaping – rain gardens/tree planters. Runoff from adjacent sealed hardstanding areas will be directed to drain towards soft landscaping areas.
- Green/ landscaped roofs.

The surface water network has been modelled to assess potential attenuation volume requirements. Runoff from areas posing a risk of contamination due to hydrocarbons (e.g., large car parking areas) will be passed through a class 1 hydrocarbon interceptor prior to discharge offsite.

The Flood Risk Assessment (FRA) included as part of the planning application documentation concluded that the risk of fluvial flooding from the nearby Tramore River is considered to be low. The risk of pluvial flooding, tidal flooding and groundwater flooding is also considered to be low. In the event of a very extreme high-intensity rainfall event, the capacity of the drainage system for the proposed development could be exceeded leading to surface water/ponding on the site. Surface water attenuation structures will be incorporated into the surface water drainage system to attenuate the excess runoff in line with Cork City Council requirements. Floodplain storage and conveyance will not be impacted by the proposed development and there will be no increase of flood risk off site.

Surface water design measures will ensure there is no significant impact on local water quality in the Tramore River or on aquatic receptors downstream of the discharge.

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 discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer. The remaining buildings to the south site cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul runoff from the majority of the site to a centrally located pumping station (PS). A rising main from the PS will discharge to the combined sewer. 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

Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Total P (mg/l)	Total N (mg/l) *	pH
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 1,751. This would increase the current WWTP load from 241,480 (based on 2020 EPA data) to 243,231 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 58.9% of its design capacity with a residual capacity of 41.1%. Thus, given the limited scale of the proposed development and the ability of the WWTP to cater for the additional loading, no impact is expected.

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 impacts from the proposed development will be negligible given the current operating conditions at the WWTP. Likewise, minor increases in nutrient levels potentially discharged by the WWTP will not have a significant impact on feeding conditions for birds listed as qualifying interests for the Cork Harbour SPA. No impact on these bird species is predicted to occur.

10.4.4.4 Potential Effects on Mammals

Increased activity and human presence, noise and artificial lighting may impact and disturb or displace mammals during the operational phase.

Bat surveys indicate that bat activity within the site is sporadic, however, there will be a net loss of foraging habitat for bats within the proposed development site. No roosts will be affected. Overall, there will be a net loss of small areas of foraging habitat, but some long-term potential foraging habitat will be provided by landscape planting. Overall, the impact will be negative, slight and long-term.

It is noted that the surrounding landscape is already subject to high levels of disturbance from traffic and human activity and species currently utilizing the site are expected to be habituated to ongoing disturbance factors in these circumstances. Given the levels of disturbance within adjacent habitats, operational lighting and activity will have a negligible impact on low value foraging habitats for other mammal species. Impacts on mammals during operation are predicted to be negative, slight and long-term.

10.4.4.5 Potential Effects on Birds

Following habitat removal during construction common bird species will be displaced and are no longer likely to use the site. No birds of conservation concern will be impacted by the proposed development. Given the availability of similar habitat in the immediate vicinity, birds are likely to readily breed and/or forage in nearby habitats. The landscape plan which is included as part of the planning application documentation for the proposed development includes the planting of native trees and a wildflower meadow. Common birds to forage and breed within this habitat post construction. 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 15 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 has been included with the NIS which accompanies this application. This concluded that no significant collision mortality is expected to occur to Special Conservation Interest (SCI) bird species 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. Rarer bird species such as Kingfisher and Grey Wagtail will not use the landscaped habitats onsite. 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 Creamfields site, there a no large expanses of glazing which could results in larger scale collisions i.e., flocks of birds. Similarly, the lack of large areas of glass will limit the light emitted from windows at night and mean that there is no significant risk of large-scale nocturnal collision for migratory birds. As noted in the NIS the proposed development site is not located in proximity to high value habitats, such as the Cork Harbour SPA and the site is not located on an obvious commuting route that links high value habitats in the wider landscape. However, the landscaping of the site will inevitably increase rates of collision. These will largely be on the lower storeys on the buildings and will be 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). No risk to rare or sensitive bird population from has been identified.

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. Landscape planting will largely replace nesting and foraging habitat for common bird species. The increase in mortality rates will not significant in context of an urban setting where bird collisions with structures are very common.

10.4.4.6 Potential Effects on Other Fauna

No significant impacts on other species during the operational phase have been identified.

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. 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.

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 Tramore River 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 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)**. Lighting mitigation measures will follow *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010).

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., Tramore River. Further detail is included in the Outdoor Lighting Report which is included as part of the planning application documentation for the proposed development.

10.5.1.4 Invasive species

An invasive species management plan (ISMP) has been drawn up as part of the application (Included in **CEMP Appendix 5.1)** and provides details on the current distribution of high-risk invasive species and guidelines/recommendations

for treatment including methods of treatment, site hygiene and follow up treatment and monitoring.

In addition to the possible advance treatment works and pre-construction survey, when the works areas become available to the contractor for fencing and commencement of site clearance, areas identified as requiring specific invasive species treatment will be demarcated and the designated control measures implemented at the earliest possible stage to reduce the risk of spread along the proposed development or beyond the land take.

There are a number of management options that may be implemented to control and prevent the spread of invasive species. Those involved in the application of herbicides/pesticides will be competent to do so and will have sufficient experience and knowledge in the area of herbicides/pesticides application.

All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

As noted in **Section 10.4.3.2** of this report, there is no statutory obligation to remove Buddleia, Winter Heliotrope and Himalayan Honeysuckle. However, all invasive species will be removed via mechanical movement and herbicide treatment prior to the commencement of construction. Further detail on this in included in *Invasive Species Management Plan* (ISMP) (Included in **CEMP Appendix 5.1**).

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. Where possible, vegetation will be removed outside this period.

There will be a defined working area which will be fenced off to prevent inadvertent damage to adjoining habitats.

To prevent incidental damage by machinery or by the deposition of spoil during site works, any habitats earmarked for retention nearby will be securely fenced or sign posted early in the construction phase. These will be clearly visible to machine operators.

Habitats that are damaged and disturbed will be left to regenerate naturally or will be rehabilitated and landscaped, as appropriate, once construction is complete. Disturbed areas will be seeded or planted using appropriate native grass or species native to the areas where necessary.

A landscape plan has been submitted with this application. The biodiversity potential of the site will be enhanced by the following measures which have been included with the landscape plant:

- Significant specimen tree planting across the site including open space trees, street trees, garden trees and site boundary trees
- Native hedge planting along site boundaries
- Ornamental hedge planting within the site
- Shrub and groundcover planting on open spaces, along streets and within gardens.
- Bulb planting
- Wildflower meadow planting along fringes and amenity grass areas

The emphasis is on the use of native tree species while ensuring that selected trees are suitable for each location in respect of ultimate size and crown spread. Otherwise, the selection of non- native trees, shrubs and groundcover species will make a valuable contribution towards the promotion of biodiversity on the site in line with the aims and objects of the All-Ireland Pollinator Plan. The current low-diversity habitat on the site will therefore be changed to a residential environment with a richer mix of trees, shrub, groundcovers and grass swards.

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. 25*' (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 trees will be removed prior to construction. Although mature trees with the potential of be of value as bat roosts are absent from the site, the following precautionary measures will be implemented. Mitigation measures will be agreed with the National Parks and Wildlife Service (NPWS) prior to any tree removal and will include the following:

- 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.

- Tree will be retained where possible and 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 Tramore River or boundary habitats and focusing lights downwards will be utilised to minimise light spillage.
- 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 bird breeding season. This will also minimise the potential disturbance of breeding birds outside of the proposed development site boundary.

It is noted that provision of native trees and hedgerows and the use of more diverse grassland planting (wildflower meadow) 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	Several road/ transport infrastructure schemes have been identified within the surrounding area of the proposed development site, which are currently at either planning/design or construction phase. These include: Lehenaghmore Road Improvement Scheme, which will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in Q3 2022. Grange Road to Tramore Valley Park Pedestrian & Cycle Link will include the construction of a new	Where projects run concurrently with the proposed development, there is potential for in-combination disturbance effects, as the sites are located in proximity to one other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team.

Plans and Key Policies/Issues/Objectives		
	Cycle and Pedestrian route connecting the Grange Road to the Tramore Valley Park. Site clearance works have commenced and is expected for completion by early 2023.	
Proposed developments at Creamfields site	Watfore Ltd. Primary Care Centre at Creamfields site. The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.	As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

It is concluded that 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 or the proposed development and in particular the Construction Traffic Management Plan (due to the nature of the projects identified above).

No cumulative operational effects have been identified.

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 are largely comprised of non-native and/or invasive non-native 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 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 negative, not significant and long term 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 (See **Appendix x**). Following the implementation of the landscape plan, impacts on bats, birds and invertebrate species will be negative, not significant and long-term.

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 significant effect due to habitat fragmentation or significant effects on commuting routes for fauna will occur. Impacts on fauna will be neutral.

The final height of the buildings at the proposed development will be up to approximately 51.2 metres above ground. The proposed development area does not provide high value habitat for rare bird species and is not located on an obvious commuting route which links high value habitats. 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 assesses the potential for significant effects of the construction and operational phases of the proposed development, Creamfields Residential Development, on archaeological, architectural and cultural heritage.

This chapter was prepared by Musetta O'Leary. Details of Musetta's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

11.2 Assessment Methodology

11.2.1 General

The methodology used to complete this chapter of the EIAR comprised the following:

- A review of the relevant legislation and guidelines;
- A desktop assessment of the proposed development site and study area (within a 2km radius);
- A survey/inspection of the proposed development site;
- An evaluation of the likely significant effects of the proposed development on the archaeological, architectural and cultural heritage of the proposed development site;
- Proposed mitigation measures to be undertaken to prevent or reduce any potential effects on the archaeological, architectural and cultural heritage.

In order to assess, distil and present the findings of this assessment, the following definitions apply.

- The term 'archaeological heritage' is applied to objects, monuments, buildings or landscapes of an (assumed) age older than AD 1700 and including a selection of monuments younger than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places and the Sites and Monuments Record);
- The term 'architectural heritage' is applied to structures, buildings, their contents and settings which are of architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest;
- The term 'cultural heritage', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations. This designation can also accompany an archaeological or architectural designation or describe features that have a more recent origin but retain cultural heritage significance.

For the purposes of this report the terms ‘architectural heritage’ and ‘built heritage’ have the same intended meaning and are used interchangeably.

11.2.2 Guidance and Legislation

This assessment has been undertaken having regard to general EIA guidance as described in **Section 1.4.3** of **Chapter 1** *Introduction* and the following legislation and guidelines were also consulted as part of the assessment.

- National Monuments Act 1930 to 2014;
- The Planning and Development Acts 2000 to 2018;
- Heritage Act, 1995, as amended;
- Heritage Act 2018;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands; and
- Policy & Guidelines on Archaeological Excavation, 1999 (formerly) Department of Arts, Heritage, Gaeltacht & the Islands;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999; and
- Planning and Development Regulations 2001 as amended.

11.2.3 Desktop Assessment Methodology

Documentary sources have been consulted to compile background information on the archaeological, architectural and cultural heritage of the receiving environment within the planning boundary and a Study Area within approximately 2km radius of the proposed development site. These documentary sources include the following:

- Record of Monuments and Places (RMP)[46]: This record was established under Section 12 (1) of the National Monuments (Amendment) Act 1994 and the Record for Cork was published in 1998. It lists all monuments and places believed to be of archaeological importance in the County. The numbering system consists of two parts: the first part is the county code (CO for Cork) followed by the Ordnance Survey map number (six-inch to the mile scale); the second part is the number of a circle surrounding the site on the RMP map, e.g. CO074-102 refers to circle 102 on OS sheet 074 for County Cork.
- Sites and Monuments Record (SMR)[46]: This contains details of all monuments and sites known to the Archaeological Survey of Ireland pre-dating AD 1700 and a selection of monuments from the post-AD 1700 period. The large archive and databases resulting from the survey are continually updated. Archaeological sites which are added to the database are proposed to be included in the next published edition of the RMP and

[46] www.archaeology.ie [Accessed 2021]

will then be afforded its protection. Sites previously listed in the RMP which, following investigation, are now considered to be of no archaeological potential are de-listed from the database and generally described as redundant records. This database, complete with maps is now available for consultation via the National Monuments Service (NMS) website at www.archaeology.ie.

- Files of the NMS: Some recorded archaeological sites have been afforded added protection under the following legislation:

  Monuments in State Care[47]: Section 8 of the National Monuments (Amendment) Act, 1954, provides for the publication of a list of monuments, the preservation of which are considered to be of national importance. The prior written consent of the Minister is required for any works at or in proximity to the monument. There are no such monuments within the Study Area

  Preservation Orders[48]: The National Monument Act 1930, provides for the making of preservation orders to protect national monuments that are considered to be under threat. The prior written consent of the Minister is required for any works at or in proximity to the monument. There are no such monuments within the Study Area

  Register of Historic Monuments: Under Section 5 of the National Monuments (Amendment) Act 1987, two months' notice must be given in writing to the Minister in advance of any proposal to carry out work in relation to a historic monument or archaeological area entered on the Resister. There are no such monuments within the Study Area.

- Archaeological Inventory: The inventories for each county are follow-ons by the Archaeological Survey of Ireland to the RMPs. They give a written description of each archaeological site in the county. The Archaeological Inventory of County Cork - East and South Cork, Volume 2 (Power, Byrne, Egan, Lane and Sleeman) was published in 1994 and a follow up volume, Volume 5 (Ronan, Egan and Byrne), was published in 2009.

- National Inventory of Architectural Heritage[49](NIAH): The National Inventory of Architectural Heritage was set up under the Convention for the Protection of the Architectural Heritage of Europe or the Granada Convention of 1985. It was established on a statutory basis under Section 2 of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999.

[47] Department of the Environment, Heritage and Local Government (2009) National Monuments in State Care: Ownership & Guardianship Available at: www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-dublin.pdf [Accessed 2021].
[48] Department of the Environment, Heritage and Local Government (2010) Preservation Orders. Available at: https://www.archaeology.ie/sites/default/files/media/publications/PO10V1_AllCounties.pdf [Accessed 2021].
[49] http://www.buildingsofireland.ie/Surveys/Buildings/ [Accessed January 2021]

The work of the NIAH involves identifying and recording the architectural heritage of Ireland, from 1700 to the present day. It is divided into two parts; The Building Survey and Historic Garden Survey (www.buildingsofireland.ie). The main function of both is to identify and evaluate the State's architectural heritage and to aid its protection and conservation. The National Inventory of Architectural Heritage carried out a survey of the buildings of County Cork between 2006 and 2011.

Under Section 53 of the Planning and Development Act 2000, as amended, all structures considered of regional, national or international Importance within the survey are recommended for inclusion in the Record of Protected Structures by the Minister for Arts Heritage and the Gaeltacht. If this is not adopted by the local authority, the reasons must be communicated to the Department.

This Inventory does not list any buildings or gardens within the proposed development site. There are, however, a number of buildings within 1km of the proposed development site, the closest of which is Saint Joseph's Cemetery (Reg. Nos. 20870012-15) approximately 500m to the north.

- The National Museum of Ireland Archives: These files were consulted for townlands within the study area. The topographical files contain the reports, including correspondence, present location and occasionally, illustrations of archaeological material recovered throughout the country. No stray finds are reported in the files for the proposed development site or adjoining townlands.
- Excavations Bulletin[50] (1969 – 2021): This site contains information regarding archaeological excavations carried out in Ireland from 1969 to 2021. Information from this resource is helpful when examining the archaeological content of an area, which may not have been recorded under the SMR and RMP databases.
- Cork City Development Plan 2015-21[51]: The City Development Plan sets out Cork City Council's commitment to identifying and safeguarding sites and settings, structures and objects of archaeological and architectural interest within the city. Specifically, Volume 3 of the City Development Plan lists protected structures and architectural conservation areas in Cork City.
- Site-specific publications: All available published information on the study area was consulted. This included historical journals, local history publications etc., all of which are listed in the Reference section 11.8.
- Consultations: During the compilation of the EIAR, the Cork City Council Archaeologist was consulted and her recommendation is reflected in **Section 11.5** below.
- Cartographic Sources: The following maps were consulted;

[50] www.excavations.ie [Accessed October 2021]
[51] Cork City Development Plan (2015-2021). Available from: Existing Cork City Development Plan 2015-2021 - Cork City Council [Accessed 2021]

Down Survey Parish and Barony maps (1654-1659)

The 1811 Grand Jury map of Cork compiled by Neville Bath in the 1790s and published in 1811 at a scale of three quarters of an inch to one mile;

1:50,000 OSI Discovery Series

Ordnance Survey (OS) 6-inch maps; the three editions of the 6-inch to one-mile scale maps; the first edition published in 1841-1842, the second edition in 1897-1904 and the third edition; OS 6-inch sheet 086 in 1933 and OS 6-inch sheet 074 in 1950 (onto which the RMP was superimposed in 1998).

The 25-inch to one-mile scale map (1897-1904) (from which the second edition 6-inch map was derived in 1897-1904).

Ordnance Survey of Ireland (OSI) online aerial photographs (dated 1995, 2000, 2005-2012, 2011-2013 and 2013-2018) (www.osi.ie) and Google maps online aerial photographs are available for viewing (www.google.ie). These were examined to identify any previously unrecorded features of archaeological/cultural heritage significance that may only be visible from the air. No such archaeological/cultural heritage sites were apparent. The entire site was brownfield throughout the series of photographs.

11.2.4 Site Inspection

The primary purpose of a site inspection is to assess the physical environment in which the proposed development will take place and identify any possible features of archaeological or cultural heritage significance which have not been previously recorded. Current land use, local topography and environmental conditions are assessed to gain an overall picture of the area. The proposed development site was visited on the 4th of August 2021 (**Refer to Plates 1-6; Appendix 11.2)**

The site is accessed at its northern end, off Tramore Road via a large roller gate. The entire proposed development site is brownfield and comprised of hard standing throughout while some floor levels of the former complex of buildings (demolished in 2006) remain in the central area of the site. Pockets of regenerated scrub vegetation and weeds are evident throughout, especially at the southern end.

11.3 Baseline Environment

11.3.1 Historical Development of the site

The proposed development site (3.37 hectares) lies within the former CMP Dairy facility which was established in the 1950s and closed in 2006. All buildings associated with this previous use have since been demolished and the site is currently vacant and categorised as a Brownfield site. Refer to **Chapter 2** *Background and Need for the Scheme*, and **Chapter 13** *Land and Soils* for further details of the development history and nature of the soils on the site.

The proposed development site is situated in the townland of Ballyphehane in a built-up industrial area, bordered to the north by Tramore Road, to the east by Kinsale Road and to the south and west by an industrial estate. It lies in the

eastern half of the townland of Ballyphehane which is part of the civil parish of St. Nicholas. The development site is situated 1.2km to the south of the Zone of Archaeological Potential for the historic city of Cork (CO074-034001). Before 1958, there were seven catholic parishes in Cork city. As the suburbs expanded, the Catholic parish network was significantly altered and by 1983 seven parishes had increased to 23 (O'Connor and Joyce, 2005). One of those newly created parishes was Ballyphehane which was named after the townland of the same name.

The townland of '*Ballephehane*' is depicted on early maps such as the Down Survey Map of 1654-1659 within the parish of ' *Finbaris*'. A house is depicted in Ballephehane townland (**Figure A11.1; Appendix 11.1).** On the Grand Jury map (1811), the townland of Ballyphehane is named '*Ballyprehane bog*' (**Figure A11.2; Appendix 11.1**) but no other details are shown.

The OS 6-inch map of 1841 (**Figure A11.3; Appendix 11.1)** depicts the area of the proposed development site in a rural setting on the southern outskirts of the Cork City. The townland of Ballyphehane is divided by a parish boundary which runs north-south a short distance to the west of the proposed development site. The northern section of the development site extends into the eastern side of a nursery. The nursery is depicted as a rectangular area planted in orderly rows with a number of buildings along its northern boundary. These are situated outside the development site and to its west. The remainder of the proposed development site falls over one field and parts of two others, to the south and these are tree-lined along their boundaries while the Tramore River runs west-east a short distance to the south outside the southern site boundary. The northern and eastern site boundaries are bordered by unnamed roads (now Tramore Road and Kinsale Road respectively).

On the OS 25-inch map (1897-1904) (**Figure A11.4; Appendix 11.1)**, the nursery has been removed although its borders remain. Some adjustments have been made at the south-eastern corner of the former nursery to accommodate the Cork and Macroom Direct Railway line which is now running northeast-southwest through the southern half of the proposed development site. The boundary road to the east (now the Kinsale Road) now twists into the southeast corner of the nursery area and has been embanked to bridge the railway line as it enters the area of the proposed development site. (The terminal for the Cork and Macroom railway line lies c. 1km to the north in the present day Capwell Bus Depot). The remainder of the area of the proposed development site comprises parts of two fields and the railway line runs through the more southerly of the two.

The area of the proposed development site remains unchanged on the OS 6-inch map dated to 1950 (**Figure A11.5**), comprising sections of three fields with the railway line running northeast-southwest through the southern end. At the southern end of the site, a short siding from the main line runs northeast through the development site.

11.3.2 Archaeological and Cultural Heritage

There are no recorded archaeological sites listed in the RMP or the SMR within the proposed development (**Figure 11.1**). The closest RMP site is a graveyard

(CO074-102) in the townland of Spittal-Lands, 500m to the north. In total, there are 33 recorded archaeological sites listed in the RMP and SMR within 2km of the proposed development site, listed in **Table 11.1** and shown on **Figure 11.1** below. Only three of these 33 sites, lie within a 1km radius of the proposed development site; St. Joseph's Cemetery (CO074-102) in the townland of Spittal-Lands, a workhouse, now St. Finbarrs hospital (CO074-094) in Skahabeg North and Vernon Mount country house (CO074-060) in Curraghconway (these are described in **Section 11.3.3** below).

Table 11.1: Recorded archaeological monuments within 2km of the proposed development site

RMP/SMR Number	Townland	Site Type	Distance to Proposed Development (approx.)
CO074-034011	Cork City	Church	1.9km to N
CO074-034012	Cork City	Bridge	1.8km to N
CO074-037	Cork City	Religious house - Dominican friars	1.8km to NW
CO074-038001	Cork City	Graveyard	1.7km to NW
CO074-038002	Cork City	Cathedral	1.7km to NW
CO074-038003	Cork City	Round tower	1.7km to NW
CO074-038004	Cork City	Leper hospital	1.8km to NW
CO074-039001	Cork City	Bastioned fort	1.7km to NW
CO074-039002	Cork City	Church	1.7km to NW
CO074-040001	Cork City	Graveyard	1.7km to N
CO074-040002	Cork City	Church	1.7km to N
CO074-041	Cork City	Religious house - Augustinian friars	1.6km to N
CO074-042	Cork City	Church	1.6km to N
CO074-044	Cork City	Church	1.5km to N
CO074-045001	Cork City	Leper hospital	1.5km to N
CO074-045002	Cork City	Church	1.5km to N
CO074-060	CURRAGHCONWAY	Country house	1km to SE
CO074-067001	Knockrea	Boundary stone	1.5km to NE
CO074-067002	Knockrea	Boundary stone	1.5km to NE
CO074-072	Cork City	Fortification	1.5km to N
CO074-073	Cork City	Fortification	1.4km to N

CO074-075	Cork City	Burial ground gallows green	1.5km to NW
CO074-094	SKAHABEG NORTH	Workhouse	900m to NE
CO074-095	GRANGE	Mill – woollen	1.9km to E
CO074-102	SPITTAL-LANDS	Graveyard	500m to N
CO074-103	CORK CITY	Asylum	1.8km to NE
CO074-114	Cork City	Quaker Burial ground	1.3km to N
CO074-180	Cork City	Burial - medieval	1.5km to N
CO086-059001	CURRAGHCONWAY	Graveyard	1.2km to SE
CO086-059002	CURRAGHCONWAY	Church	1.2km to SE
CO086-069	BALLYCURREEN	Mass-rock	1.9km to SW
CO086-107	CURRAGHCONWAY	Fulacht fia	1.5km to S
CO086-127	LEHENAGHBEG	Enclosure	1.8km to SW

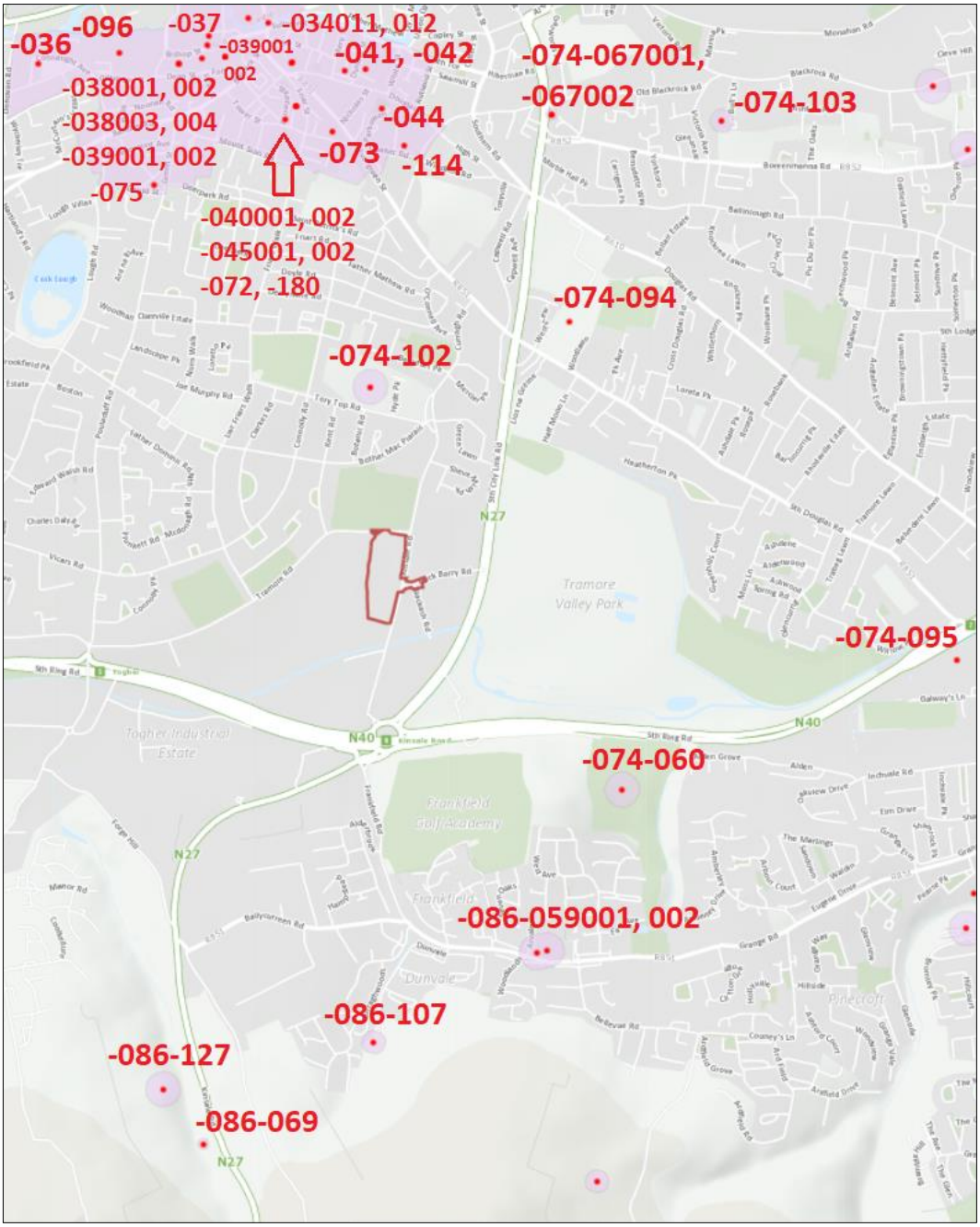

Figure 11.1 Recorded archaeological monuments within 2km of the proposed development site | Background Mapping © 2021 Bing Maps | Not to scale

The earliest recorded archaeological site in the study area is a fulacht fia (CO086-107), situated 1.5km to the south in the townland of Curraghconway. Fulachtaí fia are generally interpreted as ancient cooking sites but could have been used for any purpose that required large quantities of hot or boiling water. They are usually dated to the Bronze Age; most investigated examples were constructed during the mid to late Bronze Age (*c.*1500- *c.* 500 BC) but a small minority of excavated examples have been dated to the Neolithic and Iron Age. While they are generally interpreted as cooking sites, they may have been used for bathing, processing textiles, tanning, brewing, extraction of fats from meat, and soap making, or even a combination of these functions (Ó Drisceoil, 1988; Monk 2007; Quinn & Moore 2007).

The majority of recorded archaeological monuments, however, date from the medieval and post medieval period. The proposed development site lies 1.2km to the south of the Zone of Archaeological Potential for the historic city of Cork (CO074-034001). The medieval city of Cork is centred on the north and south islands, corresponding to the North and South Main Streets within the modern city. The South Gate Bridge (CO074-034012) stands at the southern entrance into the medieval walled city and is the oldest surviving bridge in the city dating to 1713 with a later extension 1824 (Power et al. 1994).

The earliest beginnings of Cork City as an established settlement can be traced to the monastic foundation of St. Fin Barre, on high ground on the south bank of the river in the 6th/early 7th century AD (Gwynn and Hadcock 1970, 66) in the area of St. Finbarr's Cathedral. St. Finbarr's Cathedral and graveyard (CO074-038002 and CO074-038001) situated 1.7km to the northwest of the proposed development site is one of many iconic landmarks in the city. On one of the first cartographic representations of the city of Cork, the Pacata Hibernia (1585), the *Cathedral Church of old Corke* (St. Finbarr's Cathedral; CO074-038002-) is shown on the southern bank slightly west of the South Gate Bridge (CO074-034012) and further west again on an island in the western marsh *Abby in ey Iland* (Dominican friars religious house; CO074-037). The present cathedral was built in 1867-70 by William Burges in the French Gothic Style (Power et al. 1994).

While the medieval city was contained within defensive walls on islands in the River Lee a number of contemporary religious houses developed outside along the southern riverbank. An Augustinian religious house (CO074-041) known as the Red Abbey, built in the 13th century, is situated 1.5km to the north of the proposed development site. The crossing tower of the abbey remains upstanding and is one of the few medieval remains within the city. A church dedicated to St Nicolas (CO074-040002-) and referred to in a late 12th century charter was located a short distance to the west of the abbey. The church building currently standing on the site dates to the mid-19th century while the enclosing graveyard (CO074-040001-) contains 15th and 16th century slabs (Power et al. 1994.).

Elizabeth Fort (CO074-039001), situated 1.7km to the northwest was originally built as a defensive fortification outside the medieval city walls. The fort, was constructed in c. 1624 on the site of an earlier earthen structure which was built around St. Mary Del Nard parish church (CO074-039002). The fort, quadrilateral

in shape with two pentangular bastions on the south corners and two sub-rectangular bastions on the north corners is built of regular coursed limestone blocks which lie in part on underlying bedrock (Power et al. 1994). A smaller fort, known as 'Cat Fort' (CO074-072) was built between Tower Street and Friar Street, 1.7km to the north of the proposed development site, of which there are no surviving remains.

The excavations bulletin (www.excavations.ie) lists two archaeological investigations within 1km of the proposed development site, at Kinsale Road Roundabout (Sherlock, 2002) and along Evergreen Road (Cleary, 1996) in which no archaeological finds or features were identified. In the broader region, numerous archaeological investigations have been undertaken, particularly in and around Cork City. Historical references place a Viking settlement in Cork from 846, probably located on the south bank of the river opposite South Gate Bridge (CO074-034012-). Archaeological evidence has identified Hiberno-Norse activity by the second half of the 11th century on the southern end of Barrack Street on the south bank of the river, 1.7km to the north of the proposed development site (Lane and Sutton 2003, 12) while across the river on the south end of the south island and within the muddy estuary, reclamation associated with the development of settlement plots, began at the end of the 11th century (Ní Loingsigh 2014, 40 and Cleary 2014, 266). Archaeological excavations on a number of sites on the south island have found that urban development began in the late 12th century with the construction of post and wattle houses. This initial settlement grew and progressed northwards over the following centuries along a central spine of high ground that became (South and North) Main Street.

The proposed development is situated in the townland of Ballyphehane. The Irish landscape is divided into over 62,000 townlands and this system of landholding is unique in Western Europe for its scale and antiquity. Many townlands are pre-Anglo/Norman in origin and Irish historical documents consistently use townland names throughout the historic period to describe areas and locate events accurately in their geographical context. The townland names and boundaries were standardised across the country in the nineteenth century when the Ordnance Survey began to produce large-scale maps of the country. Townlands existed long before the parishes and counties. The original Irish names were eventually written down in anglicised form as they sounded to English court scribes. The social customs or history of the people who have lived in a particular place can also be reflected in the name of the townland. Many townlands throughout Ireland took their names from early habitation sites, both ecclesiastical and secular while others were descriptive of the landscape and terrain. The townland name Ballyphehane, in Irish 'Baile Féitheán' meaning town or townland of the drains, reflects the once marshy ground of the area (Lankford, 2008). It is first referred to in the Norman grants of Cork around 1182 and is spelt Ballyphehane as it is today (*ibid*). Townlands which border Ballyphehane include, Spittal-Lands, in Irish '*Fearann an Spidéil'* meaning hospital lands, Skahabeg South, '*Na Sceacha Beaga Theas*', small thorn bush, Ballincurrig, '*Baile an Churraigh'*, meaning town of the moor, Curraghconway, '*Corr Cheannmhaí*', meaning Conway's moor, Killeenreendowney, '*Cillín Rí an Domhnaigh*', meaning little church and Raheen and Cooleen, '*An Ráithín agus An Cúilín*', meaning little fort and little corner (www.loganim.ie).

The proposed development site is located in the townland of Ballyphehane and in the Catholic parish of Ballyphehane within one of the oldest suburbs of Cork city which was created after World War II. In 1948, with the appointment of the first city architect, the Corporation formed its Direct labour Unit for house building. Between 1950 and 1965, 525 houses were built in Ballyphehane parish, in areas to the north and northwest of the proposed development site (Henchion, 2003).

Prior to the construction of these houses, Ballyphehane was a rural area inhabited by market gardens, which had sprung up around the city after the Land Purchase Acts of 1902 (Myers, 1995). This allowed small tenant farmers and landless labourers to buy plots of land and work it themselves to grow an array of vegetables which could be brought to market, usually the Cornmarket Street, Coal Quay market and sold to stall holders who would then sell it on to the public. In the townland of Killeenreendowney, to the west of the proposed development site, gardens ranged in size from 6.32 acres to 0.55 acres (Myers, 1995) and at the northern end of the proposed development site a nursery is depicted on the OS 6-inch map of 1841.

A section of the Cork and Macroom Direct Railway ran through the southern end of the proposed development site. The line opened on May 24, 1866 and ran for 24 miles with five stations on route. A short distance to the east of the proposed development site ran the Cork Bandon and South Coast Railway line. Initially, the Macroom line used the Bandon and South Coast Railway terminus at Albert Quay, however, a new terminus on Summerhill Road (now Capwell Bus Station) was opened in September 1879. The Cork and Macroom Direct Railway was amalgamated into the Great Southern Railways in 1925, the Capwell terminus was closed and trains were diverted to the original terminus at Albert Quay. The last passenger transport was in 1935 and the line closed to goods traffic in 1953 (Johnson, 2005).

A number of roads and areas in Ballyphehane are named in honour of the signatories of the Irish proclamation of Independence of 1916 such as Pearse Road, Connolly Road and Connolly Place, Kent Road, Clarke's Road, MacDonagh Road, McDermott Place and Plunkett Road (Myers, 1995). Patrick Pearse read the Proclamation of 1916 on the steps of the GPO in Dublin and was the first president of the Irish Republic before he and brother Willie were executed on May 3rd, 1916 (*ibid*). Other names in the Ballyphehane area which have religious origins include Friars Walk, Nuns Walk, Loretto Park and Friary Gardens. The eastern end of Tramore road, bordering the northern side of the proposed development site, was originally called Ballyphehane Road while the western half was called 'Hangdog Road' where 'rabid dogs infected with rabies were hung' (Henchion, 2003). In October 1963, the name was changed to Tramore Road *(ibid*), probably after the nearby Tramore River. The Kinsale road, bordering the eastern side of the proposed development site, was the main road from Cork to Kinsale until the construction of the N40.

Musgrave Park, situated across Tramore Road to the north of the proposed development site, was purchased by the IRFU in 1938 on what was previously used as a large turf store which supplied the city with fuel (Myers, 1995).

During the turbulent years of the Irish War of Independence, two murders occurred in the Ballyphehane area. In 1920, the body of a man was found in the dyke of a field adjacent to the Macroom railway line (Henchion, 2003). A night watchman at the Macroom Junction, which was located approximately 360m to the northeast of the proposed development site (now the South City Link Road), heard shots in the direction of St. Josephs Cemetery (CO074-102) on the night of the murder. The man who was shot was never formerly identified and an inquest into his death concluded that an unknown person had died of bullet wounds inflicted at Ballyphehane by persons unknown (*ibid*). It is, however thought that the murdered man was Henry Quinlisk, a suspected spy. A second man, William Sullivan was shot in 1921 around the junction of Tory Top Lane and the Curragh Road (Henchion, 2003). He was found on the roadside on Tory Top Lane with a card attached to his vest with the words 'A convicted spy. Penalty death. Let all spies and traitors beware' (*ibid*).

11.3.3 Architectural Heritage

Within the proposed development site there are no protected structures (PS) listed in the Cork City Development Plan 2015-2021 (CCDP) and no structures listed in the NIAH. Within one kilometre of the proposed development site there are three PS and a total of 54 structures listed in the NIAH, of which two are also PS. These buildings/structures date from approximately the 18th century to the mid early 20th centuries and are listed in **Table 11.2** and displayed on **Figure 11.2** below. The closest Architectural Conservation Areas (ACAs) of which there are two, are along Evergreen Road, 1km to the northeast.

Table 11.2 Recorded architectural Structures; PS and those listed in the NIAH within 1km of the proposed development site

PS/NIAH	Townland	Description	Distance to Proposed Development (approx.)
PS663	Freagh and Vicars-Acre Pouladuff Road	Joe Murphy House	900m to W
20870013 20870014 20870012 20870015	Spittal-Lands	Graveyard Mausoleum Church/chapel Gates/railings/walls	500m to N
20870016	Spittal-Lands	House c. 1860	500m to N
20867001	Skahabeg North	Workhouse 1841 (part of St. Finbarrs Hospital complex)	980m to NE
20867002	Skahabeg North	Workhouse 1841 (part of St. Finbarrs Hospital complex)	980m to NE
20867052	Skahabeg North	Workhouse 1841 (part of St. Finbarrs Hospital complex)	980m to NE
20510483	Cork City	Hospital c. 1875 (part of St. Finbarrs Hospital complex)	980m to NE
20871015	Skahabeg North	House c. 1900	860m to NE
20871029 CO074-060	Curraghconway	Vernon Mount House c. 1790	980m to SE
20870011	Killeenreendowney	Church of the Assumption	650m to NW

PS/NIAH	Townland	Description	Distance to Proposed Development (approx.)
20505431	Cork City	House c. 1934	850m to N
20505441	Cork City	House 1930-1935	920m to N
20505443	Cork City	Post Box 1920-1935	920m to N
PS974 20505561	Cork City	Post Box 1970-1980	1km to N
PS744 20505513	Cork City	Christ the King Church 1931	890m to NE
Terrace of 4 houses numbered 20505516-20505519 ACA	Cork City	Franconia 1-4 Terrace of houses on Evergreen Road c. 1901	1km to NE
Terrace of 20 houses numbered 20505527-20505546 ACA and Terrace of 13 houses numbered 20505548-20505560 ACA	Cork City	Maiville Terrace Two parallel terraces of 20 houses and 13 houses on Evergreen Road c. 1902	1km to NE

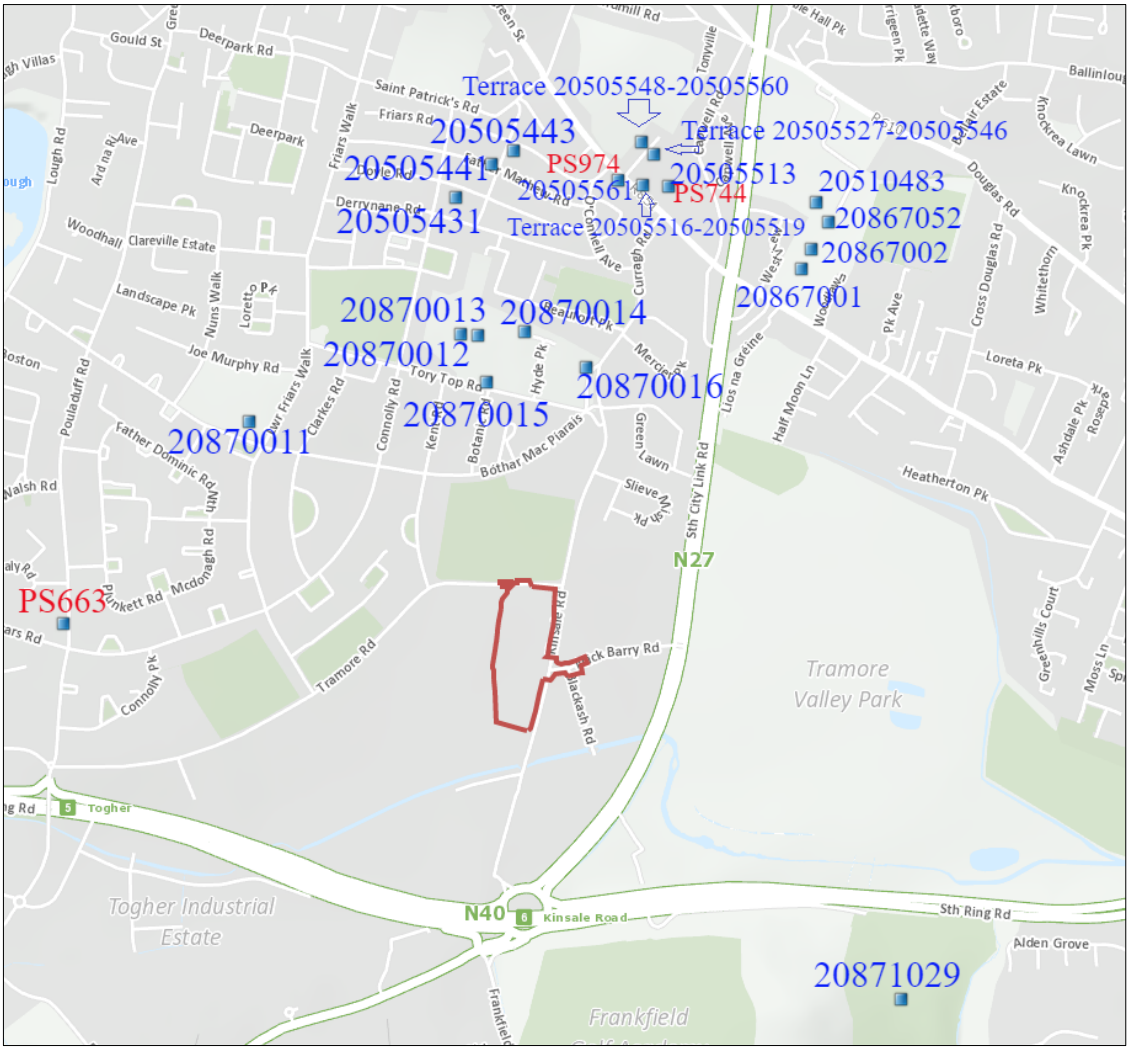

Figure 11.2 Recorded Features of Architectural and Cultural significance in proximity to the proposed development site | Background Mapping © 2021 Bing Maps | Not to scale

The PS and those listed in the NIAH within 1km of the proposed development site reflect the residential, spiritual and social history of the area from the mid-18th to the mid-20th centuries.

Vernon Mount country house (CO074-060; PS00480), situated 980m to the southeast of the proposed development site was a late 18th century house of 2-storeys over basement. A once notable house in the area, it was completely gutted by fire on 24 July 2016. According to Bence-Jones (1988), it was built in 1784 by Sir Henry Browne Hayes who spared no expense in creating this luxurious villa. The Joe Murphy house (PS663), situated on Pouladuff Road, depicted on the OS 25-inch map of 1902, was home to hunger striker, Joe Murphy. Born in America in 1895 to Irish parents, Joe was active in the Irish War of Independence, becoming a member of the Cork No. 1 Brigade IRA (Henchion, 2003). Imprisoned in Cork Goal in 1920, he along with a number of others went on hunger strike. He died 76 days later at the age of 24 and is buried in the republican plot of St. Finbarr's Cemetery (*ibid*).

There are two ACAs within 1km of the proposed development site; Franconia 1-4, Evergreen Road – described in the CCDP as '*a middle-class terrace of 4 two-bay two-storey houses built in c. 1901 making a fine contribution to the streetscape due to their scale and form*'. The second ACA is Maiville Terrace, also on Evergreen Road described in the CCDP as '*A residential enclave comprised of two parallel terraces of two-bay single-storey houses with dormer attics, built c.1902-03. These attractive houses are representative of the scale and form of purpose built artisan housing of the time*'.

Before 1958, there were seven catholic parishes in Cork city. As the suburbs expanded, the Catholic parish network was significantly altered and by 1983 the seven parishes had increased to 23 (O'Connor and Joyce, 2005). One of those newly created parishes was Ballyphehane which was named after the townland of Ballyphehane. The parish network expanded and older parishes were subdivided and new churches like the Church of the Assumption (NIAH 20870011) were built (1953-56). The church is one of the 'Rosary of Churches' constructed in the 1950s and 60s to serve the spiritual needs of the burgeoning cork suburbs. It is described in the NIAH as consisting of distinctive building materials of red brick and limestone which forms a prominent landmark in the area (NIAH). Another notable church in the area is Christ the King Church (NIAH 20505513), an irregular, octagonal-plan structure, built in 1931. According to the NIAH, the church is '*a landmark building in the history of architecture in Ireland… and representative of international architectural design and theory at that time'.*

St. Josephs Cemetery (CO074-102; NIAH 20870013) is situated 500m to the north of the proposed development site in the townland of Spittal-lands. The cemetery was established in c. 1830 on the grounds of the former Royal Cork Institution Botanical Gardens which opened on the site in 1803 which in turn were developed on land known as the Market Gardens (Lankford, 2008). The graveyard, extended to the northwest in c. 1880, is enclosed by a rubble stone wall with an inner walled area which was part of the botanical garden at the eastern end (NIAH). The graveyard holds a selection of stone monuments and gravestones which date from the 1930's to the present day and contains the graves of many notable Cork figures such as Fr Theobald Mathew who established the Cork Total Abstinence Society. Within the graveyard, are a roman catholic mortuary chapel built in 1870 (20870012) a mausoleum (20870014) built in 1860 to house the remains of the Lyons family who were clothiers whose business was situated along South Main Street in the city. The gateway with ashlar limestone gate pillars to the cemetery was built in c. 1805 and possibly formed the entrance to the former botanical gardens (NIAH). In the first 6 months of the famine, in 1848, over 10,000 victims were interred in the cemetery (Myers, 1995). Cork County Council took over the site in 1968 (ibid).

The former Cork Union Workhouse (NIAH 20867002), now part of St. Finbarr's Hospital complex is situated 980m to the northeast in the townland of Skahabeg North. It comprises a number of buildings designed by the Poor Law Commissioner's architect George Wilkinson, built at a cost of £12,800 and opened in 1841 (NIAH). By the end of January1847 there were 5,309 people in the workhouse, over double its intended capacity (Geary and Foster, 2005). The

workhouse was grossly overcrowded, resulting in 757 deaths in March 1847 with over 5,142 people dying in the workhouse between 1846 and 1848 (ibid). The workhouse was renamed the Cork District Hospital in 1898 and St. Finbarr's Hospital in 1952 and currently operates as a centre of elderly care, rehabilitation and blood bank facilities (www.imj.ie).

11.4 Potential Effects

The assessment of impacts (both direct and indirect) during construction and operation of the proposed development has been carried out in accordance with Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA Draft 2017).

11.4.1 Do-Nothing Scenario

In the do-nothing scenario, the development would not take place and therefore the potential for archaeological, architectural or cultural heritage effects would not arise.

11.4.2 Construction Phase

The site of the proposed development was established as CMP Dairy in the 1950s and operated until 2006, when the facility was closed and the buildings were subsequently demolished (**Figure 11.3**). Prior to the establishment of the CMP Dairy complex, a section of the Cork to Macroom railway line ran northeast - southwest through the southern end of the site.

An inspection of the proposed development site was undertaken on 4th August, 2021 (Plates 1-6; Appendix 11.2). The entire proposed development site is brownfield. Hard surface and some floor level remains of the former dairy facility are clearly visible on the ground and aerial photographs of the site dating from 1995 show the northern two thirds of the site occupied by buildings while the southern third is under hardstanding. Construction work associated with the railway line and the CMP Dairy facility would have removed any subsurface archaeological deposits that may have existed on the site. Given the extensive ground disturbance that has taken place, no *in situ* archaeological deposits will have survived. No likely significant effects on the archaeological environment are, therefore, foreseen.

Prior to the development of the CMP Dairy facility, a section of the Cork to Macroom railway line ran through the southern end of the site. The southern end of the site is under hard standing. However, it is possible that some remnant remains of railway infrastructure may exist beneath the surface. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made. Following implementation of this mitigation, the effect has been assessed as imperceptible.

Figure 11.3: Proposed development site 2021with former route of the railway line in red www.google.ie | not to scale

11.4.3 Operational Phase

No direct significant operational impacts on archaeology, architecture and cultural heritage as a result of the operation of the proposed development are envisaged.

11.4.4 Decommissioning Phase

No direct significant impacts on archaeology, architecture and cultural heritage is envisaged.

11.5 Mitigation Measures and Monitoring

There will be no impact on the archaeological and architectural environment. It is possible that remnant remains of the former Cork to Macroom railway line exist beneath hard standing at the southern end of the site.

11.5.1 Mitigation

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made.

11.5.2 Monitoring

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made.

11.6 Cumulative Effects

The proposed development site is brownfield which was formerly occupied by a complex of buildings associated with CMP Dairy. Those buildings have since been demolished and the entire site is of hard standing with some floor levels of former buildings remaining on the site. Given the extensive ground disturbance within the proposed development site, no likely significant effects on the archaeological environment are, therefore, foreseen.

Outside the proposed development site to the northwest it is proposed to construct a Primary Care Centre (PCC). The location for this development was also occupied by CMP Diary and is under hard standing. When the cumulative impacts of the proposed development and the development of the PCC are considered, no significant cumulative effects on the archaeological, architectural or cultural heritage environment are predicted.

11.7 Residual Effects

The proposed development site has already been subjected to extensive ground reduction thereby negating the presence of any archaeological finds or features on the site. The CCDP (2015-2021) and NIAH do not list any protected structures or features of architectural merit within the proposed development site. Any remnant remains of the former Cork to Macroom Railway line which ran through the southern end of the site will be preserved by record.

There will be no likely significant residual effects on the archaeological, architectural or cultural heritage arising from the construction and operation of the proposed development.

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12 Townscape and Visual

12.1 Introduction

The chapter is a townscape (landscape) and visual impact assessment (LVIA) prepared by Cunnane Stratton Reynolds (CSR) which was informed by a desktop study and a survey of the site and receiving environment in July 2021. The assessment is in accordance with the methodology prescribed in the Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013 (GLVIA) published by the UK Landscape Institute and the Institute for Environmental Management and Assessment.

The chapter identifies and discusses the landscape and visual constraints, and likely effects in relation to the proposed residential development at the Former CMP Dairies site located at Kinsale Road, Cork.

This chapter was prepared by Jim Kelly of CSR. Details of Jim's relevant qualifications and experience are provided in **Chapter 1**.

12.1.1 Assessment Methodology

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as '*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*'. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental and economic benefits to individuals and society.

The GLVIA notes that as a cultural resource, the landscape functions as the setting for our day-to-day lives, also providing opportunities for recreation and aesthetic enjoyment and inspiration. It contributes to the sense of place experienced by individuals and communities and provides a link to the past as a record of historic socio-economic and environmental conditions. As an environmental resource, the landscape provides habitat for fauna and flora. It receives, stores, conveys and cleans water, and vegetation in the landscape stores carbon and produces oxygen. As an economic resource, the landscape provides the raw materials and space for the production of food, materials (e.g. timber, aggregates) and energy (e.g. carbon-based fuels, wind, solar), living space and for recreation and tourism activities.

Forces for Landscape Change

The GLVIA also notes that landscape is not unchanging. Many different pressures have progressively altered familiar landscapes over time and will continue to do so in the future, creating new landscapes. For example, within the receiving environment, the environs of the proposed development have altered over the last thousand years, from wilderness to agriculture and settlement.

Many of the drivers for change arise from the requirement for development to meet the needs of a growing population and economy. The concept of sustainable

development recognises that change must and will occur to meet the needs of the present, but that it should not compromise the ability of future generations to meet their needs. This involves finding an appropriate balance between economic, social and environmental forces and values.

The reversibility of change is an important consideration. If change must occur to meet a current need, can it be reversed to return the resource (in this case, the landscape) to its previous state to allow for development or management for future needs.

Climate change is one of the major factors likely to bring about future change in the landscape, and it is accepted to be the most serious long-term threat to the natural environment, as well as economic activity (particularly primary production) and society. The need for climate change mitigation and adaptation, which includes the management of water and more extreme weather and rainfall patterns, is part of this.

12.1.2 Guidance

LVIA is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA).
- *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (Draft August 2017, EPA).

References are also made to the '*Landscape and Landscape Assessment – Consultation Draft of Guidelines for Planning Authorities*' document, published in 2000 by the Department of Environment, Heritage and Local Government.

Use of the Term 'Effect' vs 'Impact'

The GLVIA advises that the terms '*impact*' and '*effect*' should be clearly distinguished and consistently used in the preparation of an LVIA.

'*Impact*' is defined as the action being taken. In the case of the proposed works, the impact would include the site works and the construction of the proposed development.

'*Effect*' is defined as the change or changes resulting from those actions, e.g., a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

Assessment of Both 'Landscape' and 'Visual' Effects

Another key distinction to make in a LVIA is that between landscape effects and the visual effects of development.

'*Landscape*' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. '*Landscape character assessment*' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as '*a resource*'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and '*visual amenity*' refer to the interrelationship between people and the landscape. The GLVIA prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

The assessment of landscape and visual effects included a desktop study, review of the proposed development drawings and visualisations, and the site visits.

12.1.3 Methodology for Landscape Assessment

In **Section 12.6** the landscape effects of the development are assessed. Landscape impact assessment considers the likely nature and scale of changes to the main landscape elements and characteristics, and the consequential effect on landscape character and value. Existing trends of change in the landscape are taken into account. The potential effect is assessed based on measurement of the landscape sensitivity against the magnitude of change which would result from the development.

Sensitivity of the Landscape Resource

Landscape sensitivity is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape. It also relates to the nature and scale of development proposed. It includes consideration of landscape values as well as the susceptibility of the landscape to change.

Landscape values can be identified by the presence of landscape designations or policies which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape. These are described further in **Section 12.6** below.

Landscape susceptibility is defined in the GLVIA as the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies. Susceptibility also relates to the type of development – a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development.

For the purpose of assessment, five categories are used to classify the landscape sensitivity of the receiving environment.

Sensitivity is therefore a combination of landscape value and susceptibility.

Table 12.1 Categories of Landscape Sensitivity

Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principle management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principle management objective for the area is conservation of the existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principle management objective is to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principle management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Magnitude of Landscape Change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features and characteristics (also known as '*landscape receptors*'). Five categories are used to classify magnitude of landscape change.

Table 12.2 Categories of Landscape Change

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape (i.e. landscape receptors), and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape with loss of landscape quality and perceived value.
High	Change that is moderate to large in extent, resulting in major alteration or compromise of important landscape receptors, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape with loss of landscape quality and perceived value.
Medium	Change that is moderate in extent, resulting in partial loss or alteration of landscape receptors, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape but not necessarily reduction in landscape quality and perceived value.
Low	Change that is moderate or limited in scale, resulting in minor alteration of landscape receptors, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape and no reduction in landscape quality and perceived value.
Negligible	Change that is limited in scale, resulting in no alteration to landscape receptors, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character, quality or perceived value.

Significance of Effects

The terminology is used to describe the significance or importance of effects is that which is set out in the EPA's Guidelines (Draft 2017) which include seven categories.

In order to classify the significance of effects (both landscape and visual), the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint, using the following guide. There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

Table 12.3: Significance of Effect

		Sensitivity of the Resource				
		Very High	High	Medium	Low	Negligible
Magnitude of Change	**Very High**	Profound	Profound-Very Significant	Very Significant-Significant	Moderate	Slight
	High	Profound-Very Significant	Very Significant	Significant	Moderate-Slight	Slight-Not Significant
	Medium	Very Significant-Significant	Significant	Moderate	Slight	Not Significant
	Low	Moderate	Moderate-Slight	Slight	Not significant	Imperceptible
	Negligible	Slight	Slight-Not Significant	Not significant	Imperceptible	Imperceptible

Table 12.3 indicates how sensitivity of the resource/receptor, and the magnitude of the change, are combined to assess the significance of the effect. It should however be noted that this is a guide only and a degree of professional judgement is also applied.

Landscape effects are also classified as positive, neutral or negative/adverse. Development has the potential to improve the environment as well as damage it. In certain situations, there might be policy encouraging a type of change in the landscape, and if a development achieves the objective of the policy the resulting effect might be positive, even if the landscape character is profoundly changed.

Methodology for Visual Assessment

In **Section 12.6** the visual effects of the development are assessed. Visual assessment considers the changes to the composition of views, the character of the views, and the visual amenity experienced by visual receptors. Visual receptor sensitivity is a function of two main considerations:

Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention or interest is focussed on the views or visual amenity they experience at that location.

Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g., trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience.

Visual receptors less susceptible to change include travellers on road, rail and other transport routes (unless on recognised scenic routes which would be more susceptible), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

The significance of the visual effects experienced at these locations is assessed by measuring the visual receptor sensitivity against the magnitude of change to the view resulting from the development. Five categories are used to classify a viewpoint's sensitivity:

Table 12.4 Categories of Visual Receptor Sensitivity

Sensitivity	Description
Very High	Iconic viewpoints - towards or from a landscape feature or area - that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the view are such that its capacity for accommodating change in the form of development is very low. The principal management objective for the view is its protection from change.
High	Viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features focussed on the landscape). The composition, character and quality of the view may be such that its capacity for accommodating compositional change in the form of development may or may not be low. The principal management objective for the view is its protection from change that reduces visual amenity.
Medium	Viewpoints representing people travelling through or past the affected landscape in cars or on public transport, i.e., viewing but not focused on the landscape which is regarded as moderately scenic. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view
Low	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, or on heavily trafficked routes etc. The view may present an attractive backdrop to these activities but is not regarded as particularly scenic or an important element of these activities.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g., people at their place of work or engaged in similar activities such as shopping where the view has no relevance or is of poor quality.

Magnitude of Change to the View

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e., its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g., in full view, partial or peripheral, or glimpses). It also considers the geographical extent of the change, the duration and the reversibility of the visual effects.

Five categories are used to classify magnitude of change to a view.

Table 12.5 Magnitude of Visual Change

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes the dominant the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Significance of Visual Effects

As for landscape effects, in order to classify the importance of visual effects, the magnitude of change to the view is measured against the sensitivity of the viewpoint. This is set out in **Table 12.3**, though as noted this table is a guide only.

Quality and Timescale

The predicted effects are also classified as beneficial, neutral or adverse. This is not an absolute exercise; in particular, visual receptors' attitudes to development, and thus their response to the impact of a development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn. These qualitative impacts/effects are defined as:

- Adverse – Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished;
- Neutral - Scheme complements the scale, landform and pattern of the landscape (townscape)/view and maintains landscape quality;
- Beneficial – improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

Effects are also categorised according to their longevity or timescale:

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;
- Medium Term –Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years;
- Permanent – Lasting over sixty years.

A statement is made as to the appropriateness of the proposed development based on the combined assessment of the predicted landscape and visual effects. This methodology, in accordance with the various guidelines for LVIA, results in a conclusion as to the appropriateness of the proposed development based on objective assessment of its likely landscape and visual impacts.

12.1.4 Tools used in the assessment

Photomontages (refer to **Appendix 12.1**) were used to assist in the assessment of visual effects.

12.2 Proposed Development

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

12.3 Baseline Environment

12.3.1 Cork City Development Plan 2015-2021

A number of objectives relating to the landscape and developments in general are as follows:

Chapter 9 Built Heritage and Archaeology
Objective 9.1 Strategic Objectives: Built Heritage and Archaeology

a. To promote the protection of the heritage of the city and the implementation of the Heritage Plan
b. Ensure that elements of archaeological, architectural, and other cultural significance are identified, retained, and interpreted wherever possible, and the knowledge placed in the public domain.
c. Promote the retention, reuse and enhancement of buildings and other elements of architectural or other significance
d. Ensure that development reflects and is sensitive to the historical importance and character of the city, in particular the street layout and pattern, plot sizes, building heights and scales

Objective 9.22 Re-use and Refurbishment of Historic Buildings and Protection of Archaeological Resource
The City Council will positively encourage and facilitate the careful refurbishment of the historic built environment for sustainable and economically viable uses.

Chapter 10 Landscape and Natural Heritage
Introduction

10.1 With the intensification of the City its landscape and natural heritage assets are of huge importance to those living, working and visiting Cork. They are vital to quality of life, are non-renewable assets and help enhance the attractiveness and image of the city.

Cork City Landscape Study 2008
The Cork City Landscape Study 2008 sets out priorities for the enhancement of Cork's landscape. In particular developing:

> *•The Secondary Green Links- These green links extend along Cork's secondary river tributaries to provide the focus for the development of new parks and upgraded landscapes with improved public access. In some cases, the link will form an organising element for major new development (e.g., the Blackpool Valley).*

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.*

Landscape Protection
10.14 Cork City Council will seek to preserve and enhance the landscape character of the city by protecting the significant landscape elements that are intrinsically important to or contribute to the general amenity of Cork City. Cork City Council seals to achieve this through the designation of Areas of High Landscape Value (AHLV) and Landscape Protection Zones (LPZ)

10.15 Planning applications within areas / sites benefitting from such landscape protection must demonstrate that there is no resulting adverse impact on the landscape assets and character of the area, by means of a design statement that includes a landscape assessment and visual impact assessment. The City Council will seek discretionary Environmental Impact Assessments on all development proposals that it considers would be likely to have a negative impact on the landscape.

Areas of High Landscape Value
10.16 Areas of High Landscape Value comprise one or more landscape asset identified in the Cork Landscape Study 2008 and typically, combine one of the primary landscape assets (Topography, River Corridor, Tree Cover) with other landscape assets.

10.17 Areas of High Landscape Value display an intrinsic landscape character and a special amenity value. Development will be appropriate only where it results in a neutral / positive impact on the landscape. Although many AHLVs consist of a built form and a strong landscape character, typically the built form is secondary to the landscape character.

10.18 New development in AHLVs must respect the character and the primacy and dominance of the landscape. In particular, development on topographical assets such as steep sided slopes, escarpments and ridges is considered to be inappropriate due to the detrimental impact of site and excavation works on the 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.

10.19 The AHLV is an additional objective overlaying the land-use zoning objective. Development proposals must comply with the underlying land-use zoning objective. The key areas include the Montenotte / Tivoli Ridge; Shanakiel Ridge / Sunday's Well Ridge; Blackpool Valley; Lough Mahon/ Douglas Estuary; River Lee / Curragheen River.

Objective 10.4 Areas 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.

Views and Prospects
10.22 Cork City benefits from the prominent ridges which provide a series of striking viewing points of the city. This important resource helps to define the character and identity of the city. Given the development pressures associated with the planned growth of the City, the Cork City Council is faced with the challenge of managing development and protecting the city's valued landscape and views of same.

10.23 In general, the city is appreciated by most people along viewpoints such as the River Lee and panoramic views from elevated sites. Amenity views and prospects are defined as those views which significantly contribute to the character and amenity of the city, namely,

- *the visual envelope of the city defined by the ridges to the north and south;*
- *the city skyline;*
- *the built and natural heritage of the city.*

10.24 Cork City Council has identified a number of existing views and prospects of special amenity value to the city. These special views are of strategic significance to Cork City and the City Council will seek to protect and enhance them, where appropriate. In order to fully appreciate and legislate for the unique size, scale and distinctive topography of Cork City, five different view types (below) were identified.

10.25 There will be a presumption against any development that threatens to obstruct strategic views or compromise the quality or setting of these views. In addition to the strategic views and prospects of special amenity value, local views of significance are also very important to the character and legibility of neighbourhoods. Local views will be identified and assessed on a case-by-case basis through the planning process. There will be a presumption against any proposal that would cause unacceptable harm to local views of significance and their settings.

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. 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.

Overall Aim
10.35 To protect, promote and conserve Cork City's natural heritage and biodiversity.
Overall Natural Heritage and Biodiversity Objective

- *To protect, enhance and conserve designated areas of natural heritage, biodiversity, and protected species.*
- *To ensure that sites and species of natural heritage and biodiversity importance in non-designated areas are identified, conserved, and managed appropriately.*
- *To protect and maintain the integrity and maximise the potential of the River Lee and its associated watercourses*
- *To protect and enhance the city's trees and urban woodlands*
- *To promote best practice guidelines for management, control, and eradication of invasive alien species*
- *To acknowledge and adhere to all relevant biodiversity and natural heritage legislation*

Trees and Urban Woodlands
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;

c. To make use of tree preservation orders to protect important trees or groups of trees which may be at risk;
d. To ensure that new development benefits from adequate landscape structure / tree coverage, particularly in areas of the city with inadequate tree coverage;
e. To develop an urban woodland strategy and to provide a resource to protect trees and tree groups of significance, to manage existing areas with high tree coverage and to plant new urban woodlands in areas deficient in tree coverage;
f. To promote the planting of native deciduous trees and mixed forestry in order to benefit biodiversity.

12.4 Landscape Character – Site and Surrounds

The landscape character of the area surrounding the subject site is illustrated in **Figure 12.1**.

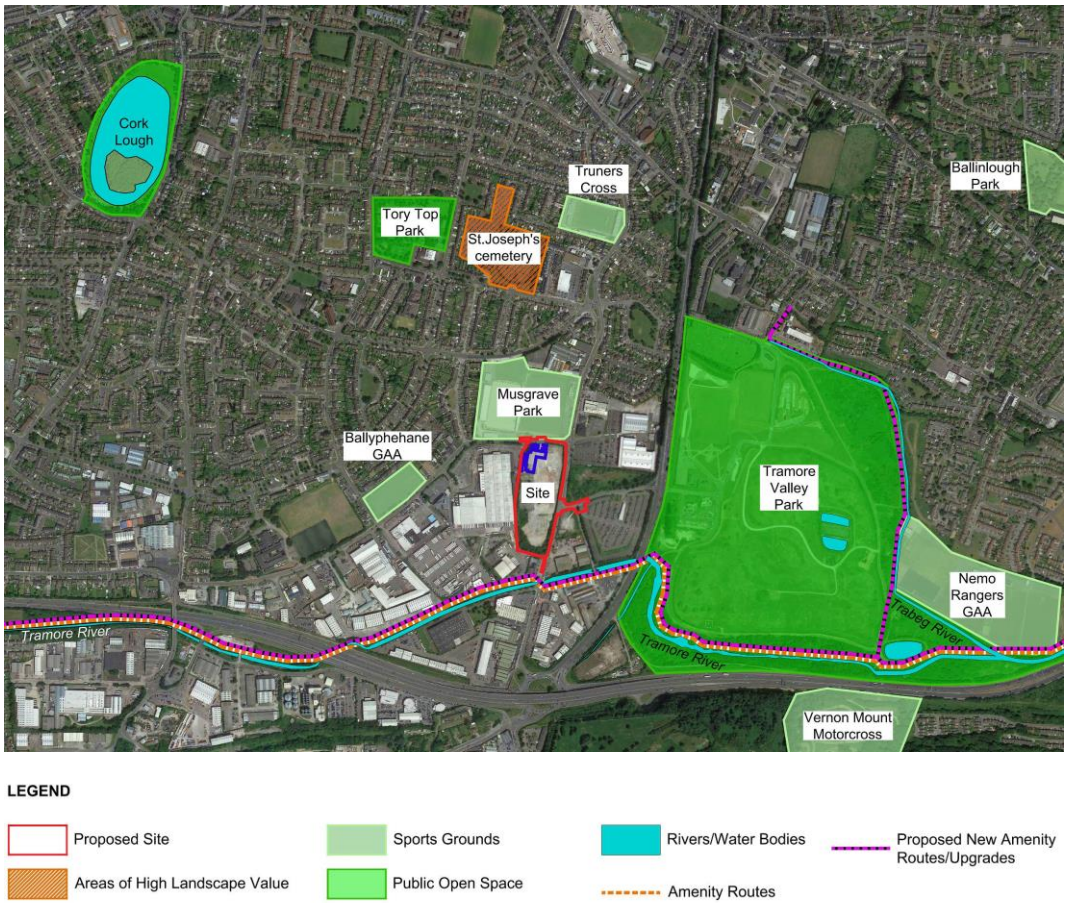


Figure 12.1 Landscape Character of the Area Surrounding the Site | not to scale

12.4.1 Subject Site

Plate 12.1 Access gate to subject site on Tramore road

The subject site is located at the junction between Kinsale Road and Tramore Road in the vicinity of the residential neighbourhoods of Ballyphehane, Togher and Turner's Cross in the southern suburbs of Cork City. It is a brownfield site not currently in use and has been cleared of the buildings which were part of its former use as a Dairygold Co-Op site. There are remnant building foundations and areas of hardstand on the site along with boundary trees/hedges and areas of self-seeded scrub willow. The site is secured by boundary palisade security fencing which is embedded within the boundary vegetation in places. The site is accessed via the former site entrance on Tramore Road.

Plate 12.2 Existing vegetation along eastern site boundary interface with Kinsale Road

Plate 12.3 View southward across the site from existing site entrance

Plate 12.4 View northward across the site showing adjoining Musgraves's site to the left

12.4.2 Site Context

The site is located in an area of mixed-use character comprised of a large zone of light industrial and retail warehousing to the south, Musgrave Park sports ground to the north, Musgraves Wholesale Warehousing to the west and retail warehousing and Black Ash park and ride facility to the east. The nearest house to the site is located approximately 170m to the west along Tramore Road. The N40 South Ring Road is located 0.5km to the south of the site and Tramore Valley Park is 300m to the east of the site. Musgrave Park is located immediately to the north of the site adjacent to a fast-food outlet.

Plate 12.5 Commercial/Business zone located to the south of the subject site along Kinsale Road

12.4.3 Landcover, Topography and Views – Cultural Heritage

The locality is characterised by large scale road infrastructure and retail shopping sites with warehouse style buildings and significant signage associated with the shopping outlets. Tramore Valley Park, a former city landfill site, is now a large public park with a BMX track and amenity walkways and also has a recycling facility for public use. The topography of the park varies and areas of high ground facilitate views outwards across the surrounding landscape.

Topography varies gently along Kinsale Road with a high point at the north-eastern corner at the junction with Tramore Road which facilitates views southward toward the high ground associated with Frankfield and northwards toward Turners Cross and the distant Montenotte/Tivoli Ridge on the north side of the city.

12.4.4 Vegetation

Site boundary vegetation comprises a mixture of Griselinia/Lawson Cypress hedging and Willow scrub along the northern, eastern, and southern boundaries which are interspersed with established trees. The western site boundary has individual specimen trees along the northern half of the site and scrub willow in the southern half. The site trees are the subject of a specialist arborists report prepared by Tree Management Services. Of the 160. no trees on the site which warranted tagging, 67 of them are Lawson Cypress which effectively make up coniferous boundary hedging. Of the 93 remaining trees, 61 no. fall into the category C which are defined as *'Trees of low quality with an estimated life expectancy of at least 10 years'*

There are two no. category A trees and 26 no. Category B trees on the site.

Category A trees are described as *'Trees of high quality with an estimated remaining life expectancy of at least 40 years'*

Category B trees are described as *'Trees of moderate quality with an estimated remaining life expectancy of at least 20 years'*

The over-mature Monkey Puzzle tree in the north-western corner of the site is a category B tree for which remedial works are recommended.

(For full details refer to TMS Arboricultural Tree Survey Report and Reference Plan TMS-CSR.01.21.21A included as **Appendix 12.2** to this EIAR).

Plate 12.6 South-eastern corner end of subject site and view northward along Kinsale Road

Plate 12.7 Approach to subject site from the city along Kinsale Road

Plate 12.8 Approach to Kinsale Road/Tramore Road Intersection from the south

Plate 12.9 Retail zone located to the east of Kinsale Road / Tramore Road junction.

Plate 12.10 View eastward along Mick Barry Road toward Black Ash Park and Ride and Tramore Valley Park

Plate 12.11 View toward Turners Cross representative of Views & Prospects OC9

Plate 12.12 View toward subject site from Tramore Valley Park

12.4.5 Landscape Designations

Local landscape designations relate to public open space provision, most notably at Tramore Valley Park and Tory Top Park. There is also an objective for a new amenity route along the course of the Tramore River to connect existing amenity routes which run parallel with the N40 South Ring Road.

Views and Prospects: OC9 is in the Old City Approach Road category and is a view to Christ the King Church in Turner's Cross from the Kinsale Road, just north of the junction with Tramore Road.

12.4.6 Summary – Landscape Character

The character of the local suburban landscape is mixed-use, with a high proportion of retail warehousing and significant road infrastructure (N27 South Link Road and the N40 South Ring Road). The area is heavily influenced by vehicular traffic. The grain of the suburban landscape changes as one moves westward and northward into the residential areas of Ballyphehane, Togher and Turner's Cross. Musgrave Park is located just to the north of the junction between Kinsale Road and Tramore Road where there is also a fast-food outlet. Tramore Valley Park is located due east of the proposed development site.

12.4.7 Landscape Value

The landscape values of a site and surrounds can be identified through formal designations which infer landscape value, as well as values which are not enshrined in policy but are evident on the site.

While the proposed development site itself, being a brownfield site, is considered to be of low value, it is located in close proximity to the residential suburbs of Ballyphehane, Togher and Turner's Cross, Musgrave Park sports ground and destination public open amenities such as Tramore Valley Park. Retail warehousing is located immediately to the east and south of the site.

Landscape values, thus, vary across the locality. Overall, local landscape value is considered to be medium.

In addition to formal designations at international, nation and local level, the GLVIA 3rd edition (2013) recommend the use of a number of criteria which can help to describe landscape values. These are listed below.

- *Landscape Quality/Condition*: A measure of the physical state of the landscape:

  The site is an industrial scale site which is currently redundant. The site has been cleared of buildings leaving extensive areas of hardstand and building foundations which have become partially overgrown with naturally re-generated vegetation. The redundant/transitionary character of the site is screened by boundary vegetation with the exception of the access gateway on Tramore Road. The landscape quality of the immediate locality of the site is mixed and defined by a mixture of retail and light industrial uses, undeveloped unkempt sites, sports grounds with high walls along local streets, a fast food outlet and a general dominance of road infrastructure along which pedestrian and cyclist provision has a low profile or is absent altogether such as along Mick Barry Road. Signage clutter is a feature of the retail area south of the subject site.

- *Scenic Quality: The landscape may appeal primarily to the senses (primarily but not wholly visual senses):*

  The site benefits from having significant tree and hedge screening along its boundaries which screens the redundant site from external areas. The high ground at the northern end of the proposed development site facilitates views southward to the distant hills and are pleasant. External views southward along Kinsale Road tend to be dominated by retail and light industrial buildings and signage with the distant landscape ridge providing an attractive backdrop. Views northward along Kinsale Road have the backdrop of the distant Montenotte/Tivoli Ridge.

Conservation values

The conservation values indicate those aspects of the receiving environment which are sensitive and could be negatively impacted on by the proposed development. These values form the potential landscape and visual constraints to the proposed development. These include:

- Established tree cover along the boundaries of the site
- Existing panoramic views southward toward the ridge landscape at Frankfield.
- Views from existing sensitive receptors in local residential neighbourhoods.

Enhancement Values

The enhancement values reflect change that is occurring in the landscape and its inherent robustness and identify elements which could be enhanced.

- The opportunity to demonstrate successful intervention in a suburban landscape of mixed-use character which would enhance the local setting.
- Potential to enhance the long-term biodiversity potential of the site.

12.5 Potential Effects

12.5.1 Potential Visual Receptors

An assessment of the potential visual receptors in the proposed development site and vicinity was carried out, based on the design drawings, development plan policies, and site visits.

The most sensitive visual receptors are likely to be residents in the vicinity of the site and users of the local public open space amenities at Tramore Valley Park.

12.5.2 Do-Nothing Scenario

Do nothing would involve the retention of the site in its current state. The development potential of the site would, therefore, remain unfulfilled.

12.5.3 Construction Phase

The development would generate traffic to and from the site associated with the delivery of materials to the site and would be required throughout much of the construction phase.

12.5.4 Operational Phase

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 presented. This would be long-term / permanent and could potentially be an adverse impact.

12.6 Landscape and Visual Effects

12.6.1 Landscape Sensitivity

Landscape sensitivity, as outlined in **Table 12.1**, is a combination of the landscape value of the site, and the susceptibility of the landscape to change.

The landscape value of the site, as noted above in **Section 12.4.7**, is considered to be Medium. The susceptibility of the site to a development of this type is considered Medium given the established mixed-use character of the locality.

Therefore, landscape sensitivity is considered Medium.

Medium:

Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.

12.6.2 Construction Phase Landscape effects

Magnitude of Change

The construction phase will involve earthworks and the movement of machinery on site, with cranes located at various locations across the site on an intermittent basis. The construction activities will introduce noise and potentially, dust into the landscape.

The magnitude of change as a result of the proposed development is considered Medium, and depending on the implementation of the construction phasing strategy, there will be short-term effects over a number of years.

Significance of Effect

The construction phase is likely to give rise to temporary to short term, moderate landscape effects which will be adverse in quality. These will be localised to the site and immediate vicinity.

12.6.3 Operational Phase Landscape effects

Magnitude of Change

The magnitude of change as a result of the proposed development is considered Medium:

Change that is moderate in extent, resulting in partial loss or alteration of landscape receptors, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape but not necessarily reduction in landscape quality and perceived value.

Internally and externally, the proposed development will constitute a significant intervention in the local suburban landscape which will change the character of the site and influence the character of the locality. The subject site will be transformed from its redundant condition to a residential neighbourhood with and town square. The new development will provide a range of services including gym, creche, retail unit, café, and coffee kiosk along with internal courtyard spaces and active edges addressing Kinsale Road and Tramore Road.

The loss of existing boundary trees will be mitigated by a new planting programme for the site to include specimen trees, wildflower meadows and a range of pollinator-friendly shrubs and groundcover. High quality hard and soft landscape treatments will be applied to further enhance the avenue which will benefit from passive surveillance for the new buildings.

Significance of Effect

The landscape effect is considered to be **significant**, on the landscape of the site and its immediate vicinity. The perception of the area as a car-dominated retail warehouse, shopping/light industrial environment will change. The proposed development will deliver a sense of neighbourhood and community with a hierarchy public and private spaces. The town square will be identifiable destinations at the heart of the new neighbourhood. The tallest building within the new development, located at the Kinsale Road/Tramore Road junction will be a landmark in the local landscape and will assist legibility as one negotiates the local road network. These attributes are **beneficia**l aspects of effect on the suburban landscape.

12.6.4 Visual Receptors – Viewpoints

A series of viewpoints were chosen in order to represent a variety of viewers from a range of locations. These include residential viewers as well as viewers from the

local road network. The viewpoints represent viewers of High to Low sensitivity, and are as follows:

Table 12.6 Viewpoints

Viewpoint	Description
1	View from Kinsale Road
2	View from Kinsale Road
3	View from Palaceanne Lawn, South Douglas Road
4	View from Tramore Valley Park
5	View from Frankfield Road
6	View from Kinsale Road
7	View from Kinsale Road
8	View from Pouladuff Road
9	View from Tramore Road
10	View from Lower Friar's Walk, Ballyphehane
11	View from Killeenreendowney Avenue, Ballyphehane
12	View from Pearse Road, Ballyphehane
13	View from O'Growney Crescent, Ballyphehane
14	View from Botanic Road, Ballyphehane
15	View from Kent Road, Ballyphehane
16	View from Hillview Estate, Ballyphehane
17	View from Tramore Road
18	View from Ardcahon Drive, Manor Farm
19	View from N27 Kinsale Road (Airport Hill)
20	View from Amberley Heights, Frankfield
21	View from Gurranabraher Road
22	View from St. Anne's Church, Shandon Bells & Tower

These viewpoints are described below and should be read in conjunction with the photomontages included as **Appendix 12.1**. A viewpoint location map is shown in **Figures 12.2** and **12.3.**

Figure 12.2 Viewpoint Locations | not to scale

Figure 12.3 Viewpoint Locations | not to scale

12.6.5 Construction Phase Visual Effects

Magnitude of Change

The construction phase will involve excavation, some local stockpiling of material and the movement of machinery on site. Construction compounds will be located within the site and material stockpiles are not likely to be visible from outside the site. Cranes will be visible intermittently across the site during the construction phase.

The magnitude of change on areas external to the site is considered Medium. These effects are short-term during the construction phase.

Significance of Effect

The construction phase is likely to give rise to temporary to short term, Slight to Moderate visual effects which will be adverse in quality. Visual effects are likely to be most pronounced in views from areas to the north of the site. Viewpoints 1,2,3,4 and 15 are likely to be affected during the construction phase, with visual effects likely to range from Slight to Moderate, adverse effects.

12.6.6 Operational Phase Visual Effects

The photomontages from Viewpoints 1-22 below assist in the assessment of operational phase visual effects. The removal of trees and site vegetation, some walls, and the construction of large-scale buildings and surface car parks are all proposed as part of the development.

The viewpoints are described below:

Viewpoint 1- View from Kinsale Road

Existing View

This view southward along Kinsale Road shows the local suburban setting characterised by commercial/retail outlets, car parking and flood lighting and site boundary netting associated with a sports ground. Boundary vegetation associated with the proposed development site is visible in the background.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will be primarily those who use the local road network regularly going to and from places of work or shopping who are considered of Medium sensitivity.

Proposed View

The proposed view shows the scale and form of the proposed development. The high-density development comprised of residential buildings constitutes a significant intervention in the suburban setting. It introduces clearly defined urban form and the tall corner building will be a landmark in the local suburban setting. Proposed avenue tree planting along Kinsale Road and Tramore Road will enhance the adjoining streets and provide transition in scale from the buildings to street level.

Magnitude of Change

The magnitude of change is considered High.

High is defined as:

Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the quality of the effect is **Beneficial**. The proposed development will have a positive effect on the locality by introducing clearly defined function and sense of place. The proposed development fronts onto adjoining roads providing passive supervision along enhanced tree-lined routes. The design qualities of the proposed development are expressed in its form, and the variety and interest expressed in building elevations along Kinsale Road and Tramore Road.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 2 - View from Kinsale Road

Existing View

This view southward along Kinsale Road shows the local suburban setting characterised by a mixture of residential development and a fast-food outlet. The distant ridge provides a backdrop to the view comprised of light industrial/retail warehousing and the rural hinterland beyond.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre along which there are residential neighbourhoods. Viewers will be primarily residents moving to and from their homes who are considered to be of High sensitivity and those who use the local road network regularly going to and from places of work or shopping who are considered to be of Medium sensitivity.

Proposed View

The proposed view shows the scale and form of the proposed development. The high-density development comprised of residential buildings with a landmark building at the north-eastern corner of the site constitutes a significant intervention in the suburban setting which eliminates the view of the distant ridge landform. It introduces clearly defined urban form and a landmark building in the local suburban setting. Proposed avenue tree planting along Kinsale Road and Tramore Road are visible in the view.

Magnitude of Change

The magnitude of change is considered High. High is defined as:

Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.

Significance of Effect

The effect is considered **Very Significant**. The loss of the view of the distant hills is an adverse aspect of the visual effect and the prominence of the development may be initially viewed as imposing and, thus, adversely by local residents. The proposed development will, however, have a positive effect on the locality by introducing clearly defined function and sense of place for the emerging area. The proposed development fronts onto adjoining roads providing passive supervision along enhanced tree-lined routes. The design qualities of the proposed buildings are expressed in its form, choice of high-quality materials in

elevations and the variations expressed in building elevations along Kinsale Road and Tramore Road. On balance, this amounts to an overall **Neutral** effect.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 3 - View from Palaceanne Lawn, South Douglas Road

Existing View

This view south-westward from this residential neighbourhood reveals the local pitch and putt facility in the foreground and considerable vegetation which extends cover across the local suburban landscape and further south toward the distant low ridge line. Elements of the local tree cover is interspersed with a sports ground, Musgrave Park, to the right and a distant warehousing facility to the left.

Visual Receptor Sensitivity

The viewpoint is located in a residential area in which there is, a school, light industrial units, an ESB station and an ESB pitch and putt club. Residential viewers are considered to be of High sensitivity.

Proposed View

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the quality of the effect is **Neutral**. While the proposed development will be prominent in the view, it benefits from being positioned within a mature landscape framework of tree dense tree screening which has the effect of partially screening the development in the setting. Overall, the panoramic view prevails, and landscape quality is maintained.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 4 - View from Tramore Valley Park

Existing View

This view westward from raised ground in Tramore Valley Park shows the mixed-use character of the southern suburbs of the city comprised of retail warehousing, light industrial units, and sports grounds facilities. Some of the infrastructure associated with Tramore Valley Park itself is evident in the foreground including recycling and parking facilities. Tree cover associated with the South Link Road has a softening effect on the middle-distance suburban landscape.

Visual Receptor Sensitivity

Viewers will primarily be visitors to Tramore Valley Park who are either walking and taking in views of the landscape as they negotiate circulation paths or who stop and take in views from vantage points. They are considered to be of High sensitivity.

Proposed View

The proposed view shows the form and scale of the proposed development along its eastern elevation. The proposed high-density residential neighbourhood constitutes a significant intervention in the suburban setting. The buildings along Kinsale Road step down in height from right to left, in sequence with the natural contours along the road and they are book-ended to the right by the tallest building of the development which provides landmark qualities and sense of identity in the locality. The permeability of the development is evident where gaps between the buildings signify the location of east to west cross-connecting routes. Variations in the building elevations are revealed by the contrasting shadows and facades arising from recesses/ buildouts in the elevations and balconies.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the quality of the effect is **Neutral**. The loss of some of the panoramic view westward is an adverse aspect of the visual effect and the prominence of the development may be initially viewed as imposing and, thus, adversely by users of the public park. The proposed development represents a response to the zoning of the site for high-density residential development and in this regard, the nature of the visual effect is not unusual. The suburban location generally has the capacity to accommodate change of this nature without affecting the overall enjoyment of the panoramic view. The development will signify the presence of a significant neighbourhood in the locality.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. There is no cumulative visual effect from this location.

Viewpoint 5 - View from Frankfield Road

Existing View

This view northward from Frankfield Road shows part of the Kinsale Road interchange, the elevated carriageways of N40 South Ring Road and the local petrol filling station. The high ground associated with northern suburbs of the city forms a backdrop to the view.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will include those who use the local road network regularly going to and from places of work or shopping who are considered of Low sensitivity. Viewers will also include local residents who walk toward the city and who are considered to be of High Sensitivity.

Proposed View

The proposed view shows the proposed development in the context of the busy interchange. The tallest building at the north-eastern corner of the site is the most prominent element and defining feature of the proposed development.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the quality of the effect is **Neutral**. While the scale and massing of proposed development will be apparent from this location, it will not dominate the view in the context of the existing built environment and the busy road interchange where the focus is on negotiating the local road and footpath network. The tallest element of the development will have a landmark status in the local suburban landscape.

Proposed View along with permitted buildings in the locality – (Cumulative)

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

Viewpoint 6 - View from Kinsale Road

Existing View

This view northward along Kinsale Road shows the local retail shopping area defined by a mixture of low-rise units and extensive signage. The subject site is visible in the middle distance, defined by the tree cover along its boundaries.

The Elysian tower block is visible in the distance along with the distant ridge to the north of the city.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will be primarily those who use the local road network regularly going to and from places of work or shopping who are considered of Medium sensitivity.

Proposed View

The proposed view shows the form and scale of the proposed development. It constitutes a significant intervention in the urban setting as a high-density residential neighbourhood and partially blocks the view of the distant landscape. The buildings which make up the development vary in height with the tallest building visible at the northern end of the site. The accommodation of space between the buildings is evident in the view. Proposed tree planting along Kinsale Road will mitigate the loss of existing vegetation along the site boundary.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Moderate**. The partial blocking of the distant landscape is an adverse aspect of the development but not unusual for a development of this nature on a site zoned for high-density residential development. The design qualities of the development in terms of materials and finishes in elevations will be apparent revealing the presence of the nature of the new residential neighbourhood. On balance the quality of the effect is **Neutral**.

Proposed View along with permitted buildings in the locality – (Cumulative)

An additional photomontage view is shown, depicting recently permitted schemes in the locality. The cumulative visual effect is considered Medium, and Neutral in quality in respect of the Primary Care Centre.

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

Viewpoint 7 - View from Kinsale Road

Existing View This view northward along Kinsale Road shows the local retail shopping environment defined by warehouse style buildings and large car parking facilities. Vegetation along the course of the Tramore River has a softening effect on the setting.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will be primarily those who use the local road network regularly going to and from places of work or shopping who are considered of Medium sensitivity.

Proposed View

The proposed view shows the form and scale of the proposed development with emphasis on its southern elevation. It constitutes a significant intervention in the urban setting as a high-density residential neighbourhood. The accommodation of space between the buildings is evident in the view. Proposed tree planting along Kinsale Road is evident in the view.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Moderate.** The development represents a response to the zoning of the site which is not unusual in terms of scale and height and the design qualities of the buildings in terms of detailing and material finishes in elevations is evident from this location. On balance the overall quality of effect is **Neutral**.

Proposed View along with permitted buildings in the locality – (Cumulative)

An additional photomontage view is shown, depicting recently permitted schemes in the locality. The cumulative visual effect is considered Medium, and Neutral in quality in respect of the Primary Care Centre.

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

Viewpoint 8 - View from Pouladuff Road

Existing View

This view north-eastward shows the carriageways of N40 South Ring Road and the backdrop of tree cover and retail warehousing along Tramore Road and Kinsale Road in the distance. The proposed development site is not visible from this location.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will be primarily those who use the local road network regularly going to and from places of work or shopping who are considered of Low sensitivity.

Proposed View

The proposed view shows that the proposed development will not be visible from this location.

Magnitude of Change

There will be **no change** experienced from this location.

Significance of Effect

There is no significance of effect to be considered for this viewpoint.

Proposed View along with permitted buildings in the locality – (Cumulative)

There are no cumulative effects arising for this view.

Viewpoint 9 - View from Tramore Road

Existing View

This view eastward along Tramore Road shows the retail warehousing which prevails along the southern side of the road. Part of the Ballyphehane residential neighbourhood fronts onto a public green open space to the left of the view.

Visual Receptor Sensitivity

This is a commercial/training area with no through-route and visual receptors will be mostly those who are moving to and from working environments and are considered to be of Low sensitivity and residents who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper parts of the proposed development will be visible from this location. This will be mostly the western elevations of the proposed residential buildings. The tallest building at the north-eastern corner of the site will be the most prominent element, appearing in the local suburban landscape as a landmark building.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Moderate** and the quality of the effect is **Neutral**. The proposed development will be identifiable as a high-density residential development with a landmark element as a backdrop to the existing retail warehousing environment along Tramore Road.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 10 - View from Lower Friars Walk, Ballyphehane

Existing View

This view south-eastward across Tramore Road shows the local green open space with pitch and retail warehousing which prevails along the southern side of Tramore Road. Residential properties front onto the pitch to the left of the view.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper parts of the proposed residential development will be visible from this location signifying the presence of a substantial residential neighbourhood to the far side of the retail warehousing zone. The tallest building will stand out as a landmark element on the skyline.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant** and the quality of the effect is **Neutral**. The proposed development will be evident and the tallest building will stand out as a landmark element on the skyline at the northern end of the site. The development

will not have an intrusive effect, however, from this distance and the sense of separation by the retail warehousing in the middle distance.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 11 - View from Killeenreendowney Avenue, Ballyphehane.

Existing View

This view south-eastward toward the site shows the local residential neighbourhood comprised of single-storey and two-storey houses.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper part of the tallest building at the northern end of the proposed development will be visible from this location.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. The proposed development is visible but is a distant element in the background.

Viewpoint 12 - View from Pearse Road, Ballyphehane

Existing View

This view south-eastward toward the site shows the local residential neighbourhood comprised of two-storey houses and green open space.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper part of the tallest building at the northern end of the proposed development will be visible from this location.

Magnitude of Change

The magnitude of change is considered Negligible. Negligible is defined as:

Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. Part of the proposed development is only just visible in the view.

Viewpoint 13 - View from O'Growney Crescent, Ballyphehane

Existing View

This view southward toward the site shows the local residential neighbourhood comprised of single storey houses and a centralised green open space. Musgrave Park is visible in the middle distance while the backdrop to the view is the rural hinterland on high ground comprised of agricultural fields and tree cover.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows how the proposed development will appear from this location, with the northern tall landmark building being the most prominent element. The development will be prominent in the middle distance.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the overall quality of the effect is **Neutral**. While the proposed development will be prominent in the view, it will not dominate it and appreciation of the wider landscape setting is retained. The variations in height, form and material finishes in elevations add interest and the tallest building appears as a landmark in the local suburban setting. There are no overlooking or overshadowing issues associated with the development.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 14 – View from Botanic Road, Ballyphehane

Existing View

This view southward toward the subject site shows Musgrave Park with associated flood lighting and car parking areas.

Visual Receptor Sensitivity

Visual receptors will be local residents on Botanic Road who are considered to be of High sensitivity.

Proposed View

The proposed view shows the tallest building of the proposed development at the north-eastern corner of the site and part of the adjacent residential block to the south of it. The building is prominent on the skyline in the middle distance.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the overall quality of the effect is **Neutral**. While the proposed development will be prominent in the view, it will not dominate it. The tallest building of the proposed development will appear as a local landmark in the middle distance. There are no overlooking or overshadowing issues associated with the development.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Neutral in quality.

Viewpoint 15 – View from Kent Road, Ballyphehane

Existing View

This view south-eastward towards the proposed development site shows the local residential neighbourhood comprised of two-storey houses and a roadside green open space. Musgrave Park floodlighting is visible in the background along with the distant ridge with tree cover and open grass areas.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper part of the tallest building of the proposed development will be visible from this location and a small portion at the southern end of the site.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. While the development is partially visible in the background it is not intrusive in the overall context of the suburban setting and there are no overlooking or overshadowing issues associated with the development.

Proposed View along with permitted buildings in the locality – (Cumulative)

There are no cumulative effects arising for this view

View 16 - View from Hillview Estate, Ballyphehane

Existing View

This view eastward toward the site shows the local residential neighbourhood comprised of two-storey houses and centralised green open space.

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the green space who are considered to be of High sensitivity.

Proposed View

The proposed view shows that only a small element of the proposed development will be visible from this location between the houses.

Magnitude of Change

The magnitude of change is considered Negligible. Negligible is defined as:

Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. Part of the proposed development is just visible in the view.

View 17 - View from Tramore Road

Existing View

This view southward along Tramore Road shows the local suburban setting comprised of Musgraves Retail Partners Ltd site to the right and the perimeter railings of Musgrave Park on the left. The proposed development site is in the distance, the only visible feature of which is its boundary vegetation.

Visual Receptor Sensitivity

The viewpoint is located on a busy local route through the suburban landscape. Viewers will be primarily local residents and those who use the local road network regularly going to and from places of work or shopping who are considered of Medium sensitivity.

Proposed View

The proposed view shows the scale and form of the proposed development. The high-density development comprised of residential buildings constitutes a significant intervention in the suburban setting, most notably the tall landmark building which is located at the north-eastern corner of the site. It introduces clearly defined urban form in the local suburban setting.

Magnitude of Change

The magnitude of change is considered High. High is defined as:

Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.

Significance of Effect

The effect is considered **Significant**, and the quality of the effect is **Beneficial**. The proposed development will have a positive effect on the locality by introducing clearly defined function and sense of place. The proposed development fronts onto adjoining roads providing passive supervision along enhanced tree-lined routes. The design qualities of the proposed development are expressed in its form, and the variety and quality expressed in building elevations.

Proposed View along with Primary Care Centre – (Cumulative)

An additional photomontage view is shown, depicting the proposed Primary Care Centre located adjacent to the subject site. The cumulative visual effect is considered Medium, and Beneficial in quality.

View 18 - View from Ardcahon Drive, Manor Farm

Existing View

This view north-eastward from this elevated location is a panoramic view across the city showing a broad range of building typologies from the retail warehousing in the foreground to city centre landmarks such as the Elysian and the chimney stacks of the ESB charging station in the South Docks. The distant Montenotte/Tivoli Ridge comprises a mixture of tree cover and buildings.

Visual Receptor Sensitivity

Visual receptors will be local residents who are considered to be of High sensitivity.

Proposed View

The proposed view shows the proposed development in the panoramic view. The tallest building unit in the north-eastern corner of the site is the most prominent and identifiable element of the development. The proposed development is identifiable but does not dominate the view or break the skyline.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

*Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.***Significance of Effect**

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. While the proposed development is visible in the view it is not an intrusive in the overall context of the panoramic view across the city landscape.

Proposed View along with permitted buildings in the locality – (Cumulative)

An additional photomontage view is shown, depicting recently permitted schemes in the locality. The cumulative visual effect is considered Medium, and Neutral in quality in respect of the Primary Care Centre.

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

View 19 - View from N 27 Kinsale Road (Airport Hill)

Existing View

This elevated location on the N27 shows significant tree cover to either side of the road and part of the distant Montenotte/Tivoli Ridge comprised of a mixture of tree cover and residential housing.

Visual Receptor Sensitivity

The viewpoint is located on a busy route to and from the city centre. Viewers will be primarily those who use the local road network regularly going to and from places of work or shopping who are considered of Medium sensitivity.

Proposed View

The proposed view shows part of the tallest building in the north-eastern corner of the development site. The building will be less apparent when the roadside trees are in full leaf. The development is not an intrusive element in the view and does not break the skyline.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The effect is considered **Not Significant** and the quality of the effect is **Neutral**. Only a small part of the development is visible in the view.

Proposed View along with permitted buildings in the locality – (Cumulative)

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

View 20 - View from Amberley Heights, Frankfield

Existing View

This elevated location from a residential neighbourhood provides a panoramic view north-westward across the city and its rural hinterland. Some landmarks such as County Hall are visible in the distance.

Visual Receptor Sensitivity

Visual receptors will be local residents who are considered to be of High sensitivity.

Proposed View

The proposed view shows the form and scale of the proposed development along its eastern elevation. The proposed high-density residential neighbourhood constitutes a significant intervention in the suburban setting. The proposed development buildings along Kinsale Road step down in height from right to left, in sequence with the natural contours along the road and they are book-ended to the right by the tallest landmark building in the development. Variations in the building elevations are revealed by the contrasting shadows and facades arising from recesses/ buildouts in the elevations and balconies.

Magnitude of Change

The magnitude of change is considered Medium. Medium is defined as:

Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The effect is considered **Significant.** The development appears imposing set against the finer grain of detail associated with the built environment in the background. The development does not, however, restrict the panoramic view from this location and does not break the skyline. The general absence of

development to the east of the subject site accentuates the profile and, thus, prominence of the development.

The proposed development represents a response to the zoning of the site for high-density residential development and in this regard, the nature of the visual effect is not unusual. The effect will alter as tree planting along Kinsale Road matures, providing green infrastructure which will partially screen the development and provide a framework to help to visually integrate the development in the setting. On balance the overall quality of effect is **Neutral**.

Proposed View along with permitted buildings in the locality – (Cumulative)

An additional photomontage view is shown, depicting recently permitted schemes in the locality. The cumulative visual effect is considered Medium, and Neutral in quality in respect of the Primary Care Centre.

Cumulative effects arising in respect of distant city centre developments are negligible due to distance.

View 21 - View from Gurranabraher Road

Existing View

This view southward from this elevated location shows the local residential neighbourhood comprised of two storey houses and a panoramic view over the western suburbs of the city and its rural hinterland. The spires of St Finbarr's Cathedral are visible in the middle distance

Visual Receptor Sensitivity

Visual receptors will be local residents who live along the street who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper parts of the proposed development will be visible from this location and that the tallest building unit at the northern-eastern corner of the site will be the most visible element. It will not, however, be an intrusive element.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. While the development is visible in the view it is not intrusive in the overall context of the panoramic view across the city landscape.

Proposed View along with permitted buildings in the locality – (Cumulative)

There are no cumulative effects arising for this view

View 22 – St. Anne's Church, Shandon Bells & Tower

Existing View

This elevated location which is a popular tourist attraction accommodates and a panoramic view over the city and its rural hinterland.

Visual Receptor Sensitivity

Visual receptors will be tourists/visitors to the city who are considered to be of High sensitivity.

Proposed View

The proposed view shows that the upper parts of the proposed development will be visible from this location and that the tallest building unit at the northern-eastern corner of the site will be the most visible element. It will not, however, be an intrusive element.

Magnitude of Change

The magnitude of change is considered Low. Low is defined as:

Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The effect is considered **Moderate/Slight** and the quality of the effect is **Neutral**. While the development is visible in the view it is not intrusive in the overall context of the panoramic view across the city.

Proposed View along with permitted buildings in the locality – (Cumulative)

There are no cumulative effects arising for this view

12.6.7 Summary of Viewpoints and Visual Effects

Table 12.7: Visual Effects Summary

Viewpoint	Description	Visual Effect	Cumulative Visual Effect
1	View from Kinsale Road	Significant, Beneficial	Medium, Neutral
2	View from Kinsale Road	Very Significant, Neutral	Medium, Neutral
3	View from Palaceanne Lawn, South Douglas Road	Significant, Neutral	Medium, Neutral
4	View from Tramore Valley Park	Significant, Neutral	No cumulative effect arising for this view
5	View from Frankfield Road	Significant, Neutral	No cumulative effect arising for this view

Viewpoint	Description	Visual Effect	Cumulative Visual Effect
6	View from Kinsale Road	Moderate, Neutral	Medium, Neutral
7	View from Kinsale Road	Moderate, Neutral	Medium, Neutral
8	View from Pouladuff Road	None	No cumulative effect arising for this view
9	View from Tramore Road	Significant, Neutral	Medium, Neutral
10	View from Lower Friar's Walk, Ballyphehane	Significant, Neutral	Medium, Neutral
11	View from Killeenreendowney Avenue, Ballyphehane	Moderate/Slight, Neutral	No cumulative effect arising for this view
12	View from Pearse Road, Ballyphehane	Moderate/Slight, Neutral	No cumulative effect arising for this view
13	View from O'Growney Crescent, Ballyphehane	Significant , Neutral	No cumulative effect arising for this view
14	View from Botanic Road, Ballyphehane	Significant, Neutral	Medium, Neutral
15	View from Kent Road, Ballyphehane	Moderate/Slight, Neutral	No cumulative effect arising for this view
16	View from Hillview Estate, Ballyphehane	Moderate/Slight, Neutral	No cumulative effect arising for this view
17	View from Tramore Road	Significant, Beneficial	Medium, Beneficial
18	View from Ardcahon Drive, Manor Farm	Moderate/Slight, Neutral	Medium, Neutral
19	View from N27 Kinsale Road (Airport Hill)	Not Significant, Neutral	No cumulative effect arising for this view
20	View from Amberley Heights, Frankfield	Significant, Neutral	Medium, Neutral
21	View from Gurranabraher Road	Moderate/Slight, Neutral	No cumulative effect arising for this view
22	View from St. Anne's Church, Shandon Bells & Tower	Moderate/Slight, Neutral	No cumulative effect arising for this view

Summary

Viewpoints 1-22 represent a range of views at varying locations, elevations, distances and directions. They represent both sensitive visual receptors such as residents and other visual receptors in the vicinity of the proposed development site.

Viewpoint 2 is considered to be Very Significant. There are eleven visual effects which are found to be significant (views 1, 3, 4, 5, 9, 10, 13, 14, 17 & 20). Of these, eight are considered to be neutral in quality and the remaining three (views 1 & 17) are considered to be beneficial.

Neutral - Scheme complements the scale, landform and pattern of the landscape (townscape)/view and maintains landscape quality.

Beneficial – improves landscape(townscape)/view quality and character, fits with the scale, landform, and pattern, and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

Visual effects are most pronounced in close proximity to the site, along Kinsale Road and Tramore Road. Beneficial results reflect those views in which positive aspects of the proposed development are evident, such as distinctiveness, legibility, contribution towards sense of place, quality of materials and finishes and improvements to local streets/public realm.

For views 6, & 7 visual effects are Moderate & Neutral.

For views 11, 12, 15, 16, 18, 21 & 22 visual effects are Moderate/Slight & Neutral.

For view 19 visual effects are Not Significant & Neutral

The proposed development will have no effect from the remaining viewpoint (view 8).

12.7 Mitigation, Avoidance and Enhancement

12.7.1 Construction Phase

The proposed remedial measures relate to implementation of appropriate site management procedures – such as the control of site lighting, delivery of materials and site boundary hoarding to minimise impacts on receptors in the vicinity of the site.

12.7.2 Operational Phase

Mitigation by design was carried out during the design development process.

The development has been designed to deliver a high-quality residential development town square in response to the zoning of the site. The primary objective has been to deliver attractive and safe neighbourhoods with excellent amenities for residents. The development will have distinctive landmark qualities and will provide a new pedestrian/cyclist boulevard along Kinsale Road which will significantly improve connectivity to and from the city centre. Remedial mitigation includes a comprehensive tree planting programme to mitigate the loss of existing site boundary trees and scrub willow.

12.8 Cumulative Effects

Cumulative effects relate to the potential combined impact of the proposed development in association with other recent developments or proposed developments in the vicinity of the site. Developments considered in this regard are:

- Primary Care Centre adjacent to the north-western corner of the proposed development site
- Railway Gardens Apartment Tower Block, South Link Road, Cork
- AQ2 Apartment Tower Block, Albert Quay, Cork
- Custom House Quay Tower Block, Cork
- The Prism Tower Block, Clontarf Street, Cork.

Cumulative effects in respect of the adjacent Primary Care Centre site are found to be Medium and Neutral in quality. (Refer to views 1, 2, 3, 9, 10, 13, 14, , 18 & 20.) while the effect is Mediun and Beneficial in quality for View 17.

Cumulative effects in respect of distant city centre developments are found to be Negligible and Neutral in quality. (Refer to Views 5, 6, 7, 18, 19 & 20.)

12.9 Decommissioning

In the event of the proposed development being decommissioned, all demolition and removal works would be carried out in accordance with relevant legislation at the time of decommissioning.

12.10 Residual Effects

Residual impacts associated with the proposed development relate to the scale and height of the buildings which will remain visible in views locally. The buildings will be evident in the local landscape into the future which would be expected for developments of this scale and massing with landmark elements. The extent of residual effect will reduce as the tree avenue along Kinsale Road matures. The nature and quality of the residual effects is set out in **Section 12.11**.

12.11 Summary and Conclusions

12.11.1 Landscape effects

As described in **Section 12.7.3**, internally and externally, the proposed development will constitute a significant intervention in the local suburban landscape which will change the character of the site and influence the character of the locality. The proposed development site will be transformed from its redundant condition to a residential neighbourhood and town square. The new development will provide a range of services including gym, creche, retail unit,

café, and coffee kiosk along with internal courtyard spaces and active edges addressing Kinsale Road and Tramore Road.

The loss of existing boundary trees will be mitigated by a replacement planting programme for the site to include specimen trees, wildflower meadows and a range of pollinator-friendly shrubs and groundcover. The biodiversity potential of the site will be further enhanced by the inclusion of areas of wildflower meadow within the courtyards, and SuDS measures in the form of rain gardens will be provided to deal with roof and surface water run-off.

The landscape effect is considered to be **significant,** on the site and its immediate vicinity. The perception of the area as a car-dominated retail warehouse shopping environment will change. The proposed development will deliver a sense of neighbourhood comprised of a hierarchy of residential blocks and town houses with a series of interior recreational courtyard spaces to cater for the needs of the residents. The town square at the northern end of the site is a public space finished out with a range of high-quality hard and soft landscape treatments, street furniture, lighting, and a coffee kiosk. The square and adjoining services will be available to the local and wider communities of Ballyphehane, Togher and Turners Cross.

The tallest building of the development, located at the Kinsale Road/Tramore Road junction, will be a distinctive landmark in the local suburban setting. The overall quality effect on landscape will be **beneficial** reflecting the delivery of an attractive and vibrant neighbourhood.

(Refer to the Architectural Design Statement for the Urban Design Strategy for the site and the Landscape Design Rationale Report for the landscape design strategy for the site).

12.11.2 Visual Effects

As described in **Sections 12.7.6** & **12.7.7**, visual effects vary as follows:

Very Significant for view 2.

Significant for views 1, 3, 4, 5, 9, 10, 13, 14, 17 & 20.

Moderate for views 6 & 7.

Moderate & Moderate-Slight for views 11, 12, 15, 16, 18, 21 & 22.

Not Significant for 19.

No Change for view 8.

The development will be prominent in many of the views but not necessarily intrusive.

In views 1, & 17, which are located close to the subject site, visual effects are recorded as significant and beneficial reflecting clearly defined function and sense of place which the development will impart at the busy junction between Kinsale Road and Tramore Road. The design qualities of the proposed development are expressed in its form, and the variety and interest expressed in building elevations.

Semi-mature tree planting enhances the setting at street level and the effect of the trees will be accentuated as they mature in the longer term.

In view 2, the loss of the view of the distant landscape from the local residential neighbourhood is found to be an adverse effect while the positive effects of the development in this instance are as outlined for views 1 & 17 above. On balance, therefore, the overall effect for view 2 is considered neutral.

In view 4, the eastern elevation of the development constitutes significant effect but appreciation of the local landscape is not significantly affected.

In view 20, the development is prominent from an elevated location but the overall quality of the panoramic view is retained. The visual effect will be mitigated in this instance as the specimen trees along Kinsale Road mature.

The large number of neutral effects recorded, nineteen in total, reflects the capacity of the site and locality to accommodate development of this scale without adversely affecting landscape or visual quality.

The Musgraves site, located immediately to the west of the proposed development site, is not represented by photomontage images due to it being a private site. However, this neighbouring site has been considered through the design process and generous off-sett distances have been provided along the boundary in respect of the proposed buildings. Considerable attention has also been paid to detailing and materiality in building elevations.

Beneficial outcomes associated with the development relate to the delivery distinctiveness, sense of place, quality of materials and finishes and green infrastructure in the form of specimen tree planting along adjoining roads.

There are no protected views or prospects affected by the proposed development and there are no overshadowing or overlooking issues arising in respect of residential properties in the vicinity of the site (the nearest residential property to the site is approx. 170m to the west along Tramore Road).

12.12 References

- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA).
- *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (Draft August 2017, EPA).
- *Cork City Development Plan 2015-2021*

13 Land, Soils, Geology and Hydrogeology

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. **Chapter 4** *The Proposed Development* and **Chapter 5** *Construction Strategy* provide a full description of the proposed development and describe the construction strategy. The outline of the proposed development, referred to as the site, is shown as a red line on all figures in this chapter.

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.

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[52].

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 (2013) Guidance on the management of Contaminated Land and Groundwater at EPA licensed sites.
- 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

[52] Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements.

(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);

- 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 how the legislation and guidelines (listed above) are considered in relation to 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 13.2.19). 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 also supported the assessment of the potential impacts of the development on human health.

Contaminated Land Assessment Methodology

The site has been assessed following the methodology presented in the EPA *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 (13.2.4), which has been combined with the results of a site walkover (13.2.5), and a review of the publicly available information on the ground conditions (13.2.6 to 13.2.11) and local nearby sensitive receptors (13.2.14 to 13.2.15) 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 (13.2.12) and hydrogeology (13.2.13) and the conceptual site model (13.2.19). 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 (13.2.12) and local hydrogeology sections (13.2.13). The nature of the contamination has been used to inform the design of the proposed development and the Construction Environmental Management Plan (CEMP) (**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 red line boundary illustrated in **Figure 13.1**.

13.1.3.7 Categorization 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 (2021).
- Aerial photography (Bing, 2021);
- Environmental Protection Agency (EPA) maps (2021). 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 (2021). Aerial photography (Google, 2021);
- Google Earth (2021). Historic Aerial Photography (Google Earth, 2021);
- Geological Survey of Ireland (GSI) (2021). Geological maps of the site area produced by the Geological Survey of Ireland (GSI, 2021) 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.
- Department of the Environment, Climate and Communications, mineral deposits
- National Parks and Wildlife Service (NPWS) (2021). Proposed / Designated NHA, SPA, SAC Sites (NPWS, 2021);
- Ordnance Survey of Ireland (OSI) (2017). Current and historical Ordnance Survey (OS) maps available for the study area and aerial photography; and
- Trinity College Library Dublin Map Library.

13.1.3.8 Site Visits

Arup carried out site walkovers on 19th March and in 20th April 2021.

The aim of these site visits 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 March 2021 to further develop an understanding of the ground conditions. Three rounds of groundwater monitoring were carried out during May to August 2021 by the GI contractor.

13.1.3.9 Ground Investigations

The most recent investigation was carried out between March to May 2021 to collect geoenvironmental information on the site. Copies of the borehole logs are presented in **Appendix 13.2** and are reviewed in Section 13.2.12.

In addition, a hydrogeological ground investigation was carried out by O'Callaghan Moran & Associates (OCM) in 2006. Copies of the borehole logs from this investigation is presented in **Appendix 13.3** and is 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. One consultee provided a response that was relevant to this chapter, and this is summarised below in **Table 13.1**.

Table 13.1 Summary of the Consultee Responses Relevant to the Land Chapter

Consultee	Summary of the comments
Inland Fisheries Ireland (IFI)	There is a proposal to dispose of septic effluent from the development to the public sewer. IFI would ask that Irish Water signifies there is sufficient capacity in existence so that it does not overload either hydraulically or organically existing treatment facilities or result in polluting matter entering waters. IFI would ask that there be no interference with, bridging, draining, or culverting of any watercourse its banks or bankside vegetation to facilitate this development without the prior approval of IFI.

13.1.4 Difficulties Encountered in Compiling Information

Initially the ground investigation was delayed due to public health restrictions. However, the investigation did eventually take place and ultimately 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 operation of the proposed development will have on the surrounding environment (Section 13.4.1).

13.2.2 Regional Overview

The Creamfields Site (Former CMP Dairy Site) is located within Cork City in the suburb of Ballyphehane, situated to the west of the Douglas River Estuary. The site is located 1.7km south of the River Lee. The regional setting of the site is shown on **Figure 13.1**.

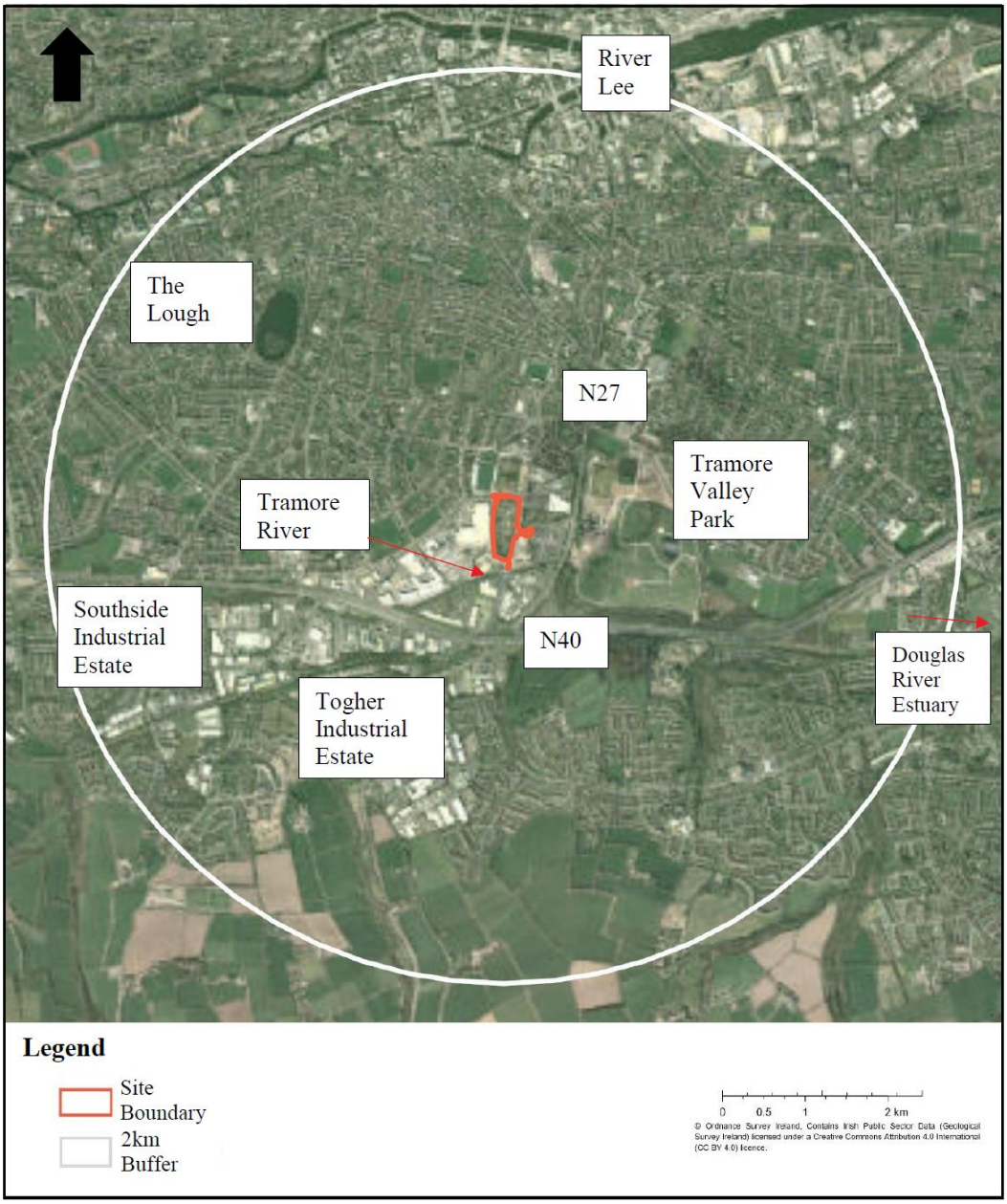


Figure 13.1 Regional site location | not to scale

The site is located within the catchment of the Tramore River (also referred to as the Douglas River) located 0.08km (80m) south of the site and the flows east towards the Douglas River Estuary and Lough Mahon. The Tramore River discharges to the Douglas River Estuary 2.5km east of the site, north of Douglas village.

The topography of the area around the site falls from the north to south, towards the Tramore River.

The Tramore Valley Park, an old landfill (known locally as the Old Kinsale Road Landfill), is located 200m east of the site. The N40 is located 0.5km south of the site, with industrial and commercial park such as Southside Industrial Park, Togher Industrial Estate and South Link Industrial Park south and southeast of the N40. The areas west and north of the site are predominately housing estates and

increasing commercial buildings closer to the City Centre. The Lough, a small lake, is located approximately 1.3km northwest of the site.

13.2.3 Existing Site

The site is located at Irish Transverse Mercator 567615 and 569736, and its location is shown on **Figure 13.2**. The site was previously the site of Cork Milk Producers (CMP) factory but the buildings were demolished and tanks removed by 2007 according to google earth aerial photographs. Only the factory floors are present in the north and centre of the site together with access roads and car parking. The south of the site comprises a relatively level area without any structures. The surface is covered partly with either concrete, or stone / construction and demolition materials with dense vegetation along the perimeter of the far south of the site.

The site is currently not in use and is not accessed by the public, but is occasionally used for temporary public events.

Figure 13.2 Site Location | not to scale

The site is bounded by two busy roads, the Tramore Road to the north and Kinsale Road to the east. Industrial buildings are present to the south and west of the site and Musgrave Park is located just north of the site.

Access to the site is from the Tramore Road via a large, locked gate. The site falls to the south from approximately 12.5m Ordnance Datum (mOD) in the north to 6mOD in the south.

13.2.4 Site History

The site history is presented in **Chapter 11** *Archaeology, Architectural and Cultural Heritage* and the historical maps are presented in **Appendix 13.4**. The key features in relation to geo-environmental risks are summarised below:

- From the earliest map and up to 1957 the site is shown as largely undeveloped and potentially used as agricultural lands.
- On the 25" 1888 to 1913 map and the 1957 map the Cork to Macroom railway line is shown on the maps running through the south of the site.
- On the 25" 1888 to 1913 map and 1957 maps there is a noticeable cut along the eastern section of the site. This could potentially have been access route to the railway from the road.
- The 1964 historical maps show two large buildings in the north of the site and the realignment of the current Kinsale road, which runs directly along the eastern boundary of the site.
- The 1979 historic map (**Figure 13.3**) provides more detail on the two buildings and they are recorded as the 'milk production plant'. The railway is recorded as the 'Former Railway from Macroom' suggesting it has been decommissioned.
- The 1979 map shows the Kinsale Road and north of the site to be higher than the central parts of the site and the south of the site.

The CMP Dairy Site is shown to have expanded in the 1995 map and reflects the configuration of the foundations observed currently on the site.

According to the OCM Hydrogeology Report, 2005, the CMP Dairy Site contained bunded and unbunded tanks, some which stored diesel and other nitric acid, in addition they note that the site has a paint store, a vehicle repair garage, a fuel pump house and wastewater treatment plant. OCM show a well in the southwest of the site in one of their plan (**Appendix 13.3**). The site is shown to be clear of factory buildings in the 2013 arial photograph, with dense vegetation to the south.

The site was closed in 2006. Based on google earth aerial photographs the buildings and tanks on site were removed by 2007.

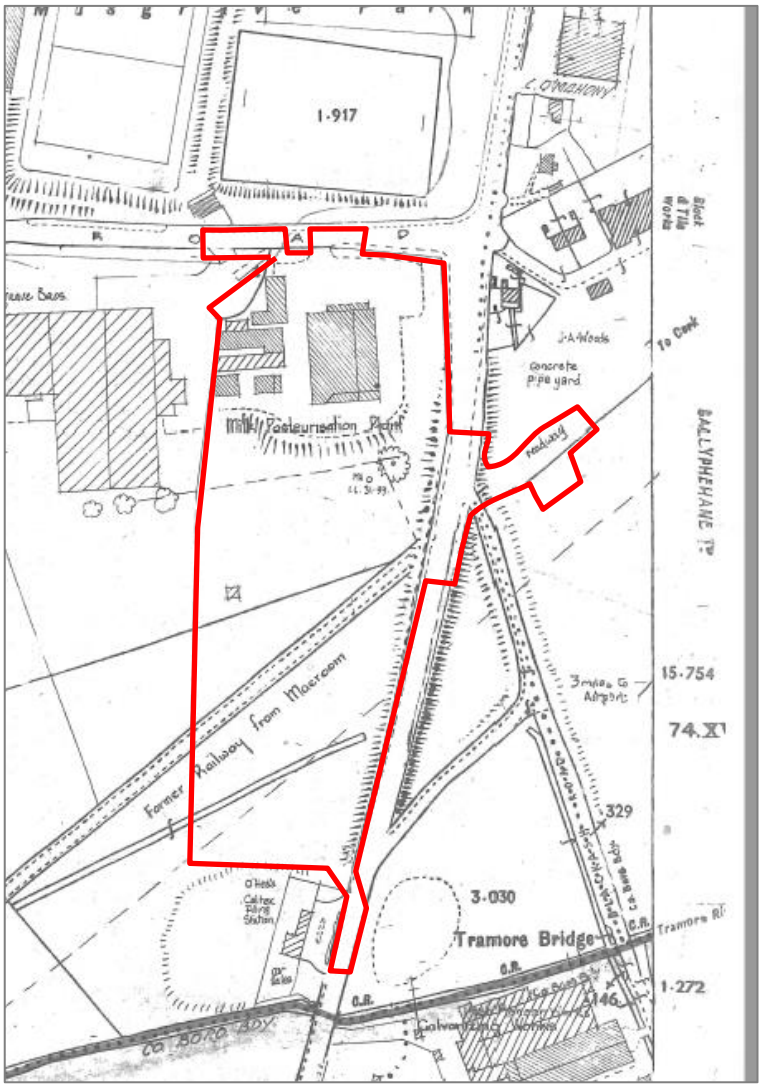


Figure 13.3 OSI 1979 historic map (Trinity College Dublin, Library) | not to scale

13.2.5 Site Walkover

A site walkover was carried on the 20th of April 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**.

There were no tanks or buildings recorded on site during the walkover. The surface of the site falls gently towards the south. The northern and central sections of the site were predominately overlain with hardstanding (concrete slabs or asphalt) and the floors of the old factory or associated buildings (**Appendix Figure 13.1.1)**. The south of the site comprises uneven ground consisting of crushed construction and demolition materials (**Appendix Figure 13.1.2**). Site levels varied in some areas, notably in the northwest of the site where there was an area of lowered ground (**Appendix Figure 13.1.3**) and the centre of the site where the former factory was raised above the surrounding ground level (**Appendix Figure 13.1.4**).

Along the southern boundary of the site, in the area of dense vegetation there was a sharp drop off in ground level by approximately 1m to 2m (**Appendix Figure 13.1.5**). This low-lying area at the base of the slope and along the southern boundary was observed to be wet like a marsh. There are no surface water features in the north or south of the site.

In the southwest of the site, close to the location where the well was indicated to be present in a depression, was a potential underground tank and chlorine canisters were noted nearby (**Appendix Figure 13.1.6**). In the northwest of the site there was an approximately 2m deep below ground level concrete tank or basement (**Appendix Figure 13.1.7**). Japanese Knotweed was noted in several areas of the southern end of the site (**Appendix Figure 13.2.8**).

It was noted that on the day of site visit the Tramore River, 0.08km to the south of the site, had a potential hydrocarbon film (Appendix **Figure 13.2.9**).

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 forms the long valley east-west valley of the River Lee;
- Sandstone forms the higher ridges to the north and south of the valley[53].

With the exception of the south of the study area the topography in the study area is relatively low relief and gently falls over 2km from 30mOD in the north east to 0mOD at the Douglas River Estuary in the south west. This area is underlain by limestone. Sandstone is present in the south of the study area and the ground level

[53] MacCarthy, Ivor. (2012). Geology of the Ballincollig-Crookstown Area, County Cork.. Journal of Muskerry Local History Society. 10. 1-22.

increases rapidly south of the N40 approximately 1km from the site, to over 150mOD.

Within the study area the GSI record Hummocky Sand and Gravel landforms directly south of the site and one east of the site, close to Tramore Valley Park. The GSI also record a Glaciofluvial Terrace north outside the site (**Figure 13.4**).

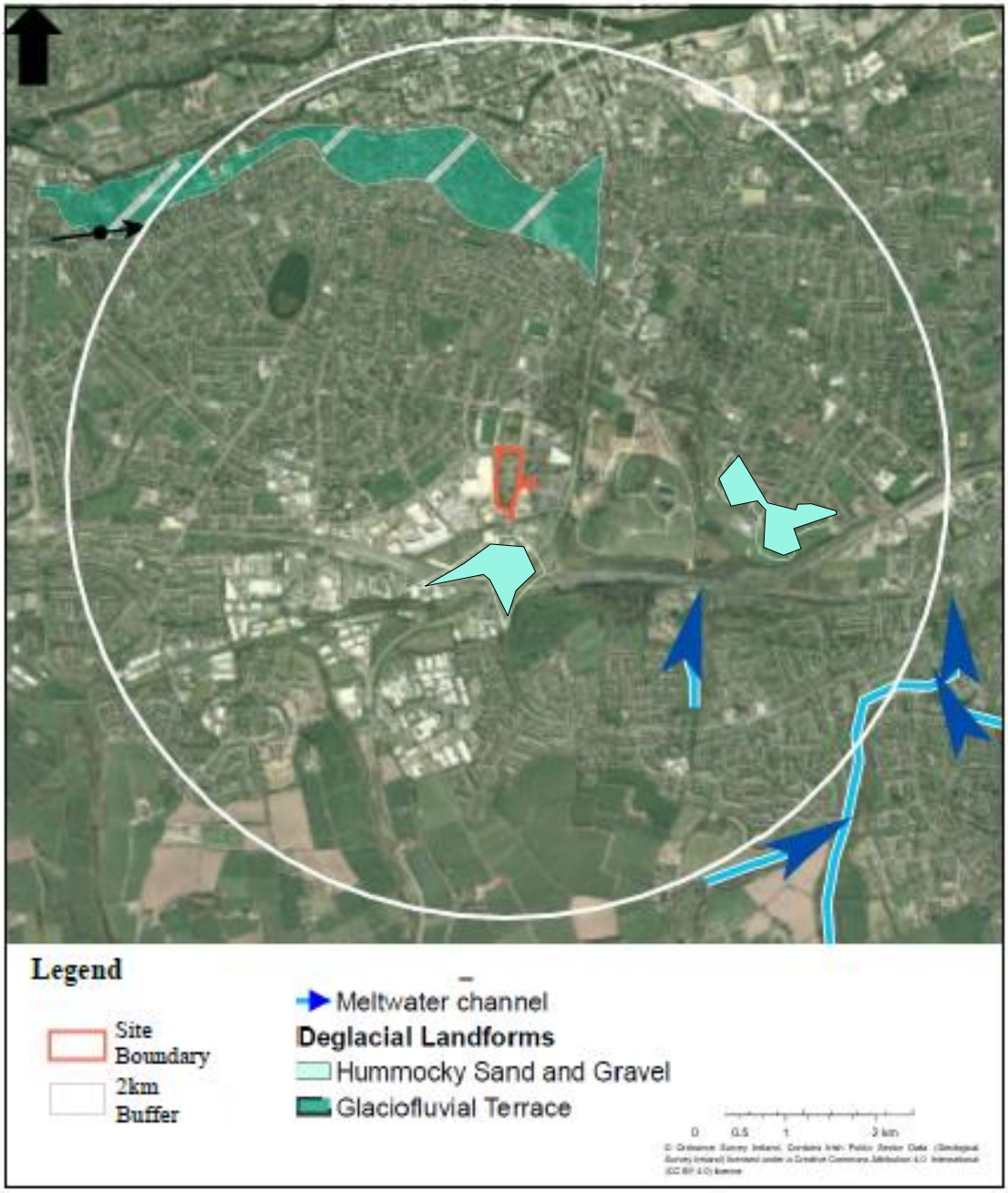


Figure 13.4 Geomorphology and topography of the region | GSI | not to scale

13.2.7 Regional Soils

Based on the Teagasc soils database, the dominant soil type under and near the site is shown to be made ground. There is deep well drained mineral soils located to the south, outside of the site. The soils located within 2km of the site are presented in **Figure 13.5**.

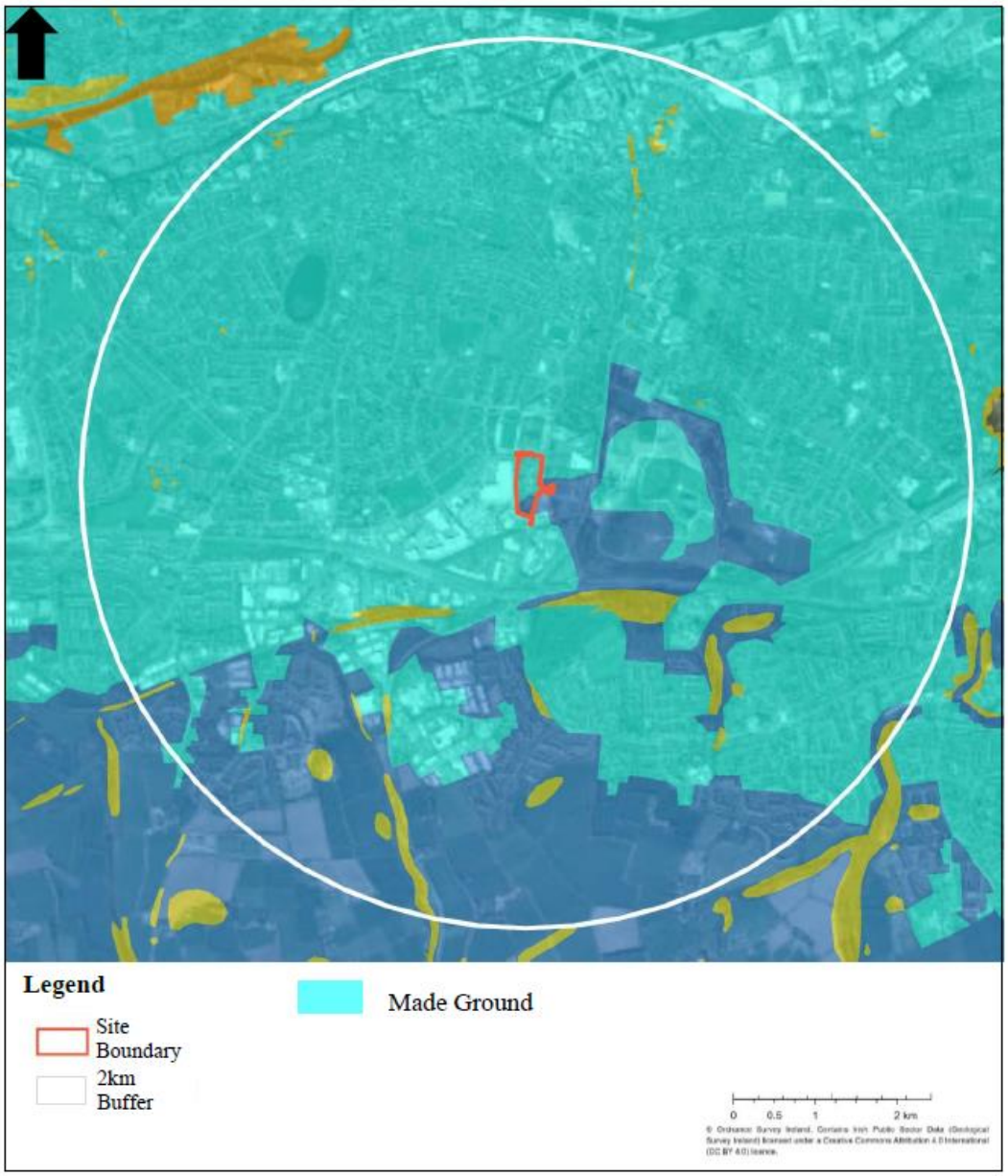


Figure 13.5 Regional Teagasc Soils | GSI | not to scale

13.2.8 Regional Quaternary Sediments

As with the regional soils information (Section 13.2.3), 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 13.6**.

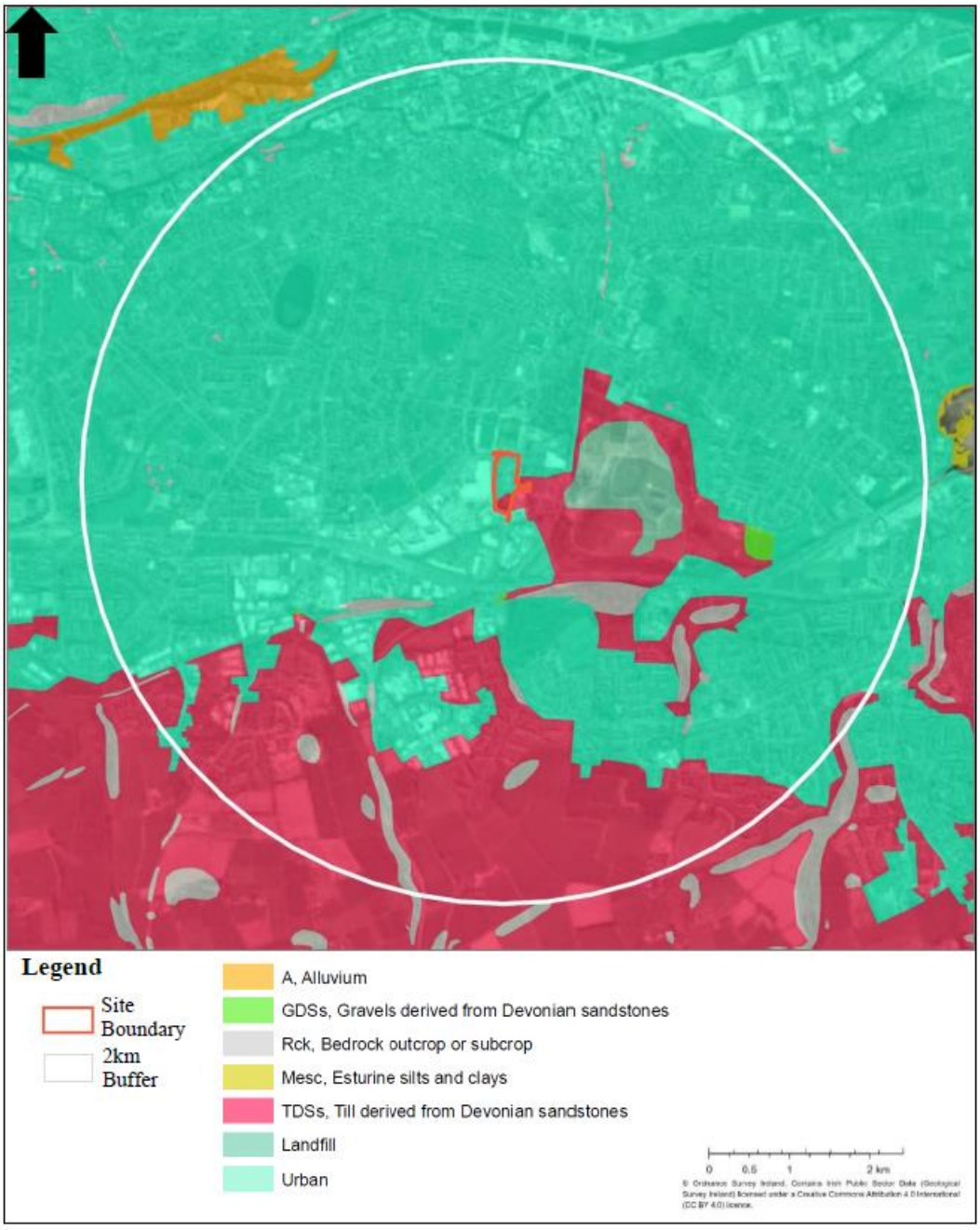


Figure 13.6 Regional Quaternary Sediments | GSI | not to scale

The GSI show Quaternary sediments in the south of the site, to the east of the site and to the south of the N40 to consist of till derived from Devonian sandstones (TDSs). These deposits are likely to be present in areas under the made ground within the site and Cork City.

Also in the study area are gravels derived from Devonian sandstone (GDSs), located approximately 1.4km east of the site, on the far end of the Old Kinsale Road Landfill.

The bedrock outcropping/sub-cropping is shown where the sandstone ridge starts south of the N40.

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 and 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 Carboniferous bedrock called the Waulsortian Limestone. The GSI describe the Waulsortian Limestone as a very fine-grained carbonate rock which can develop karst features. The Regional Bedrock is shown on **Figure 13.7**.

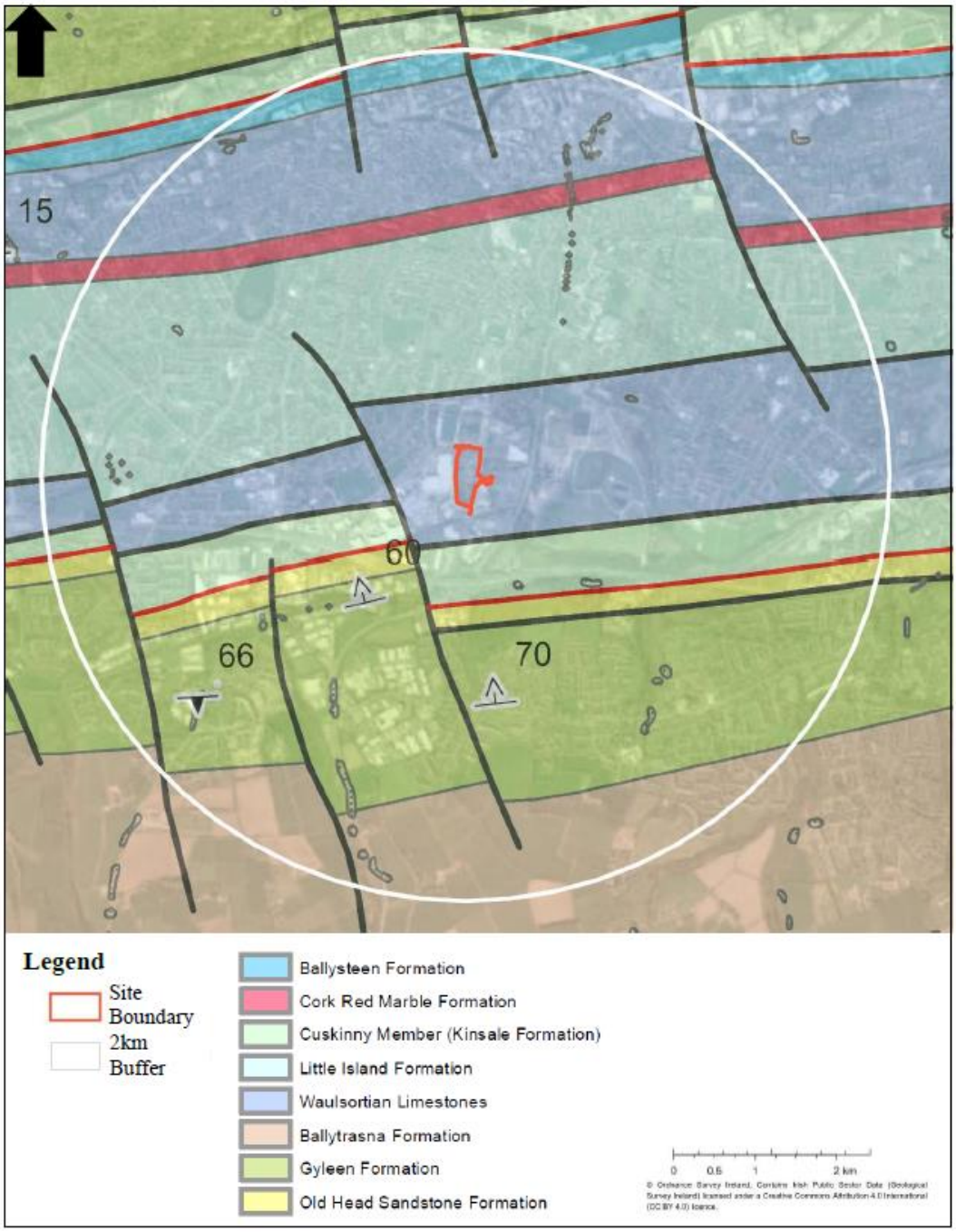


Figure 13.7 Regional bedrock Geology | not to scale

Based on information provided by the GSI the Walsortian Limestone dips approximately 60˚ to 70˚ to the north under the site. Faulting is present in the area. The nearest fault is approximately 400m to the east of the site and comprises a normal fault.

According to the Department of the Environment, Climate and Communications and the GSI there are no mineral deposit locations within the site or the surrounding area.

The GSI aggregate potential viewer shows crushed rock aggregate potential within the site is very high potential and high potential for granular aggregate on the southern half of the site. Notwithstanding this the potential for economic exploitation of these aggregates is improbable due to their location in an urban setting and they are not considered further in this chapter.

13.2.10 Regional Hydrogeology

13.2.10.1 Bedrock Aquifer

Based on the GSI Groundwater Resources Aquifer Map the Waulsortian Formation, is categorised as a 'Regionally Important Aquifer - Bedrock is karstifed (diffuse), and forms part of the Ballincollig groundwater body (GWB) The bedrock aquifers in the vicinity of the site are shown on **Figure 13.8**.

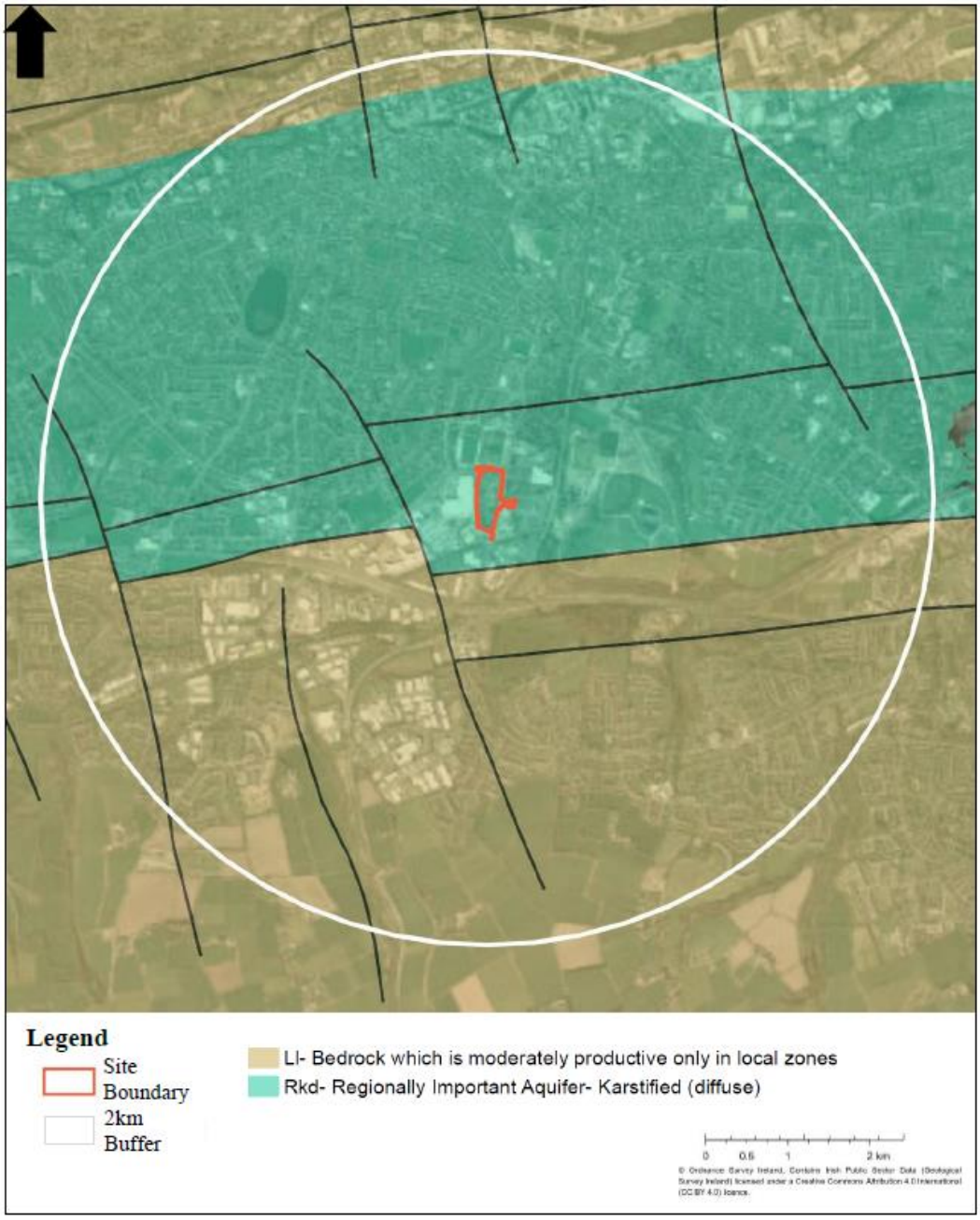


Figure 13.8 Regional Bedrock Aquifer | not to scale

The groundwater in the Waulstortian Limestone bedrock flows in the many fractures, fissures and joints, enlarged by karstification. According to the GSI (2004), due to the high frequency of fissures in this region, overall groundwater flow is thought to be diffuse in nature, although solutionally enlarged conduits and cave systems do occur. There is a large east to west running fault located to the south of the site.

Regional groundwater flow in the vicinity of the site is anticipated to be generally towards the Douglas River Estuary and Lough Mahon in the east. It is reported by the GSI that the water table is generally within 10 m of the surface, and groundwater is generally unconfined[54]. The GSI states that most groundwater

[54] GSI, 2004, Ballincollig GWB: Summary of initial Characterisation.

flow occurs in an upper shallow highly karstified weathered zone in which groundwater moves quickly in rapid response to recharge. Below this is a deeper zone where there are two components to groundwater flow: interconnected conduits and cave systems, and a more dispersed slow groundwater flow in smaller fractures and joints.

13.2.10.2 Karst features

Karst is a type of geological feature characterised by caves, caverns and other types of underground drainage resulting from the dissolution of the underlying bedrock. This typically occurs in areas of high rainfall with soluble rock.

Whilst the limestone under the site is susceptible to dissolution and could form karst features, according to the GSI Data Viewer, there are no mapped karst features present beneath the site or the within the study area. The closest karst feature, a cave located in Ballinlough, is approximately 3km north east from the site.

13.2.10.3 Sand and Gravel Aquifers

The Lee Valley Gravel Aquifer (LVG) is located approximately 1.5km north of the site, and is shown in **Figure 13.9**. No sand and gravel aquifers are shown under the site.

The Lee Valley Gravel (LVG) is likely to have a high to moderate hydraulic conductivity. Values reported for a site in Cork City[55] range from approximately 5 x 10^{-3}m/s to 5 x 10^{-4}m/s. The groundwater in the aquifer is likely to be in continuity with the Lee Estuary Lower.

Considering its distance from the site it is anticipated that there is no significant continuity with the Lee Valley Gravel aquifer and it is not considered further in this chapter.

[55] 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.

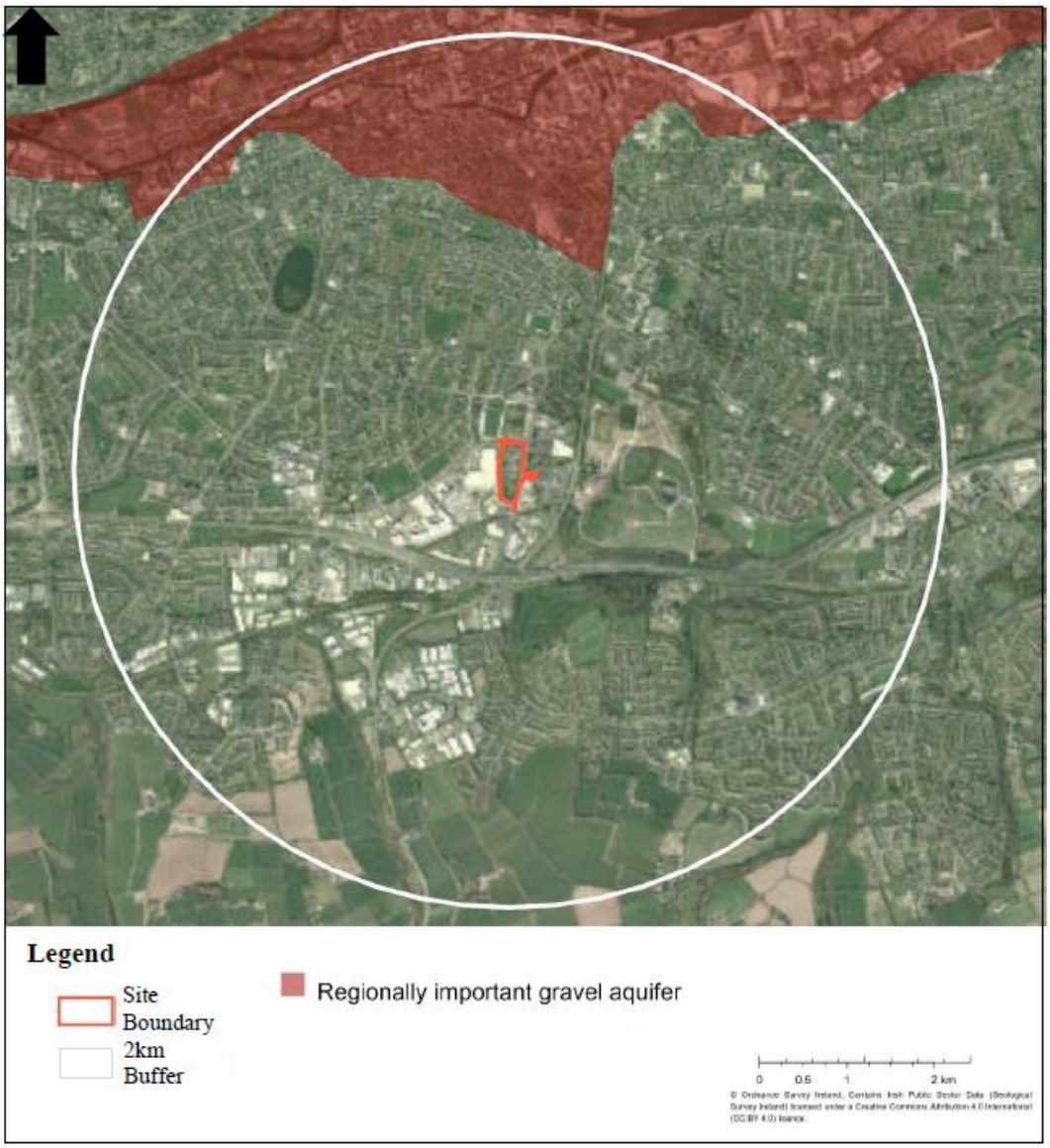


Figure 13.9 Regional Gravel Aquifers | not to scale

13.2.10.4 Recharge

The effective rainfall is reported by the GSI to be 674mm/yr. The GSI groundwater recharge map of the area indicates an average recharge of 135mm/yr through the majority of the site. This low rate is likely to relate to the presence of made ground which limits the amount of infiltration. A small portion of the south of the site is shown to have a much higher average recharge of 575mm/yr and is stated to be a "Sand & gravel aquifer, overlain by well drained soil", where made ground is not mapped. The regional recharge map is shown in **Figure 13.10**.

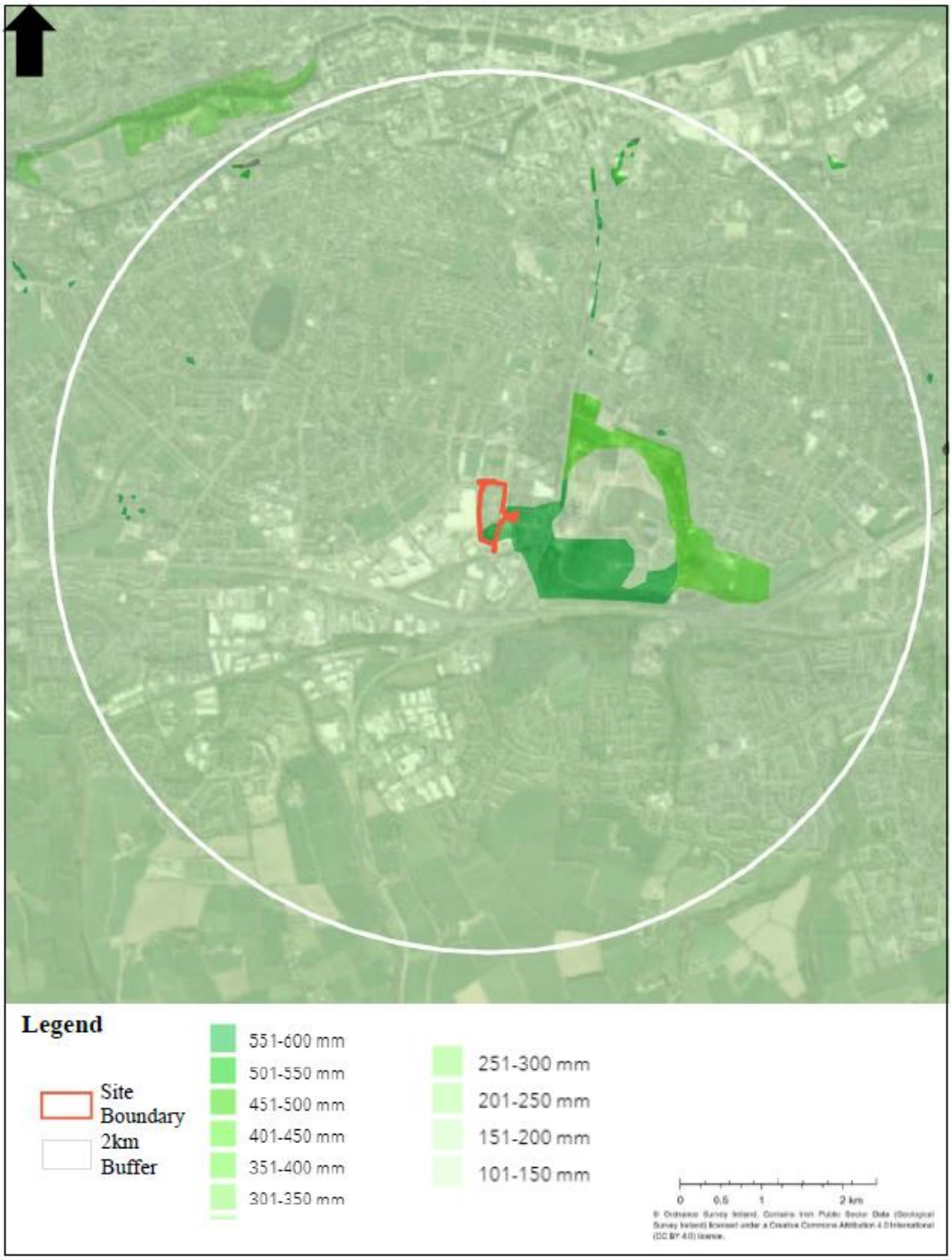


Figure 13.10 Regional Recharge Map | not to scale

13.2.10.5 Aquifer Vulnerability

According to the GSI Aquifer Vulnerability map, the vulnerability of the groundwater beneath the site is classified as Moderate. The groundwater vulnerability in the vicinity of the site is shown on **Figure 13.11**. This vulnerability relates to the limestone (bedrock) aquifer.

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 10m of the surface the presence of moderately permeability subsoil is likely to increase the vulnerability of the limestone aquifer.

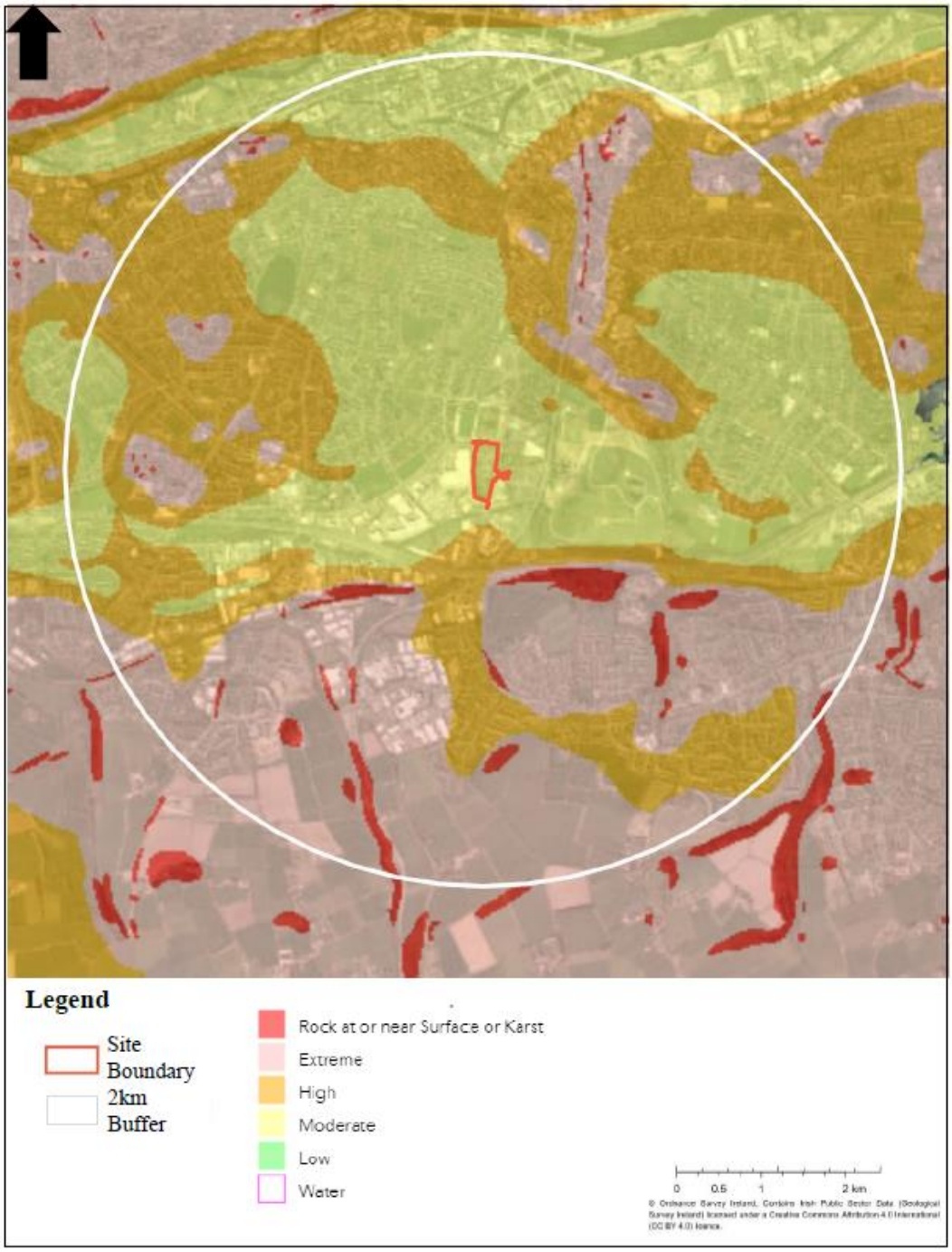


Figure 13.11 Aquifer Vulnerability Map | not to scale

13.2.10.6 Water Framework Directive Status

The majority of the site is underlain by the Ballincollig Groundwater Body (GWB) (IE_SW_G_002), a small portion in the north eastern areas of the site is

underlain by a small groundwater associated with the landfill, Waste Facility (W0012-03) GWB (IE_SW_G_091).

The Ballincollig GWB is classified by the EPA as having a good chemical and quantitative status for the period 2013 to 2018. The GWB associated with the landfill is classified at poor chemical status based on ammoniacal nitrogen concentrations associated with the landfill. The aquifer under the site is highlighted as being At Risk in relation to failing to achieve good Chemical Status but not for its quantitative status.

13.2.11 Surface Water Bodies

The hydrology in the surrounding areas is described in detail in **Chapter 14** *Water*. In summary, the site is located within the catchment of the Douglas River Estuary. Surface water features in the site and surrounding area are shown on **Figure 13.12**.

Figure 13.12 Surface Water Features | not to scale

The nearest and most significant of the water courses close to the site is the Tramore River located 0.08km south of the site and the flows east towards the Douglas River Estuary and into Lough Mahon. The Tramore River joins the Douglas River Estuary 2.5km east of the site, north of Douglas Village.

The Tramore River is a small river and was observed during the walkover from the Kinsale Road to have a low gradient with a relatively slow flow. To the southeast and downstream it has been extensively culverted due to remediation work around the Old Kinsale Road Landfill to the east of the site. Some gravel was observed in the base of the river and it is likely to receive a component of

groundwater flow from shallow aquifers. The Tramore River is tidal downstream by St. Patrick Mills in Douglas Village[56].

Also, within the study area are the Lee Estuary Lower, the Glasheen River - one of its tributaries and three tributaries of the Tramore River which drain the area south of the N40. As the site is not within the catchment of these features they are not considered further in this assessment.

In addition to the watercourses there is a lake called the Cork Lough, located 1.5km northwest. It is a proposed Natural Heritage Area (pNHA) (Site Code 001081) and is a wildfowl sanctuary.

13.2.12 Local Geology

The following ground investigations have been completed at the site:

- OCM Hydrogeological Assessment Report, 2005 in CMP Dairy, Tramore Road, Cork City
- Priority Geotechnical Limited (PGL) in March 2021 in Creamfields, Cork City.

As part of the PGL investigation geophysical surveys were carried out to examine the potential extent of made ground in the historic railway cutting.

Copies of the PGL logs together with borehole location plans are presented in **Appendix 13.2** and the OCM logs are presented in **Appendix 13.3**. The results of the geophysical survey are included in **Appendix 13.2**. An interpreted generalised stratigraphy of the ground conditions based on the PGL 2021 Ground Investigation are presented in **Table 13.2**.

Table 13.2 Generalised Stratigraphy within the Creamfields site

Lithology		Approx. thickness (m)	Depth to top of Stratum (mbgl)	Description[1]
Concrete		0.1 to 0.4	0	
Made Ground *(Northern Section)*	Gravel Fill	0.1 to 3.8	0 to 0.8	Grey to brown sandy gravel or a clayey very gravelly sand with minor amounts of anthropogenic material.
	Silt/Clay Fill	0.8 to 2.1	0.3 to 1.4	Mostly reworked natural soils comprising of red brown clayey gravelly sand/sandy gravel with occasional red brick, chalk, slate, ceramics, plastics and bituminous material.
Made Ground *(Southern Section)*	Gravel Fill	1 to 3	0 to 0.2	Brown clayey slightly sandy gravel with medium cobble to high boulder content and concrete blocks (1000mm diameter), 'construction waste' ceramics, bricks and plastics and small metal wires in all exploratory holes

[56]Arup, 2017. Douglas Flood Relief Scheme (Including Toger Culvert).

Lithology		Approx. thickness (m)	Depth to top of Stratum (mbgl)	Description[1]
	Silt/Clay Fill	0.9 to 3.7	0.3 to 1.3	Soft to firm purple or reddy brown sandy gravelly silt/clay with low to high cobble and boulder content and 'construction wate' plastic, metal, waste material, high amount of construction waste, clothes, red brick, concrete, timber, 'electronics' in all exploratory holes.
Clay and Silt	Clay	0.65 to 4.2	0.4 to 7	Soft to very stiff red/purple, brown slightly sandy slightly gravelly clay with low cobble content.
	Silt	1 to 5	5 to 6	Red brown sandy gravelly silt
Gravel with sand pockets		0.7 to 17	7.2 to 7.6	Loose brown silty sandy gravel with low to high cobble and lenes of brown clayey/silty gravelly sand.
Limestone Bedrock		>4.6m full thickness unproven	18.5 to 28.5	Strong blue grey limestone bedrock with areas of moderately weathered and moderately fragmented sections. Localised clay or sand a gravel infill of fractures and probable dissolution features.

13.2.12.1 Made ground

The made ground is located across the site with varying thickness. The made ground is thicker in the east and south of the site, where historic maps show that previously that there had been lower ground level. This suggests that soil was placed to build-up the ground level.

The made ground in the south contains more man-made (anthropogenic material) including plastic package from the old CMP dairy, construction and demolition (C&D) waste and asbestos containing material. A photograph showing the typical composition of the made ground in the southern section is shown in **Figure 13.13**.

Figure 13.13 TP08 C&D waste

Figure 13.14 shows the indicative separation between the northern and southern sections of made ground.

Figure 13.14 The line of separation between the made ground in the northern and southern sections of the site | not to scale

13.2.12.2 Silts and Clays

There is a thin layer of sandy gravelly clay is located beneath the made ground across the site. The thickest layer of clay is located to the north of the site, at BH01.

There is a lens of silt located to the south of the south, beneath the clay layer. The silt layer ranges between 3 to 5m thick, with the thickest layer at BH09 to the south of the site. Refer to **Appendix 13.2** for the locations of these boreholes.

13.2.12.3 Gravel and sands

There are two different gravel and sand layers across the site. One shallow one in the south of the site is located in the top 5m, overlaying the silt layer. The second sand and gravel layer is located in the north of the site deep below the clay and above the limestone bedrock. The two layers are considered to be different and are not necessarily in continuity.

13.2.12.4 The Limestone Bedrock

The limestone bedrock was proven in the north of the site at 23.9 mBGL and in the centre of the site at 18.3mBGL. The limestone is described as being weathered and with karst dissolution features. The geophysics suggests that could be present higher at around 12mbgl in the south of the site, but it was not proven in BH09 at 19mbgl.

13.2.12.5 Soil Contamination

Environmental soil testing was carried out during the OCM 2005 GI and the PGL 2021 GI. The OCM 2005 GI tested 9 samples of soil from six trial pits across the site. The PGL 2021 GI tested 50 soil samples from ten trial pits and nine boreholes at 50m intervals across the site.

As described in section 13.1 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 OCM and PGL soil samples were screened against the GAC for a residential area with no plant uptake[57]. This is considered the most relevant criteria considering the proposed future use.

The results used to carry out the GQRA are presented in **Appendix 13.5** and are summarised below:

- TP08 had Dibenz(a,h)antracene at 0.2mBGL;
- TP06 had asbestos containing materials (ACM) with chrysotile in cement at 1mBGL;
- TP08 had ACM with chrysotile in cement at 2.5mBGL; and
- BH09 asbestos in soil (AiS) with chrysotile present at 0.5 and 2.5mBGL.

All the contamination noted above is noted only in the southern section of the site (see **Figure 13.14**).

[57] CL:AIrE, Soil Generic Assessment Criteria for Human Health Risk Assessment, ISBN 978-1-905046-20-1, 2010. *Contaminated Land: Applications in Real Environments*

Based on the results of the GQRA the soil is not suitable for the proposed use without suitable remedial measures. These are likely to comprise use of hardstanding materials and/or covering the contaminated soil with imported clean soil.

Soil samples were also analysed using the Hazwaste Online Tool[58] and the leachate results have been compared to EPA Waste Acceptance Criteria[59]. The results highlighted that based on a preliminary assessment out of the 50 samples, 2 samples are classified as suitable for disposal to a hazardous landfill due to the presence of asbestos, 16 are classified as suitable for disposal to a non-hazardous landfill based on levels of heavy metals and 32 samples are classified as suitable for disposal to an inert landfill.

13.2.12.6 Ground Gas

Ground gases were monitored to determine the risks from the deep made ground on the current and future site use. The assessment also included the potential risks from adjacent areas of fill.

Ground gases were measured during the PGL 2021 investigation on three occasions. The results are presented in the PGL report (**Appendix 13.2**). To determine the level of risk to land users the ground gas readings have been compared against the gas screening values following international good practice (BS8485:2015). **Table 13.3** summaries the maximum concentration of methane and carbon dioxide which have been split into the northern and southern section. Boreholes BH02A, BH03 and RH06 for the northern section also monitor potential for gas migration under the Kinsale Road from the nearby landfill and are included under that heading.

Table 13.3 Maximum Ground Gas Screening Value (GSV)

Location	Methane	Carbon Dioxide	Maximum flow	GSV Methane	GSV Carbon dioxide	Hazard Potential
Northern Section	0.1%	10%	0.1 L/hr	0.001	0.01	Very Low Risk
Southern Section	0.1%	4%	0.1 L/hr	0.001	0.004	Very Low Risk

The levels of gas recorded suggest that there as very little potential for soils on site to generate ground gas and the amount of gas migration from off site is low. Based on the results of the ground gas monitoring the hazard potential to the built development on the site and in the future is very low. Hence based on the

[58] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance) *OJ L 312, 22.11.2008, p. 3–30 (EN) Special edition in Croatian: Chapter 15 Volume 034 P. 99 - 126*
[59] Environmental Protection Agency 2020, Guidance on Waste Acceptance Criteria at Authorised Soil Recovery facilities.

preliminary assessment no special measures are required in relation to ground gas protection at the current or future development.

13.2.13 Local Hydrogeology

During the 2021 ground investigations, groundwater was observed in the made ground, sands and gravels and limestone bedrock. Groundwater was monitored during summer 2021 between 1st July 2021 and 16th August 2021 and the results are presented in **Appendix 13.2**.

Groundwater standpipes in the deeper boreholes are installed in gravel above limestone (BH01), limestone (RC06) or clay (BH09). These are considered to all be in continuity and represent groundwater levels and flow in the limestone aquifer. The summer water levels in the deeper boreholes and the shallow made ground boreholes are presented in **Table 13.4**.

Table 13.4 Summary of the groundwater levels in mOD

Borehole	01/06/2021	21/07/2021	16/08/2020
Deeper monitoring wells (limestone)			
RC01	7.15	6.29	6.33
RC06	6.34	5.86	5.93
RC09		4.78	4.8
Shallow monitoring wells (made ground)			
	mOD	mOD	mOD
BH02A	8.96	Dry	Dry
BH03	8.32	Dry	Dry
BH04	7.5	Dry	7.05
BH05	Dry	Dry	Dry
BH07C	6.45	5.79	5.79
BH08B	Dry	6.01	6.05

Figure 13.15 shows the interpolated groundwater flow contours for the limestone aquifer these suggest the groundwater flow direction under the site is to the south towards the Tramore River.

Figure 13.15 Groundwater contours in the limestone [black text] and made ground [white text] (16th August 2021)

Groundwater levels in the made ground are over 1m above the levels in the limestone, which are considered to represent a perched body of groundwater. This lack of continuity is due to the presence of a significant thickness of silt and

clay between the made ground and the limestone. Groundwater flow in the made ground is towards the south and is likely to discharge to the marshy area in the south of the site and ultimately the Tramore River.

13.2.13.1 Groundwater Quality

Samples of groundwater were collected from the deeper (limestone) and shallow (made ground) wells during summer 2021. As the limestone is a Regionally Important aquifer the groundwater results were compared with the Irish Drinking Water Standards (DWS). For compounds/elements that have no DWS then the results are compared against the Environmental Quality Standards (EQS) for groundwater and surface water as this standard is relevant to the Tramore River where the groundwater is likely to ultimately discharge to. The comparison is presented in **Table 13.5**.

13.2.13.2 Limestone

Generally, the water quality in the limestone is poor with some exceedances for some metals (manganese and nickel) and ammonia. The 2021 groundwater samples show that ammoniacal nitrogen exceeds the EQS in the limestone wells except BH06 in June 2021. As the concentrations are noted up-hydraulic and gradient at similar concentrations to down-hydraulic gradient they are not considered to be attributable to the site. This information is consistent with the EPA Water Framework Directive records (Section 13.2.10.5).

13.2.13.3 Made ground

Four of the six wells monitoring the made ground were dry or had insufficient water available to sample. Therefore, samples were only able to be taken from two wells, both located in the south of the site. A number of exceedances are recorded in the wells monitoring the made ground including manganese, iron, nickel and zinc but no hydrocarbon exceedances were noted. Ammoniacal nitrogen in all samples exceeded the EQS in the made ground and was noticeably higher than the concentration in the limestone. This is likely to be attributable to the breakdown of organic waste materials in the made ground on site.

Considering the probable connection with the Tramore River it is likely that some of this groundwater with elevated ammoniacal nitrogen discharges to the river via gravel deposits under the made ground. However, considering the distance to the river (80m), the dilution in the river and low volumes of water in the made ground it is unlikely that water from the made ground is currently having a perceptible impact on water quality in the Tramore River.

In the absence of groundwater samples from made ground in the north of the site leachate concentrations were compared with the same standards as the groundwater (see **Appendix 13.6**). With the exception of some chromium, nickel and lead the concentrations in the leachate soil samples are below the standards.

The concentrations for chromium are a similar order of magnitude to the threshold and are only present in 6 of the 22 samples. It is noted that chromium is not

observed in the limestone above the detection limit, hence this exceedance in the made ground was not observed to have an impact on the limestone water quality. Nickel is recorded in the groundwater in the limestone up and down hydraulic gradient of the site but the concentration down gradient is not perceptibly higher than the up hydraulic gradient concentration. Lead is record in one sample of leachate above the standard. Lead is only recorded in the groundwater in the limestone on one occasion above the detection limit and is not recorded in the down hydraulic gradient borehole above the detection limit. Consequently, the concentrations of chromium, nickel and lead in the leachate are not observed to have a perceptible impact on groundwater quality in the limestone.

Table 13.5 Summary of groundwater quality results (mg/l)

Stratigraphy	Location	Date	Ammoniacal Nitrogen	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Manganese	Iron
		Standards(See note 1)	0.065 (GTV)	0.01 (DWS)	0.005 (DWS)	0.05 (DWS)	2.0 (DWS)	0.01 (DWS)	0.02 (DWS)	0.075 (GTV)	0.05 (DWS)	0.2 (DWS)
Made ground	**BH7**	**21 July 2021**	9.3	0.0019	< 0.11	< 20	0.008	<0.0005	0.028	0.29	13	1.9
	BH7	**16 August 2021**	12.0	0.0037	< 0.11	< 20	0.0007	<0.0005	0.024	< 2.5	16	8.2
	BH8	**21 July 2021**	2.4	0.00066	< 0.11	< 20	0.00097	<0.0005	0.0099	0.015	17	0.013
	BH8	**16 August 2021**	2.6	0.0025	< 0.11	< 20	0.0011	<0.0005	0.014	< 2.5	13	0.012
Limestone		**Up Hydraulic Gradient**										
	RC01	**30 June 2021**	0.11	0.00041	< 0.11	< 20	0.0026	<0.0005	0.012	0.0025	0.1	< 5.0
	RC01	**21 July 2021**	0.16	0.0011	< 0.11	< 20	0.00065	<0.0005	0.024	0.015	14	0.16
	RC01	**16 August 2021**	0.32	0.0003	< 0.11	< 20	0.0058	<0.0005	0.011	0.0042	0.0016	< 5.0
		Centre of the Site / Down Hydraulic gradient of the north-east of the site										
	RC06	**30 June 2021**	0.057	0.00026	0.00014	< 20	0.0043	<0.0005	0.023	< 2.5	0.065	< 5.0
	RC06	**21 July 2021**	0.39	0.00079	0.00022	< 20	0.0065	<0.0005	0.03	0.051	0.35	< 5.0
	RC06	**16 August 2021**	1.2	0.0076	0.00024	< 20	0.015	0.0012	0.024	< 2.5	0.39	0.086
		Down Hydraulic Gradient										
	RC09	**30 June 2021**	0.3	0.0003	< 0.11	< 20	0.00059	<0.0005	0.0027	< 2.5	0.13	< 5.0
	RC09	**21 July 2021**	0.24	< 0.20	< 0.11	< 20	0.00079	<0.0005	0.0017	0.01	0.17	< 5.0
	RC09	**16 August 2021**	0.19	0.00035	< 0.11	< 20	0.003	<0.0005	0.002	0.0073	0.11	< 5.0

Note 1 - DWS is derived from European Communities (Drinking Water) Regulations 2014 (S.I. No 350 of 2014) as amended and GTV is derived from European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010), as amended

Note 2 – Values highlighted in brown are higher than the standard.

13.2.14 Sensitive Features – Groundwater Abstractions

21 groundwater wells or springs are listed on the GSI database within 2km of the site. The wells within the site and surrounding area are displayed in **Figure 13.16** and details of the wells in **Appendix 13.7**.

The onsite well 1405NEW163 is recorded on the GSI database within the site, along the western boundary. According to the GSI 2021, the use of the well is industrial. Based on the site walkover the well is currently not in use. This well is probably the production well for the old CMP Dairy site, referred in OCM 2005 Hydrogeological Report, in **Appendix 13.3**. The next nearest abstraction (1407SEW065) is shown with a 1km area and this area partly overlaps the northern part of the site. This is also recorded as being for industrial use and has an excellent yield.

Figure 13.6 Groundwater abstractions in the vicinity of the site | not to scale

None of the abstractions within the 2km of the site are recorded as being for public supply. Based on the GSI there are no Source Protection Zones (SPZ) Source Protection Areas (SPAs) or Group-Water-Scheme and Public Supply Source Protection Areas within or nearby the site.

13.2.14.1 Sensitive Features – Groundwater Dependent Terrestrial Ecosystems

There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Natural Heritage Areas (NHA) within 2km of the site. The Cork Harbour is the nearest SPA, for wild birds, located 2.3km east of the site (see **Figure 13.17**).

A proposed Natural Heritage Area (pNHA) Cork Lough is located 1.5km north west of the site and is a wildfowl sanctuary (**Figure 13.17**). It is unknown what the source of the water in the lake is. Conservatively in this assessment it is assumed that the lough is groundwater dependent.

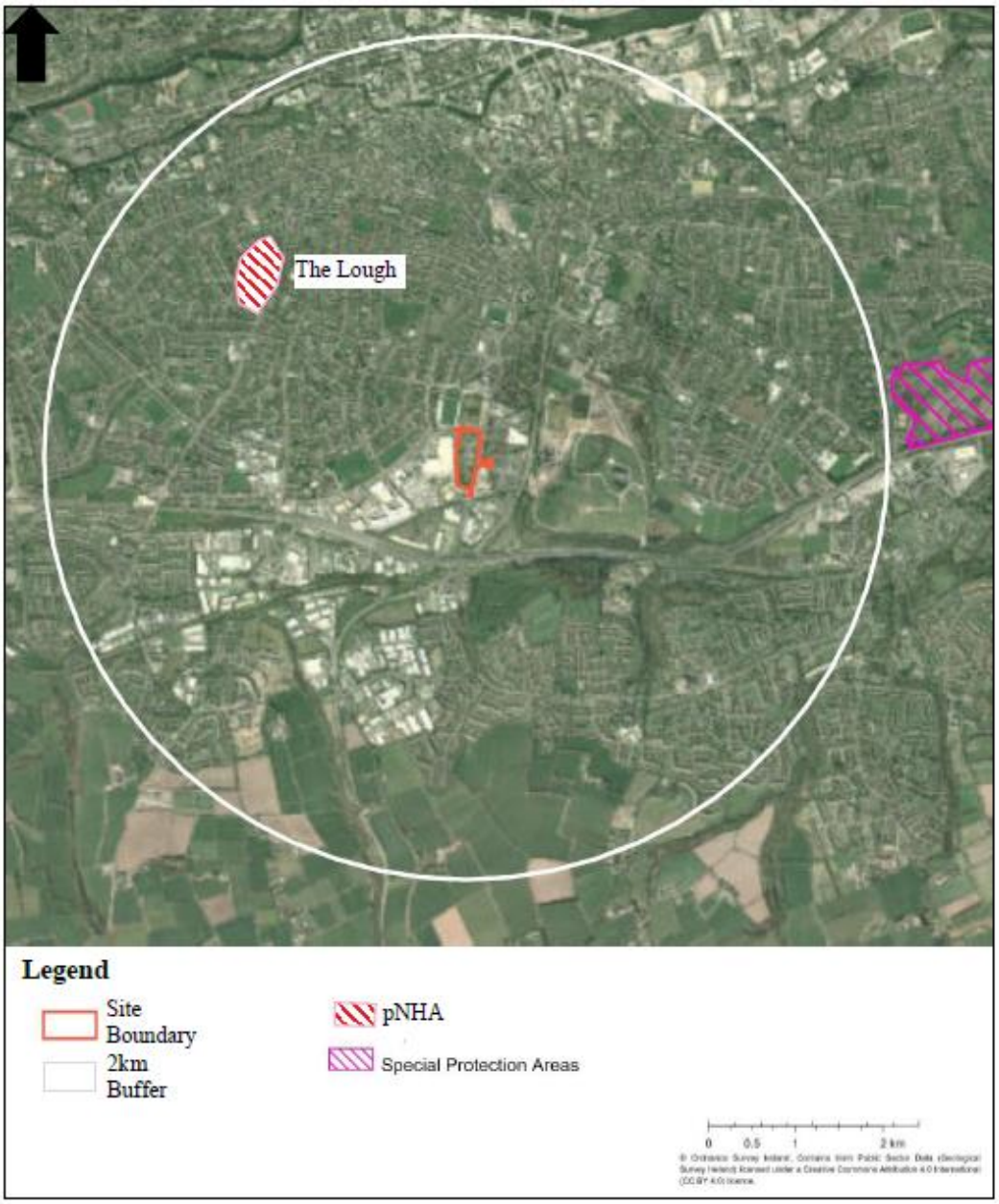


Figure 13.17 Areas of ecological importance

13.2.14.2 EPA Licensed Facilities

The EPA keep a register of all licenced and permitted sites and waste sites. The EPA register records six sites within 2km of the site. The nearby licensed facilities are shown on **Figure 13.18**.

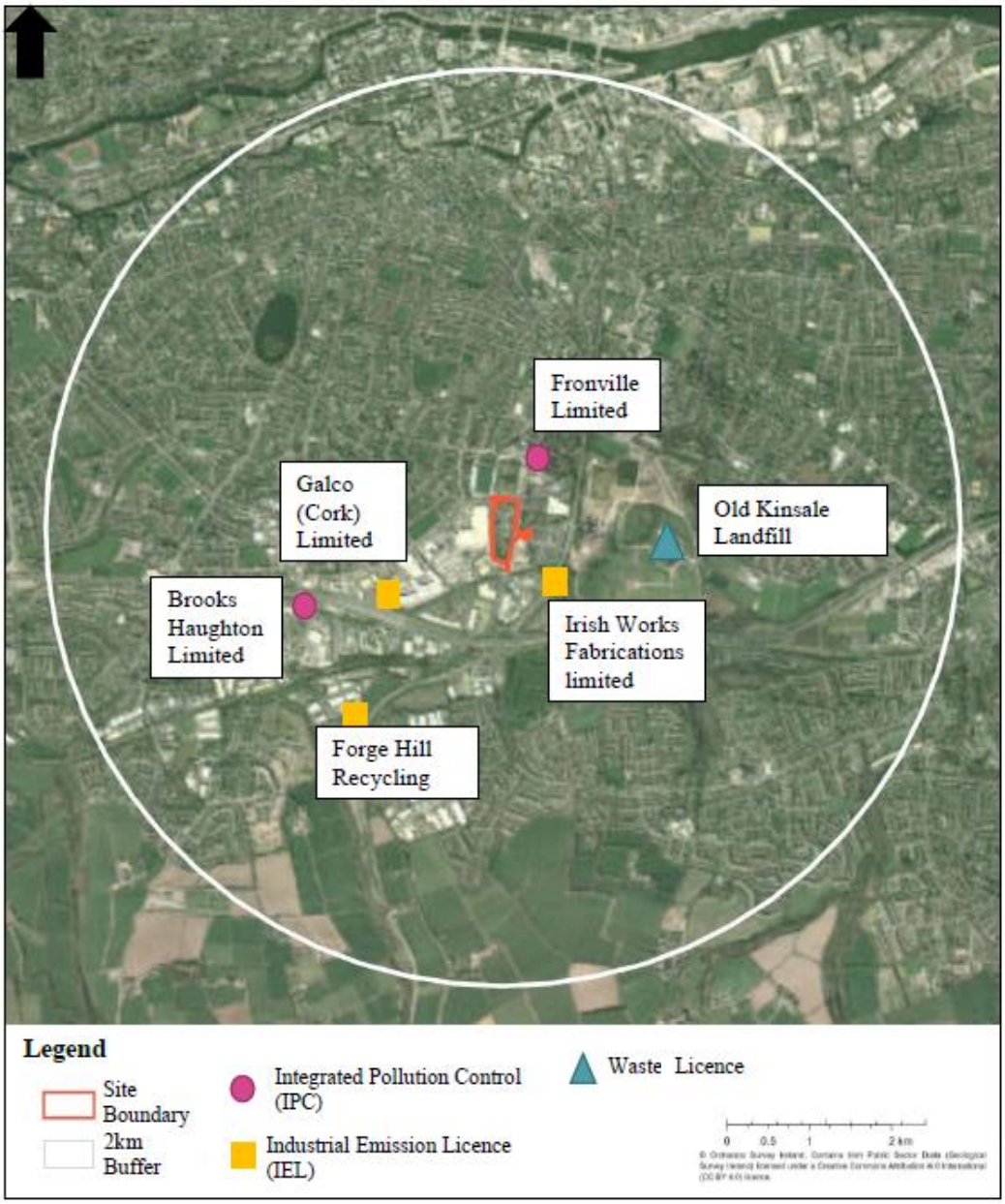


Figure 13.18 EPA Licensed facilities (EPA, 2021) | not to scale

The closest site is the old Kinsale Road Landfill (waste licence number W0012-03) which is shown to have a boundary that extends up to the opposite site of Kinsale Road, 20m east of the site. The second closest is the Irish Pioneer Works Ltd, which is a fabrication and galvanizing company, (IE license number P0407-02) located approximately 90m south of the site. Fronville Limited, which is reported to make foam for upholstery and is located 200m north of the site. While Fronville Limited is registered with an active IPC license with a license number P0059-02 the site is known to have ceased operation.

The other sites are located over 500m from the site and relate to a galvanizing company, a timber and building supplier and a recycling company.

13.2.15 Geological Heritage Features

There are no geological heritage features on the site or within 2km of the site.

13.2.16 Technical limitations

The baseline data described and considered in this assessment includes existing data from earlier investigations within the site as well the most recent ground investigation. The data collected provides a dataset in relation to the soils and geology within the site.

The baseline data provides valuable information on the existing soils and geological environment at point locations within the site. Between each point the baseline data has been assessed by conservative interpretation.

This review was completed by studying local geological maps, aerial photography, historic and current ground investigation and completing site walkovers to provide an understanding of the site.

The findings from the intrusive investigations for the majority of cases compared favourably with the desk study of existing information.

13.2.17 Conceptual Site Model

A Conceptual Site Model (CSM) has been developed from ground information surrounding the site area and the 2021 Ground Investigation carried out by PGL.

The CSM, as shown in **Figure 13.19** and described below, summarises the important geological and hydrogeological features near the site.

The geology at the site can be split roughly north/south. In the north it comprises hardstanding over made ground, clay, gravel and then limestone. In one place the clay is absent. No groundwater was seen in the made ground and it is assumed that any recharge in this area is able to drain to the aquifer. Groundwater flow in the limestone is to the south and is conservatively assumed to flow to the Tramore River located to approximately 80m south-east of the site. Groundwater could also contribute to the supply of some of the wells located within the study area. These are all listed as being for industrial supply and are located further away than the Tramore River.

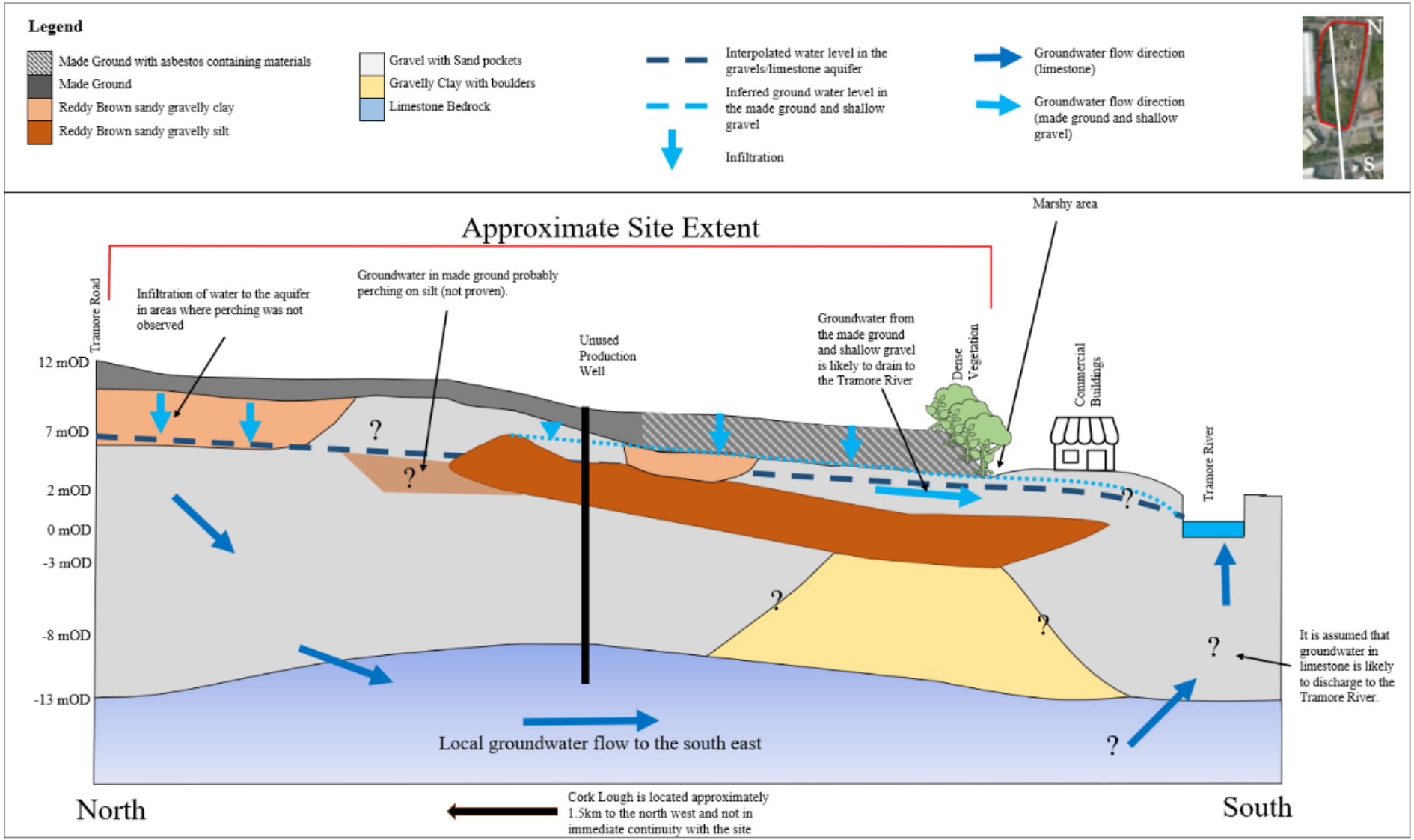
In the south the made ground overlies gravel, then silt and clay and then limestone. In the south groundwater was seen in the made ground and shallow gravel and appears to be perched on the silts and clay. The perched groundwater appears to drain to the south towards and probably into the Tramore River. It is seen close to the surface at a marshy area in the south of the site.

The made ground in the north is free of soil contamination that pose a risk to human health and does not appear to impact the limestone groundwater quality. The made ground in the south contained some asbestos-containing material and one sample included an organic compound above the relevant threshold. Groundwater quality in the made ground and gravel in the south of the site has

some exceedances, but is not likely to be impacting on the Tramore River due to the distance to the river.

The Cork Lough pNHA is located approximately 1.5km north-west of the site. It is reported to be fed by groundwater springs which could be from the same aquifer that underlies the site. However, it is over 1km up-hydraulic gradient of the site and therefore has no connection with the groundwater under the site.

Figure 13.19 Conceptual Site Model | not to scale



13.2.18 Importance of Features

A summary of the geological and hydrogeological features of relevance within the study area is presented in **Table 13.6**. In addition, the importance ranking of the highlighted feature is established based on the IGI guidance.

Table 13.6 Summary of the geological and hydrogeological features of importance

Feature		Importance ranking	Justification
Surface water feature	Tramore River/ Douglas River	Medium	Water feature of local importance (see Chapter 10)
	Cork Lough	Very high	Water feature is a proposed NHA
Aquifer	Regionally Important Karstified Limestone	High	This is a regionally important aquifer
Groundwater abstractions	Onsite and nearby as listed in Appendix 13.7	Medium	High yield but only used for industrial supply
Soil on site	Made Ground	Medium	Made Ground is contaminated on a local scale
	Quaternary sediments	Medium	Sub-economic extractable mineral resource

13.2.19 Environmental Type

The geological environment is a naturally dynamic hydrogeological environments e.g., areas underlain by a regionally important aquifer and areas underlain by permeable subsoils (Type B) (IGI, 2013).

13.2.19.1 Activities/Environment Matrix

Table 13.7 outlines the required activities that would be undertaken during construction and operation, and the investigations, assessments and surveys that have been carried out to consider those activities.

Table 13.7 Activities required during construction and operation

Work Required under Activity and Type Class (based on IGI Guidelines)	Details of works completed to date
Earthworks	
Invasive site works to characterise nature, thickness, and stratification of soils and subsoils	Site specific site investigation carried out across the site (Section 13.2.11).
Storage/ transmission of leachable and/or hazardous materials	
Establish nature and quantity of leachable materials.	Leachable materials comprise chemicals and fuels stored on site during the construction phase.

Work Required under Activity and Type Class (based on IGI Guidelines)	Details of works completed to date
Works to determine groundwater flow direction and gradient, e.g. monitoring in stand pipes, piezometers, or boreholes.	Installation of groundwater monitoring wells during site specific site investigation (Section 13.2.12).
Site works to characterise nature, thickness, permeability and stratification of soils, subsoils, bedrock geology.	Site specific site investigation carried out across the study area (Section 13.2.11 & 13.2.12).
Excavation of materials above the water table	
Site works to characterise nature, thickness, permeability and stratification of soils and subsoils e.g., trial pits, augering.	As above

13.3 The Proposed Development

A detailed description of the development is provided in **Chapter 4** and the construction strategy is presented in **Chapter 5**. In relation to this chapter the following construction and operational features are noted.

13.3.1 Construction Phase

The proposed development is anticipated to be constructed in five sequential phases; four main construction phases preceded by a site enabling works phase. The four phases comprise the progressive development of the site from the north to the south over a period of approximately 10 years.

The first phase comprises site preparation and enabling works. This includes the removal of the existing ground floor slabs, foundations and car parking surfacing.

13.3.2 Operational Phase

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; crèche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works.

The Northern Part of the site including the Primary Care Centre (which is subject to a separate planning application under the consideration of Cork City Council), retail, gym, café and first block of residential housing will be built on (or partly on) a podium level above an undercroft. Beneath the podium structure, car and bike parking is provided along with waste storage rooms and plantrooms.

Any areas not over laid by the podium will be developed over the existing ground. Any areas 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.

13.3.2.1 Earthworks

During the construction of the undercroft, foundations, site services and attenuation tanks it is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. The deepest excavation will be in the north of the site to facilitate the under-croft car park. The base of the excavation is likely to be dug to approximately 7.0mOD. Therefore made ground and subsoil will be excavated during the dig. The excavation will be above the groundwater level in the Regionally Important limestone aquifer. Hence no dewatering of the Regionally Important aquifer is anticipated. In addition, no perched groundwater was noted in that area, so the excavation is anticipated to be largely dry.

Localised excavations will occur across the site e.g., for installation of services. Hence some localised dewatering from the made ground or shallow gravel maybe required during construction and to manage surface water or perched water ingress into excavations.

It is noted that asbestos contamination is present in soils in the south of 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. Where the soil has suitable engineering properties made ground can be left in-situ under buildings where it poses not risk to site users. In addition, in the landscaped area such as the central court garden and open spaces between the buildings where soil is exposed the contaminated soil shall be covered by a geotextile a suitable thickness of clean soil to prevent site users coming into contact with ethe contaminate soil.

Although the soil to be excavated may contain contaminants it may also have suitable engineering properties that could make it useful as a fill material. The soil will be reused where possible within the legislative framework with a view to limiting off site transport of material and unnecessary import of fill.

If it is required to export contaminated soil offsite for disposal (with or without treatment) it is likely to be classified as either non-hazardous waste with trace level of asbestos or hazardous waste. In this case, it will likely be exported and disposed of outside of Ireland.

Samples from the material to be disposed of shall be tested and the results from the testing shall 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.

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.

13.3.2.2 Foundations

The design of the foundations will be subject to detailed design at a later stage but initial indications from the site investigation carried out would suggest that either or both piled and raft slab solutions could be the used.

It is envisaged that the ground floor of each building will comprise reinforced concrete suspended slabs, spanning onto the pile caps. The exact depths of excavation required for the ground floor and foundation structures varies, depending on existing ground level, however it will generally be in the region of 1-2.5m below existing ground level.

13.4 Predicted Impacts

13.4.1 Do-Nothing Scenario

As noted in Section 13.2.1, 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 EU Guidance. A conservative approach would be to assume no major changes to the baseline condition of the site over time.

There is an impact resulting from the do-nothing scenario. At present the soils contaminated with asbestos are not covered by hardstanding and there is little protection to site users. Hence there is potential risk of significant harm to site users, which is classed as medium long-term adverse effect with a significant to profound significance to site users.

13.4.2 Construction Phase

The likely potential effects of the construction of the proposed development on land, soils, geology and hydrogeology are listed below and described in the following sections.

During the Construction Phase the following activities are highlighted that could have a potential impact on the environment:

- Removal of hardstanding and temporary stockpiling of contaminated soils which could have the following impacts:
    - mobilisation of contamination in the soil into the local watercourses;
    - mobilisation of contamination into the regionally important aquifer; and
    - exposure of site workers and future residents to soil contamination, vapours and air borne contamination.
- 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

During construction, areas of the site will be stripped of hardstanding and the soil exposed. This could temporarily allow more rainwater to infiltrate through the contaminated soil than currently does. Some contamination was observed in the leachate samples from the made ground in the north of the site. In addition a number of exceedances were noted in the shallow perched groundwater in the south of the site, highlighting the potential for the made ground to generate water of poor quality.

In the northern area of the site removal of hardstanding could allow contaminants held in the unsaturated made ground to percolate down into the groundwater. In the north this infiltrating water could reach the limestone aquifer. The connection between the made ground and the aquifer is via several metres of natural subsoils which will filter the infiltrating water. The contamination observed in the leachate in the north is minor as the concentrations are close to the relevant standard. Any infiltration will be subject to significant dilution in the Regionally Important Aquifer and currently no impacts on the water quality in the aquifer are perceptible. Considering the thickness of the unsaturated subsoil, the amount of dilution available and that the contamination is minor in the north the effect of an increased in recharge during construction will be negligible and the significance will be imperceptible.

As the impacts on groundwater in the limestone are negligible and that Cork Lough is located 1.5km up-hydraulic gradient of the site there will be no impact on water quality. Hence the significance of the effect on Cork Lough will be imperceptible.

In the southern area of the site the hardstanding is largely absent. Consequently, there is only likely to be a small increase in infiltration due to the removal of hardstanding in this area. The water quality in the made ground and gravel under the south of the site is poor but is perched above and not in continuity with the limestone aquifer. It is likely to drain to the Tramore River but due to the distance to the river (80m), the dilution in the river and low volumes of water in the made ground it is unlikely that water from the made ground is currently having a perceptible impact on water quality in the Tramore River

The removal of hardstanding in the south of the site during the development of the proposed development will have a small increase in infiltration which could mobilize more contamination towards the Tramore River. However, as the increase is small it is not anticipated to have more that a negligible to small impact on the water quality in the Tramore River and its significance will be imperceptible to slight.

The historic site use included an area for vehicle service and a re-fueling area. These areas were investigated, and no contamination was observed, but localized areas of hotspots could be present. In addition, no evidence of contamination was observed in the groundwater in the made ground or limestone. Should these be uncovered during the removal of the hardstanding increased recharge could

mobilise contaminants. As no evidence of these were seen it is envisaged that any hot spots could be small. Hence the amount of contaminated recharge would be small and subject to dilution in the limestone aquifer or Tramore River (via the made ground/gravel). Hence the significance of this small adverse effect on the limestone aquifer will be moderate/slight and slight on the Tramore river.

13.4.2.2 Exposure of site workers to soil contamination and air borne contamination

During construction, shallow soils will be excavated which are diffusely contaminated with dibenz(a,h)antracene 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; and
- 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 has 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 respirable fibers becoming airborne. The risk of contaminated dust becoming airborne and affecting site users, construction workers and residents in the nearby houses is temporary and is at its highest when the soils are dry and able to be eroded by the wind.

The probability of fibers becoming airborne is low and the time over which it will occur is temporary. However, the adverse effect of exposure to asbestos fibers 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.

13.4.2.3 Removal of soil from site

The made ground contains some contamination and without some level of remediation is not suitable re-use on site with the proposed use of the site (residential). The subsoils comprise clay, silt gravel and sand and are free of contamination.

Part of the made ground and subsoil will be removed to facilitate the development and where necessary to reduce the current effect on the surrounding environment. As detailed in Section 13.4.2 where there is a need for non-engineered fill such as under hard and soft landscaping areas made ground or subsoil could be reused onsite where its quality is adequate (potentially after treatment). The proposed development will reduce the effect of the made ground on site users by preventing them from being exposed to potential contaminants. Hence the development will remove the potential adverse effect and provide a major permanent beneficial effect.

The proposed development will include the excavation of around 30,000m^3 to 40,000m^3 of subsoil to facilitate the construction of the under-croft. These are likely to comprise uncontaminated clays and gravel. The clay has a low intrinsic value however the gravel could be more valuable as a potential aggregate. The gravel being removed is only a small part of a large deposit that extends under the site.

Considering the urban setting the gravel is not considered a viable mineral resource and was given a medium importance (**Table 13.6**). The effect of partial removal of these deposits comprises a slight or moderate significance. The effects associated with soil disposal or reuse are discussed further in **Chapter 15** *Resource and Waste Management*.

13.4.2.4 Construction of the Foundations of the Building by Piling

The foundations for the proposed development could comprise reinforced concrete piles. The piling process is likely involve drilling deep wide holes through the made ground, silts, clays and sand and gravel and into the top of the bedrock aquifer. Addition of cement will raise the pH of the groundwater locally in the aquifer 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 on the aquifer will be small the effect of groundwater with elevated pH levels passively discharging into the Tramore River 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 e.g. abstractions, any adverse temporary effects on water quality at down hydraulic gradient water dependent receptors is considered to be negligible and the significance is imperceptible.

13.4.2.5 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 aquifer and/or made ground by the accidental spillage of fuels or chemicals used on the plant operated on site which could then travel to the Tramore River.

The pathway for hazardous substances draining through the ground are similar to those highlighted above for the mobilisation of contamination in the soil (see above). However, the substances used during construction are potentially more harmful to the groundwater environment than the current contamination on site. Any storage will be temporary, and the volumes stored will be small. If there was a spill in the north of the site the effects on the limestone aquifer will be temporary, reversible and negligible or small and the significance is moderate to significant.

If the spill occurred in the south of the site the effect on water quality in the shallow ground water could be a temporary reversible small to moderate adverse effect. This could have a temporary, reversible and negligible to small effect on the Tramore River. Hence the significance of the impact on the Tramore River is likely to be slight to imperceptible.

Considering the distance from the site the significance of any impact on Cork Lough will be imperceptible.

13.4.2.6 Dewatering

Dewatering reduces the water table locally in the area of the abstraction and diverts water flowing through ground reducing flow temporarily to nearby features. No dewatering of the Regionally Important aquifer is anticipated.

Dewatering may only be needed to pump small amounts of water from the made ground or shallow gravel during localised excavation. As the made ground and the gravel underneath it potentially provides baseflow to the Tramore River there could be a temporary reduction in flow. However, considering the catchment of the Tramore River the contribution to the Tramore River from the site is anticipated to be negligible. Hence the effect of dewatering on the Tramore River will negligible and have an imperceptible significance.

13.4.2.7 Indirect effects during construction

No indirect effects were highlighted during construction.

13.4.3 Operation Phase

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

- 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 Reduction in recharge to the aquifer

The proposed development will include a limited surface area for recharge comprising buildings, roads or footpaths with small areas of gardens. Surface water run-off will be collected and will outfall to the Tramore River without draining to ground. Consequently, the proposed development could reduce recharge to the aquifer. In the north of the site, where recharge drains directly to the aquifer, the surface is currently largely covered with hardstanding so the change in recharge is likely to be negligible. In the south of the site the surface is not covered by impermeable surfacing, but infiltration does not drain to the aquifer. Consequently, the effect on the aquifer of reducing infiltration will be negligible and the significance will be imperceptible.

Reducing the infiltration in the south of the site could have a permanent adverse effect on the quantity of recharge to the made ground and gravel, both of which are likely to drain to the Tramore River. Consequently, reducing the recharge could reduce the amount of groundwater from the site contributing to the Tramore River. However, the relative proportion of the groundwater from the site that contributes flow to the Tramore River is negligible compared to the catchment area of the river hence the reduction in flow with be negligible and the significance will be imperceptible.

13.4.3.2 Impact on site users and the environment from the retention of contaminated soils on site

Diffuse soil contamination was identified in the made ground in the south of the site. While a proportion will be removed, a large amount of soil will be left in situ under the development. Subject to the regulatory requirements (with or without treatment), some of the excavated contaminated soil could also be reused on site.

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. The design will include a separation layer to prevent site users prevent site users from coming into contact with 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.

13.4.3.3 Indirect effects during operation

There are no identified indirect impacts at the operational stage relation to land and soil.

13.4.4 Cumulative Impacts

There are three projects to consider in the area;

- The Primary Care Centre, which is going for planning permission in early 2022.
- Lehenaghmore Road Improvement Scheme, which will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in 2022.
- Grange Road to Tramore Valley Park Pedestrian & Cycle Link will include the construction of a new Cycle and Pedestrian route connecting the Grange Road to the Tramore Valley Park. Site clearance works have commenced and is expected for completion by early 2023.

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 Primary Care Centre or Lehenaghmore Road Improvement Scheme site will increase the area of impermeable hardstanding in the area which could cumulatively reduce the infiltration rate to the limestone aquifer. However, based on the EPA Water Framework Directive classification (2013 to 2018) the quantitative status of the limestone aquifer under the site is good and not at risk. 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

13.5.1.1 Impacts on the aquifer

During the construction phase it was highlighted that without mitigation accidental spills of fuels or chemicals could lead to a moderate to significant impact on water quality in the limestone aquifer. The CEMP (**Appendix 5.1**) includes a number of standard practices that can mitigate any potential impacts, including:

- 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;
- 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;
- Use trigger-operated spray guns, with automatic water-supply cut-off.
- 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.
- 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.

Implementation of the above measures will reduce the potential effect to negligible hence the impact on the aquifer will be imperceptible.

13.5.1.2 Exposure of site workers to soil contamination and air borne 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 members of the public in the vicinity of the site 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.

13.5.2 Operation Phase

No mitigation is required as no significant impacts were identified for the operational phase of the works

13.6 Monitoring

13.6.1 Construction Phase

As stated in Section 13.5.1 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 ensure that the control measures do not release airborne asbestos fibres.

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).

13.6.2 Operation Phase

No monitoring is specified as no significant impacts were identified for the operational phase of the works.

13.7 Residual Effects

13.7.1 Construction Phase

With the implementation of the proposed mitigation measures outlined in Section 13.5.1 and monitoring during construction, the effect of the proposed development on land soil geology and hydrogeology is considered to be of negligible magnitude and imperceptible significance during construction phase.

13.7.2 Operational Phase

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

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 surrounding environment.

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.

The baseline environment is described in **Section 14.3**. Potential environmental effects at each stage of the projects are identified in **Section 14.4**, followed by a summary of the mitigation and monitoring measures that will be implemented in **Section 14.5**.

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 Environment

14.3.1 Site Location and Setting

The site is located in Cork City on the grounds of a former Cork Milk Providers Dairy facility. The location is a brownfield site and is currently undeveloped. All buildings associated with its previous use have since been demolished and the site is currently vacant.

The site itself is bordered by Kinsale Road to the east and Tramore Road to the north. The Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities in the vicinity of the proposed development including Musgrave Retail Partners Ireland to the west.

This site lies within the area covered by the Cork City Development Plan 2015-2021, and is zoned as *Light Industry and Related Uses*[60]. In addition, the mixed industrial / commercial area centred on the Tramore Road and Kinsale Road has been identified as *an area with potential for intensification of development, linked to the development of a high quality public transport route linking the northside to the City Centre and the Airport*.

The Tramore Road / Kinsale Road area has been identified as a key growth area in the Proposed Cork City Development Plan 2022-2028[61] and classifies the site of the proposed development as being zoned as *ZO 02 New Res Neighbourhoods*. The objective of this land zone is: "*To provide for new residential development in tandem with the provision of the necessary social and physical infrastructure."*

[60] Cork City Council, 2016. Cork City Development Plan 2015-2021. https://www.corkcity.ie/en/existing-cork-city-development-plan-2015-2021/ [Accessed: October 2021]
[61] Proposed Cork City Development Plan 2022-2028. Available at: https://www.corkcity.ie/en/proposed-cork-city-development-plan-2022-2028/draft-plan-documents/phase-2-draft-development-plan-2022-2028/volume-1-written-statement/

For a detailed description of the proposed development refer to **Chapter 4** *The Proposed Development.*

14.3.2 Hydrology Baseline Environment

The study area is located within Hydrometric Area 19 which is the EPA classification for the catchments flowing into the River Lee, Cork Harbour and Youghal Bay (Refer to **Figure 14.1**). Hydrometric Area 19 covers 1,732km^2 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.

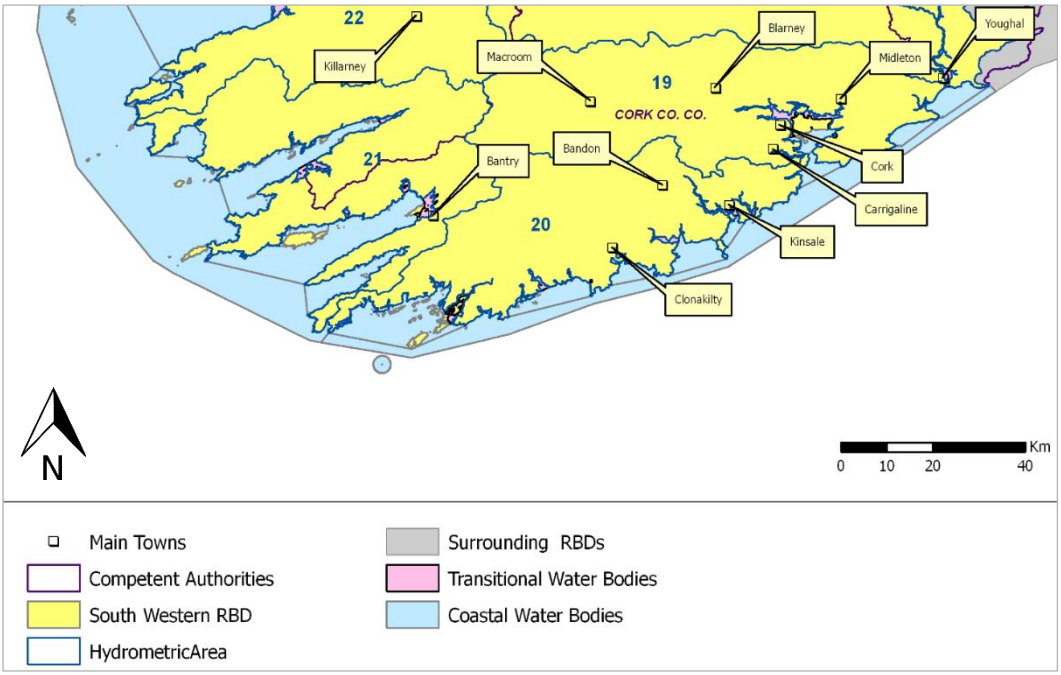


Figure 14.1 Hydrometric Area 19 as part of the South Western River Basin including Togher and Douglas (Water Framework Directive Ireland, 2005) | not to scale

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[62]) building on the progress made during the first cycle, and it's third cycle (2022-2027[63]) currently in draft status. Ireland is required to produce a river basin management plan under the Water Framework Directive (WFD)[64].

[62] 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]
[63] 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]
[64] The EU Water Framework Directive (WFD), 2000/60/EC

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 Tramore River

The Tramore River is located approximately 30m to the south of the proposed development site. According to the EPA Envision Mapping, the Tramore River Waterbody WFD (Water Framework Directive) status is classed as *'under review'*.

The Tramore River rises in the southwest of the study area and flows eastwards for approximately 7.5km before entering the Douglas River Estuary and subsequently Lough Mahon, approximately 200m east of Douglas. The catchment area of the Tramore River covers an area of 21km^2 with 41% of the catchment consisting of discontinuous urban fabric. The urban areas are concentrated in the north of the catchment with agricultural land making up the remainder of the land use (refer to **Figure 14.2**).

The Tramore River (Coastal) (IE_SW_19_1717*) Water Matters Report*[65], available at www.wfdireland.ie, covers the catchment of the Tramore River upstream of its confluence with the Ballybrack Stream at Douglas Village. The report states that the watercourse is not heavily modified, however, the Tramore River is culverted over most of its length through Togher. The overall ecological status of the watercourse is classified as '*moderate*' with the watercourse classified as "*at risk of not achieving good status*" in accordance with the WFD (Refer to **Figure 14.3)**. The watercourse is identified as being *'at risk'* from diffuse sources in the EPA diffuse model and point sources in the form of combined sewer overflows (CSOs).

The functional value of the Tramore River in Togher is considered '*very low*' as the watercourse is culverted for the majority of its length in this area.

The WFD ecological status of Lough Mahon, the water body to which the Tramore River discharges, was classified as *'moderate'* and the WFD Risk Score assigned to Lough Mahon as '*at risk of not achieving good status'*.

[65] The Tramore River (Coastal) (IE_SW_19_1717) *Water Matters Report*. Available at www.wfdireland.ie

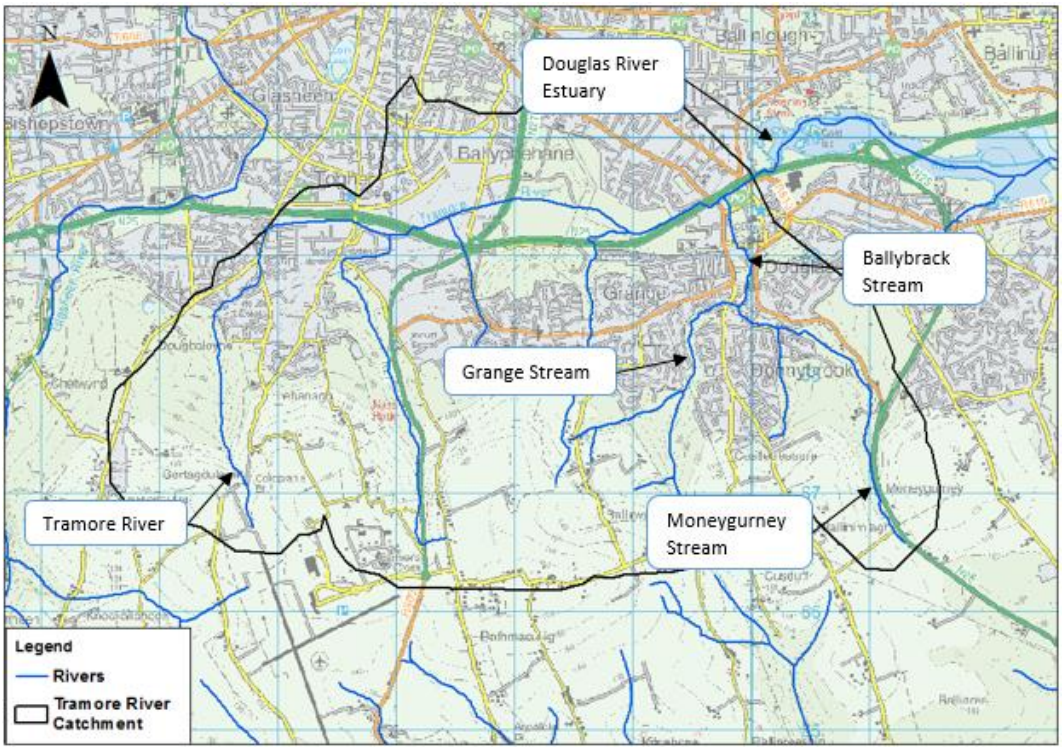


Figure 14.2: Tramore River Catchment | not to scale

14.3.4 Tramore River Surface Water Quality

There are no EPA water quality monitoring stations located on the Tramore River, therefore, EPA biological quality ratings (Q-values) are not available for the watercourse.

There is surface water quality information available for the Tramore River as reported in the Kinsale Road Rivers Monitoring Report 2020[66] for the Kinsale Road Landfill which operates under an EPA waste licence (licence registration No. W0012-03). The site is a former landfill site operated by Cork City Council and no longer accepts waste. The Kinsale Road Landfill is located at the Tramore Valley Park, off the Kinsale Road and the Tramore River flows around the southern section of the site before flowing through Douglas (Refer to **Figure 14.3**). The management of Tramore Valley Park monitor the water quality of the Tramore River on several strategic locations along the river as part of the EPA licence conditions. This report is available online on the EPA website.

Biological oxygen demand (BOD) is one of the physico-chemical parameters used to assess water quality of rivers. **Table 14.1** summarises surface water quality results for 5 locations (labelled EM0, EM1, EM2, EM11 and EM6/10 on the Tramore River as reported in the Kinsale Road Rivers Monitoring Report 2020[66]. All the reported BOD measurements are less than 3mg/l. A BOD measurement less than 3mg/l would suggest a Q4/Q5 water quality rating according to the quality classes as per EPA parameters.

[66]Kinsale Road Rivers Monitoring Report 2020
http://www.epa.ie/licences/lic_eDMS/090151b28079f902.pdf(Accessed 2021)

Table 14.1: Surface water quality results (summarised) for sampling location EM 0, EM1, EM 2, EM11 and EM6/10 as reported in the Kinsale Road Landfill AER (2020) under the EPA waste licence No. W0012-03.

Sampling Point	Sampling Date	pH	BOD (mg/l)
EM0	03/03/2020	7.84	1.5
	01/04/2020	7.96	1.3
EM1	03/03/2020	7.85	1.6
	01/04/2020	8.03	1.7
EM2	03/03/2020	7.83	2.2
	01/04/2020	8.04	1.5
EM11	03/03/2020	7.89	1.8
	01/04/2020	7.97	1.8
EM6/10	03/03/2020	7.88	1.8
	01/04/2020	7.95	1.3

14.3.5 Existing Infrastructure

Surface Water Drainage

It is understood there are two surface water outfalls into the Tramore River to the south of the site. These are understood to take surface water runoff from the roads and buildings located immediately north of the outfalls.

It is proposed to construct a new dedicated surface water system to serve the proposed development. The intention is to discharge surface water off site to an existing surface water pipework located within Kinsale Road to the south of the site. This surface water drainage network ultimately outfalls to the Tramore River. A CCTV survey of this pipe was carried out which indicates a blockage along the existing pipework upstream of the outfall. From discussions with Cork City Council, it is understood that the existing gullies in the vicinity of the pipework may not be adequately connected to the existing pipework. It is intended that the pipe blockage will be remedied and the existing gullies will be connected to the pipework.

Foul Water Drainage

There is an existing Irish Water 600mm diameter combined sewer which enters the site from the west and exits to the east before ultimately draining away from the site in a north-easterly direction.

A below-ground foul drainage network will be constructed to collect and convey all foul water generated by the proposed development. The existing 600mm diameter combined sewer will be diverted to accommodate the proposed buildings/site layout. It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer. The remaining buildings to the south cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul runoff from most of the site to a centrally located Pumping Station (PS). A rising main from the PS will discharge to the combined sewer.

14.3.6 Flood Risk

The risk of fluvial, tidal, pluvial and groundwater flooding to the site is low, based on the Flood Risk Assessment accompanying this EIAR (**Appendix 14.1**.)

In addition, while one flooding event was recorded in December 2009 at the Tramore River (approximately 30m from the site), there are no historic flood events recorded within the proposed development site according to FloodInfo.ie.

The proposed development is not likely to have an impact on floodplain storage and conveyance and will not increase flood risk off site during the construction phase.

Refer to **Appendix 14.1** for further details.

14.4 Potential 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 surface/ground water regime of the area. There are potential sources of pollution from 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; 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.

All of the above would be likely short term significant 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 parking 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 below, it is predicted that there will be no significant effects on surface water as a result of the operation of the proposed development.

Refer to **Appendix 14.1** *Flood Risk Assessment* for further information on the potential for the proposed development to be affected by flooding, or to have adverse effects on flood risk.

No likely significant adverse impact has been identified with respect to water during the operational phase of the proposed development.

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.
- Works at the existing outflow on the Tramore River will be carried out from July to August inclusive to minimise impacts on spawning fish .

Flooding

During construction phase, 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 following mitigation measures will be employed during the operational phase of the proposed development:

- Surface water from the proposed residential areas, town square and Primary Care Centre (subject of separate planning application) will be captured by a new drainage network for the site.
- Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to ensure safe discharge into the receiving waters.
- Measures will be put in place to ensure that foul water will be managed appropriately.
- The applicant will engage with Irish Water to ensure that there will be a sufficient water supply to the proposed development site.
- Grease traps will be installed where required within the wastewater drainage system to prevent water contamination from fats, oils and greases (FOGs).

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

14.6.1 Primary Care Centre

Permission for a Primary Care Centre which will be located on the Tramore Road side of the proposed development is being sought by Watfore Limited under a separate planning application.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; town square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential effects will be managed both through the design process (i.e. integrated approach to site infrastructure design) and through the implementation of a CEMP (**Appendix 5.1**).

No potential effects have been identified during the operational phase of the proposed development.

As such, no significant cumulative effects are predicted.

14.6.2 Other Developments

A review of Cork City Council online planning records was carried out and no other developments were identified which could give rise to cumulative effects.

14.7 Residual Effects

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

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European Communities, Water Policy Regulations 2003 (S.I. No. 722 of 2003).

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European Union (Surface Water) (Amendment) Regulations 2019 (S.I. No. 77/2019);

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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.

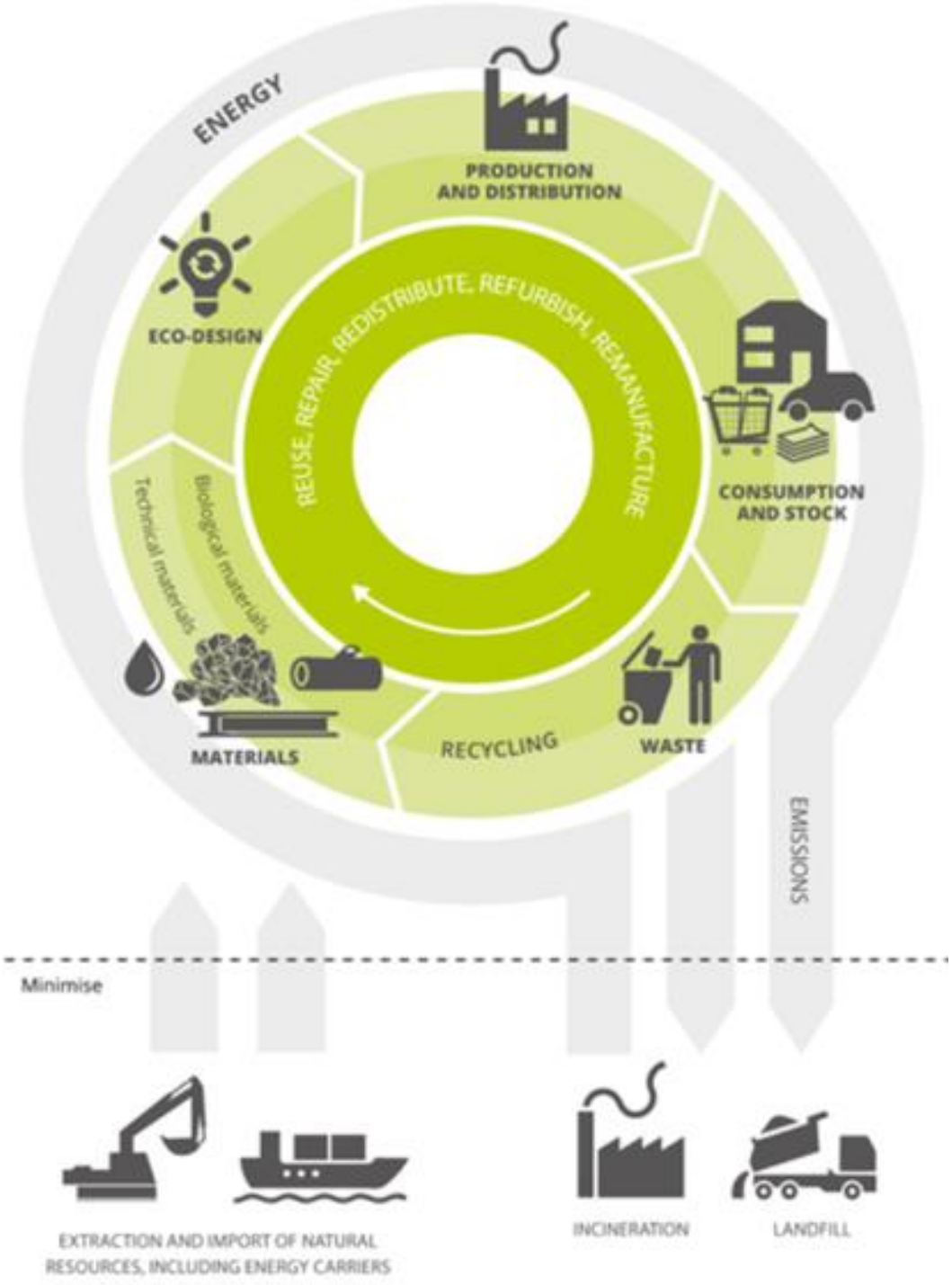

Figure 15.1: Circular Economy

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.

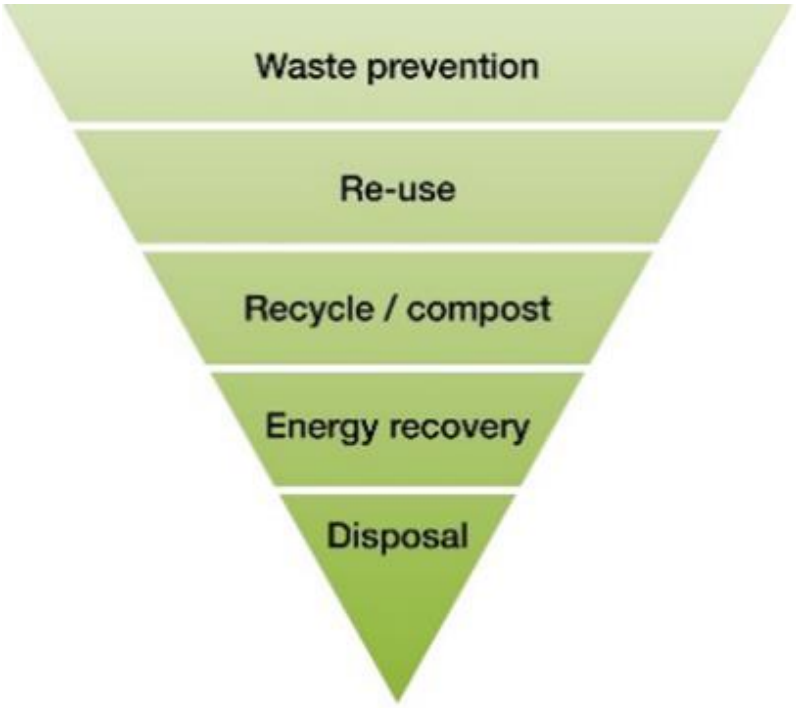

Figure 15.2: Waste Hierarchy (European Union, 2010)

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 Environmental – 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 Environment

15.3.1 Construction and Demolition Waste

The most recent complete figures published by the EPA[67] 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 large increase of 2.6 million tonnes on the quantity of C&D waste generated in 2018 (6.2 million tonnes), corresponding with an 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%**

[67] 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[68].

[68] EPA (2021) Hazardous waste statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/

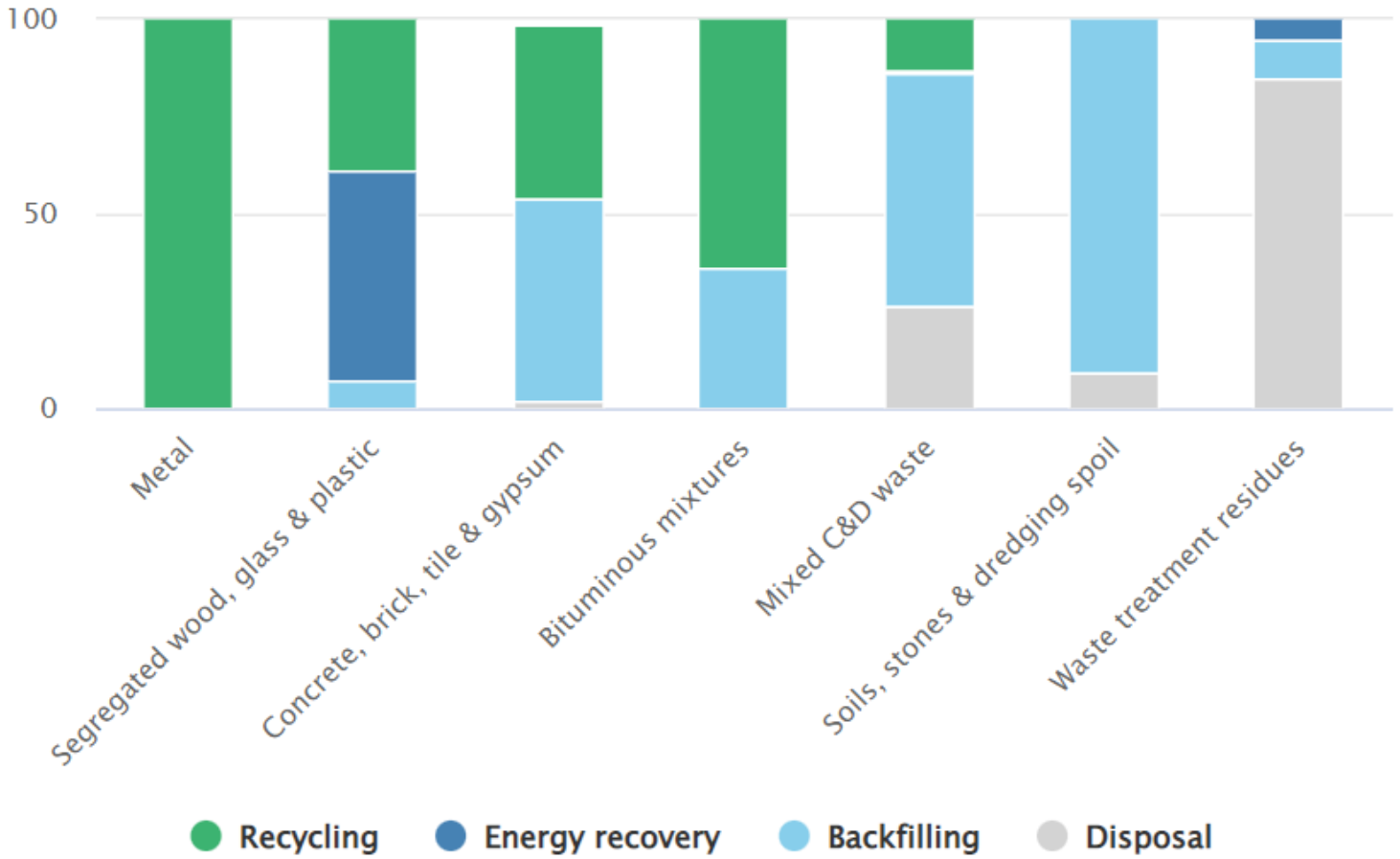

Figure 15.3: Final Treatment for C&D Waste Material Classes in Reference to Total for each Material Class, 2019 (https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/) (Accessed December 2021)

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[69].

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.

[69] EPA (2021) Municipal Waste Statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/municipal/

15.4 Potential 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

There are no buildings or structures currently present on the site, however there are concrete ground floor slabs and foundations for previously demolished structures across significant parts of the site.

The proposed development will require the demolition and removal of the existing concrete ground floor slabs and foundations along with carpark surfacing. The approximate areas of the existing concrete ground floor slabs and foundations (approx.: 6,650m^2) and carpark surfacing (approx. 2,700m^2) are identified in **Figure15.4.**

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 steel frames, concrete, concrete blocks, insulated steel cladding and hardstanding, and will be dealt with in a similar manner.

Figure 15.4: Extract from Google Maps marked up to show existing concrete ground slabs and foundations | red: concrete floor slabs/ foundations, blue: carpark | not to scale

15.4.3 Construction Phase

Construction works, site offices and temporary works facilities will require the use of resources and will generate construction waste.

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
- 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. Refer to **Chapter 5** *Construction Strategy,* **Appendix 5.1** *Construction Environmental Management Plan* and **Appendix 5.2** *Construction and Demolition Resource and 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.

15.4.4 Operational Phase

During the operational phase, waste will be generated from the residents, crèche, café and from transient users of the town square. This will result in an increase in wastes generated from the site during operation.

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 internals 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).

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 community facilities, including retail, café, crèche, gym and coffee kiosk of the proposed development is based on the schedule of accommodation for the scheme.

The number of bins required per residential building per week (assuming twice weekly collections) to cater for the volume of residential waste estimated are presented in **Table 15.2**. The numbers have been calculated using the formulas assumptions and calculations previously noted in **Appendix 15.1** *Operational Waste Management Plan.*

Equally, the number of bins required per commercial building per week (assuming twice weekly collections) to cater for the volume of commercial waste estimated are presented in **Table 15.3**.

Table 15.2: Residential Waste Storage, assuming twice weekly collection

Waste Storage Room	Building	Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
R01	B	3	2	2	1
R02	E	4	2	2	2
R03	C	3	2	2	2
	I	1	1	1	1
	N	1	1	1	1
R04	L	1	1	1	1
	M	1	1	1	1
R05	J	2	1	1	1
	G	1	1	1	1
	H	1	1	1	1
R06	F	4	2	2	2
Total		**22**	**15**	**15**	**14**

Table 15.3: Commercial Waste Storage, assuming twice weekly collection

Waste Storage Room	Building	Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
R06	E	1	1	1	1
	F	2	1	2	1
Total		**3**	**2**	**3**	**2**

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 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. 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 Mitigation

15.5.1.1 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 45,920m^3 of made ground and subsoil.

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 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; and

- 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.

15.5.1.2 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**) will be prepared which will provide 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.

15.5.2 Monitoring

15.6 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.

15.7 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.

15.7.1 Primary Care Centre

Permission for a Primary Care Centre which is located on the Tramore Road side of the proposed development has been sought by Watfore Limited under a separate planning application.

The proposed development will consist of the construction of a Primary Care Centre (c.7,767m^2), of principally 4 storeys and part 7 storeys in height above ground, to include a ground floor pharmacy (c.289m^2); modifications to the existing entrance/exit from Tramore Road and an upgrade of the Kinsale Road/Mick Barry Road junction; 98no. car parking spaces (57no. undercroft spaces and 41no. surface spaces); bike store; all ancillary plant and facilities, including a substation; and all site development, drainage and landscaping works, including a town square.

Construction of the Primary Care Centre is anticipated to occur within Phase 1 of the proposed development, within the planned 2.5-3.5-year timeline. (This is subject to the planning application outcome). During this time the retail, town square, and ancillary site development works including underground services, pavement upgrade works, surface carparking and landscaping works will be carried out.

Although the proposed development will be constructed at the same time as the Primary Care Centre, given their temporary nature and the implementation of Construction Environment Management Plans for both projects, the likelihood of any significant cumulative effect on resource and waste management is slight and short-term.

No cumulative effects on resource and waste management are predicted to arise during the operational phase.

15.7.2 Other Developments

A review of Cork City Council online planning records was carried out and no other developments were identified which could give rise to cumulative effects.

15.8 Residual Effects

With the implementation of the Construction Waste Management Plan, and the Operational Waste Management Plan, the residual impact of the proposed development on resources and waste management will be direct, slight, negative and long-term.

15.9 References

Department of Environment Community and Local Government (2006). *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.*

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Environmental Protection Agency (2021) *Hazardous Waste Statistics for Ireland. Latest Reference Year 2020.* Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/

Environmental Protection Agency (2021) *Municipal Waste Statistics for Ireland. Latest Reference Year 2019.* Available at: www.epa.ie/nationalwastestatistics/municipal/

European Commission (2017) *Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste*

European Environment Agency (2016) *Circular economy in Europe.*

European Union (2008/98/EC) on Waste (Waste Framework Directive)

European Union (2017). Environmental Impact Assessment of Projects. Guidance on the Preparation of the Environmental Impact Assessment Report.

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

Transport Infrastructure Ireland (2010), Specification for Roadworks

Waste Management (Collection Permit) Regulations, 2001 (as amended)

Waste Management Acts 1996 (as amended)

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 Study 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[70]) 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[71]), the Department of Housing Planning and Local Government (DHPLG, 2018[72]) and the EPA (EPA 2017a[73]).

The identification of the sensitive receptors to the proposed development have been identified based upon the EPA Guidelines (2017[73] and 2002[74]) and EPA Advice Notes (2015 and 2003[75]). 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:

[70] EC (2017a) Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)]
[71] 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.
[72] DHPLG (August 2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
[73] EPA (2017) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
[74] EPA (2002) Guidelines on information to be contained in Environmental Impact Statements (EIS)
[75] 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 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 in July 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 11** *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, Architecture and Cultural Heritage* and **Chapter 13** *Lands, 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.

Population data and human health data have been derived from information provided in the most recent Population Census, published for 2016 and 2011[76].

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 potential 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:

[76] 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[73].

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**.

Residual and cumulative effects are described in **Section 16.6** and **Section 16.7**, respectfully.

16.3 Baseline Environment

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 circa 3.39 hectares.

The EPA Corine (2018) landcover data has classified the land cover within and surrounding the site boundary as *Industrial, commercial and transport units*. Initially, the site had been developed as a creamery in the 1950s and operated as such until 2006, when CMP Dairies closed the facility. The proposed development site is a brownfield site and is currently undeveloped. All buildings associated with this previous use have since been demolished and the site is currently vacant.

The site is bordered by Kinsale Road to the east and Tramore Road to the north. Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities adjoining and close to the proposed development including Musgrave Retail Partners Ireland to the west of the subject site.

The site is occasionally used by Funderland but is generally not accessible to the public.

In addition, Cork Mosque and Coláiste Stiofáin Naofa (CSN) College of Further Education are located approximately 570m and 630m respectively southwest of the proposed development.

16.3.3 Zoning

The proposed development site is located within the functional area of Cork City Council. The site lies within the Cork City South Central area. Under Variation No. 6 of the Cork City Development Plan 2015-2021, the site has been rezoned from "*Light Industry and Related Uses*" to "*Residential, Local Services, and Institutional Uses*", to which this proposal directly responds.

The site is not designated as an area of high landscape value or an area of architectural conservation.

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[77] (**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.

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

[77] https://www.cso.ie/en/census/census2016reports/

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[78], 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[79] released by the CSO for the third quarter (Q3) of 2021 indicated that in Ireland there was an annual increase in employment of 9.8% or 221,200 in the year compared to Q3 of 2020, bringing total employment to 2,471,200. This compares with an annual increase of 6.4% in the year to Q3 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 September 2021, the new COVID-19 Adjusted Measure of Employment is currently estimated to have been 2,369,731 with an associated COVID-19 Adjusted Employment Rate of 69.1%.

There was an annual decrease in unemployment of 30,100 (-16.8%) in the year compared to Q3 2020, bringing total unemployment to 149,100.

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 164,626 persons signing on the Live Register in November 2021. This represents an annual decrease of 29,432 (-15.2%) since November 2020.

A total of 216,959 persons were either on the Live Register or were benefitting from the PUP in November 2021. This compares to 239,387 in the month of October 2021.

[78] CSO (2021) Population and Migration Estimates, April 2021. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-pme/populationandmigrationestimatesapril2021/mainresults/ [Accessed January 2022]
[79] https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter32021/

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[77] 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 Ballyphehane B within Cork City, which is bounded to the north by ED Ballyphehane A, to the west by ED Pouladuff B, to the east by ED Turner's Cross D and to the south by ED Lehenagh. Population changes from 2011 to 2016 occurring in Cork County and City[80], and within these electoral divisions[81] 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 (Ballyphehane B) has shown a slight decrease (3.5%) in population from 2011-2016. However, overall, most electoral divisions in close proximity (Ballyphehane A, Turner's Cross D and Lehenagh) have all shown population increases from 2011-2016, in the order of 7.1%, 4.4% and 3.7% respectively. Pouladuff B has shown no change in population (0%).

[80] Population and Average Annual Rates 2011 to 2016 (City and County)
[81] Population and Average Annual Rates 2011 to 2016 (Electoral Division)

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%
Ballyphehane A	609	652	+7.1%
Ballyphehane B*	834	805	-3.5%
Pouladuff B	1,668	1,668	+0%
Turner's Cross D	451	471	+4.4%
Lehenagh	9,898	10,267	+3.7%

**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.

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
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[82] 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.

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 (Ireland)

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)

[82] https://www.gov.ie/en/publication/350b7-health-in-ireland-key-trends-2021/

16.3.5.2 Local Context

Cork City Council is a member 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
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.

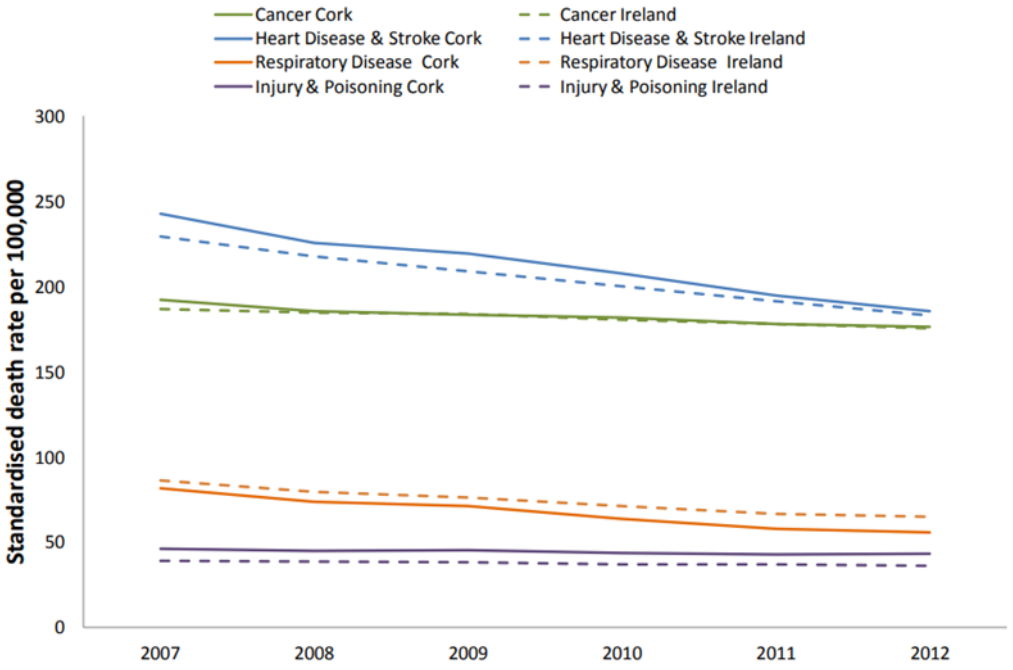

Figure 16.1: Trends in death rates per 100,000 for the four principal causes of death over the period 2007-2012 for all ages compared to Ireland. Note: Data is for Cork City and Cork County (Source: County Cork Age Profile, HSE, 2015).

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, 5 to 10% 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)[83].

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. All buildings associated with this previous use have been demolished and the site is currently vacant.

Asbestos and Contaminated Land

Asbestos is the name for a set of mineral fibres that are heat and chemically resistant. Due to these properties, asbestos was commonly used in construction as a means of fireproofing, heat-proofing, electrical insulation and in construction materials. Inhalation of asbestos fibres released from asbestos-containing materials can cause asbestos-related diseases, such as cancers of the lungs and chest.

Asbestos Containing Materials (ACMs) were identified in a previous asbestos survey and during standard geo environmental sampling undertaken as part of site investigation works at the proposed development site. ACM was identified within soils predominantly in the southern part of the proposed development site. An asbestos audit will therefore be undertaken prior to any demolition and excavation works. Any asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

It is likely that further instances of asbestos may be found on site during construction. It is possible that disturbance of ACMs on site could cause asbestos fibres to be released into the ambient environment. Due to the hazardous properties of asbestos all ACMs will be bagged, stored and removed from site by licenced contractors. In addition, 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 population.

Further details on the asbestos 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*

[83] https://www.epa.ie/radiation/radonmap/ [Accessed 2021]

Management Plan (CEMP) for details on mitigation measures to be implemented for ACMs during construction activities.

16.4 Potential 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 Considerations

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 along the five main roads and access route surrounding the site (identified in **Chapter 7** *Traffic and Transportation)* would remain in its current state.

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 rezoned under Variation No. 6 of the Cork City Development Plan 2015-2021, from "*Light Industry and Related Uses*" to "*Residential, Local Services, and Institutional Uses*", 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. The effect of a Do-Nothing Scenario on land use would therefore be neutral.

Human Health

There is an impact resulting from the do-nothing scenario. At present the soils contaminated with asbestos are not covered by hardstanding and there is little protection to site users. Hence there is potential risk of significant harm to site users, which is classed as medium long-term adverse effect with a significant to profound significance to site users.

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

It is anticipated that the construction of the proposed development will be carried out in five sequential phases: a site enabling works phase (approximately 4 months) followed by four main construction phases (as described in **Chapter 4** *Construction Strategy*). An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth.

Social Considerations

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 South Central 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.

Cork Mosque and Coláiste Stiofáin Naofa (CSN) College of Further Education are located approximately 570m and 630m, respectively, southwest of the proposed development. Due to their distance from the site, it is unlikely that these will be affected by the proposed development.

Due to the height of the proposed development buildings at the Creamfields site (outlined in **Chapter 4** *Proposed Development*) the local wind microclimate may be influenced which could affect the existing and proposed pedestrian environment. Accordingly, a Wind Microclimate Study was carried out to ascertain if the proposed development enhances or reduces 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. The development does not introduce any critical impact on the surrounding buildings, or nearby adjacent roads, and therefore, it is likely to provide a wind micro-climate suitable for its intended use. The Wind Microclimate Study report is included in the planning application documentation.

Additionally, the design height of the proposed development could have an effect on surrounding premises. A Daylight and Sunlight analysis was completed in order to establish the effect of the proposed development on the levels of daylight and sunlight availability in the existing residential and commercial surrounding buildings and also the proposed developments performance in daylight availability. In the assessment, a total of 2,919 points at every window were tested for skylight availability and 1,506 points at every south facing window for sunlight availability. It was concluded that the overriding effect of the proposed development on the surrounding properties will be negligible. The proposed development will have a non-significant impact on the levels of daylight and sunlight availability in the surrounding existing properties and amenity spaces. It will produce an environment that allows for plentiful sunlight penetration into all the amenity spaces and the majority of south facing apartment windows, in addition to producing appropriate levels of diffuse daylight within the apartments themselves. The Daylight and Sunlight Analysis report is included in the planning application documentation.

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. 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 2-4.

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 2-4 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 200, with a peak of up to 250 personnel at the most intensive fit-out and landscaping phases. **Chapter 7** *Traffic and Transportation* estimates that a total 46 Heavy / Light Goods Vehicles and 172 vehicles for construction workers will be travelling to the site on a daily basis during construction phase.

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 200 to 250 (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 Draft 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 2-4. 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.

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 there, the construction activities in relation to dust would be of "major" 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 7385-284 will be adhered to during construction to ensure minimal effects of vibration on human health.	**Chapter 9** *Noise and Vibration*
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 2-4 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, Construction and Demolition Waste Management Plan and Construction Traffic Management Plan will be developed. These detailed and robust plans outline the mitigation and monitoring measures to be implemented.

[84] BS 7385-2 (1993) Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration

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 and odour. Potential effects will be managed by means of a Construction Environmental Management Plan and Construction Traffic Management Plan. These effects will be short term in nature.

16.4.3 Operational Phase

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, Phase 3 and Phase 4. Completion of the proposed development is planned for 2031.

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 Considerations

In terms of operational effects, the issues of concern for social activities in the area would be primarily visual amenity and traffic safety.

As with the construction effects, most local amenities in the wider area are outside the zone of influence to have any significant effect. The effect of changes to visual amenity will therefore be a long-term neutral effect on the social activities in the area.

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 retails units, gym, crèche, café, 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.

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 2-4 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/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 a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; crèche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works.

The proposed development will align with the rezoning of the site under Variation No. 6 of the Cork City Development Plan 2015-2021, from "*Light Industry and Related Uses*" to "*Residential, Local Services, and Institutional Uses*".

This is consistent with the zoning and with the uses of lands to the north and west of the site. It is therefore considered that the operational phase will have a neutral effect on adjacent land 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.

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 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.	**Chapter 8** *Air Quality and Climate*
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**)	**Chapter 9** *Noise and Vibration*

Aspects	Potential Effects on Human Health	Additional information
	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.	
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*

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.

Establishments which fall under the remit of the Seveso III Regulations are classified as either "lower tier" or "upper tier" sites. The nearest such facility to the proposed development is Goulding Chemicals Ltd, which is located approximately 2.2km northeast of the site in the South Docklands. In accordance with the Regulations, operators of a "Lower Tier Establishment" are to develop a site-specific Major-Accident Prevention Policy (MAPP) which is implemented by site specific procedures and systems. The proposed development does not lie within the consultation distance for Goulding Chemicals Ltd.

Objective 12.23 of the Cork City Development Plan states the local authority are actively seeking to relocate these facilities to alternative sites outside of the city. Consultation with operators of the sites, statutory bodies and Cork County Council are ongoing.

It is the long-term intention that Goulding Chemicals Ltd will relocate out of the Docklands. Even if the Goulding Chemicals Ltd establishment remains, given the significant distances of the facility from the proposed development and the strict safety and environmental standards and requirements imposed on operators of such facilities by the relevant authorities, the likelihood of such an incident occurring and resulting in the proposed development having an adverse effect on the environment is considered 'extremely unlikely'. Overall, this results in a 'low risk scenario' and therefore, will not have a significant negative effect on human health.

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, 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 construction and operation of the proposed development resulting in both short and long-term positive impacts.

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.
- Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility.

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 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.

16.6.1 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.

Following the implementation of these mitigation measures, there will be no significant residual effects on population and human health.

- Following implementation of the mitigation measures as detailed in the CEMP e.g., spraying of exposed earthwork activities, stockpiles and site haul roads during dry weather; sweeping of hard surface roads etc the residual effect of dust is not significant.
- To minimise the effects of noise on human health, abatement measures such as the provision of acoustic barriers, standard working hours, site representatives and noise minimisation will be provided. Following implementation of such mitigation measures the residual effect is predicted to be not significant.
- With the implementation of the Construction Traffic Management Plan the residual effect of traffic is predicted to be intermittent, temporary and slight.

16.6.2 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.

16.7 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.

16.7.1 Primary Care Centre

Planning permission for a Primary Care Centre which will be located in the north-western part of the wider development site has been sought by Watfore Ltd from Cork City Council. It is anticipated that the provision of this Primary Care Centre will bring people to the town square.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

It is planned that the Primary Care Centre will be constructed during Phase 1 of the proposed Creamfields Residential Development, as outlined in **Chapter 5** *Construction Strategy*. The construction of this development will have an impact on the traffic, noise, dust and odours identified within the proposed development site and surrounding area. This will have a slight short-term effect on population and human health.

As the Primary Care Centre will open at the end of construction Phase 1, along with residential and retail units associated with the proposed development, there will be an increase in traffic in the surrounding area. This has been included in the

assessment for traffic in **Chapter 7** *Traffic and Transportation.* The subsequent construction phases of the proposed development (Phases 2-4) will equally have an impact on the operation of the Primary Care Centre in relation to noise, odour and dust.

Mitigation measures, as outlined in **Section 16.5, Chapter 5** *Construction Strategy* and **Appendix 5.1** *CEMP* will be incorporated into both designs to account for this cumulative impact.

16.7.2 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:

Several Road Improvement Schemes have been identified within the surrounding area of the proposed development site, which are currently at either planning/design or construction phase. These include:

- **Lehenaghmore Road Improvement Scheme**, which will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in Q3 2022.
- **Grange Road to Tramore Valley Park Pedestrian & Cycle Link**, which has commenced site clearance works and is expected for completion by early 2023.

Even if 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.

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.*

16.8 References

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Central Statistics Office (CSO) website (www.cso.ie) Accessed: January 2022

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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 November 2021]

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).

Health Service Executive (HSE) (2016) Health Profile 2015 Cork County

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*"[85]

Whilst the current Draft EPA Guidelines[86] 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*.

[85] Environmental Protection Agency (2015) Draft Advice Notes for Preparing Environmental Impact Statements
[86] EPA (2017) Guidelines on Information to be contained in Environmental Impact Assessment Reports (draft)

This chapter was prepared by Debbie Flynn. Details of Debbie's qualifications and experience are included in **Chapter 1** of this EIAR, *Introduction*.

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 CMP Dairies 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 under **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 1.1** of **Chapter 1** *Introduction.*

The study area is located in Cork City on the grounds of a former CMP Dairies site. The location is a brownfield site and is currently undeveloped. All buildings associated with its previous use have since been demolished and the site is currently vacant.

This site lies within the area covered by the Cork City Development Plan 2015-2021[87] under Variation No. 6 (Tramore Road / Kinsale Road Site)[88] and is zoned

[87] Cork City Council, 2016. Cork City Development Plan 2015-2021. https://www.corkcity.ie/en/existing-cork-city-development-plan-2015-2021/ [Accessed: March 2021]
[88] Cork City Council (2019) Cork City Council Development Plan 2015-2021 – *Variation No. 6 (Tramore Road/Kinsale Road Site).* https://www.corkcity.ie/en/media-folder/cork-city-

as *"Residential, Local Services, and Institutional Uses"*. In addition, the mixed industrial / commercial area centred on the Tramore Road and Kinsale Road has been identified as *an area with potential for intensification of development, linked to the development of a high-quality public transport route linking the northside to the City Centre and the Airport*.

A Draft Cork City Development Plan 2022-2028[89] is currently underway and indicates the site as being zoned as *ZO 02 New Res Neighbourhoods*. The objective of this land zone is: "*To provide for new residential development in tandem with the provision of the necessary social and physical infrastructure."*

For a detailed description of the proposed development refer to **Chapter 4** *The Proposed Development.*

17.3.1.2 Adjoining Land Uses

The EPA Corine (2018) data has classified the area surrounding the site as *Industrial, commercial and transport units* (southwest) and *Discontinuous urban fabric* with *Artificial Surfaces* (north). This has been illustrated in **Figure 17.1.**

The Black Ash Park and Ride is located to the east of the proposed development, while there are a number of commercial facilities surrounding the proposed development including Musgrave Retail Partners Ireland (to the west).

Cork City's Civic Amenity Site is located approximately 300m east of the proposed development. This area encompasses the former Kinsale Road Landfill site and current Tramore Valley Park Civic Amenity area classified as *Sport and leisure facilities* (EPA Corine, 2018).

The site is bordered by Kinsale Road to the east and Tramore Road to the north and west. The N27 South Link Road lies approximately 200m east and 300 south of the site and the N40 South Ring Road is located approximately 400m southwest of the site.

development-plan/adopted-variation-6-tramore-road_kinsale-road-site-rezoning-copy-1.pdf [Accessed: December 2021]

[89] Cork City Council, 2021. (Draft) Cork City Development Plan 2022-2028. https://www.corkcity.ie/en/proposed-cork-city-development-plan-2022-2028/draft-plan-documents/ [Accessed: October 2021.]

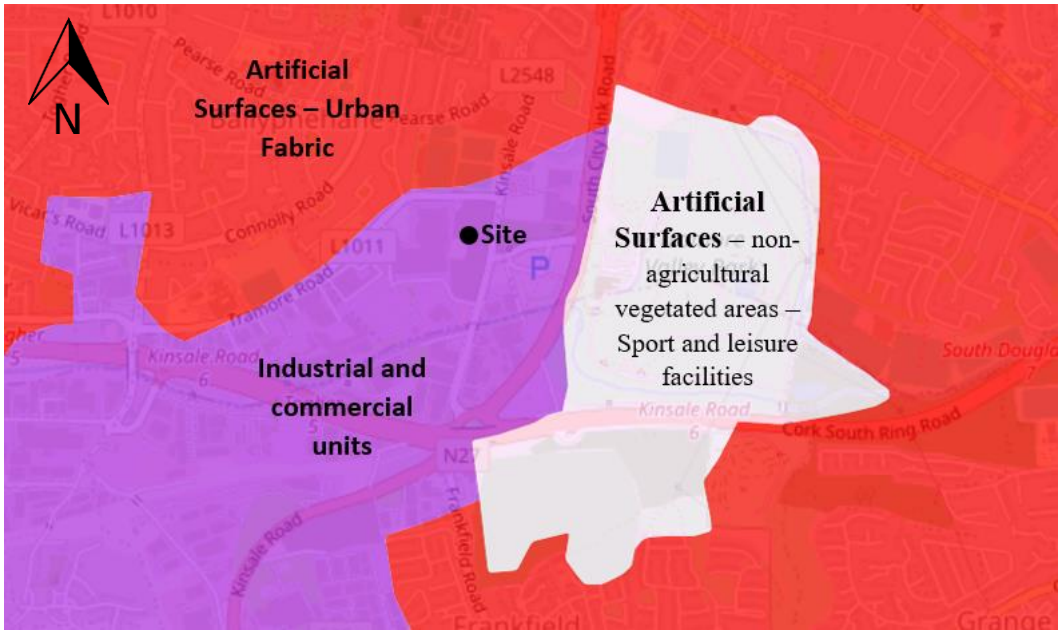

Figure 17.1: Existing Land-Use at, and around the Proposed Development Site (proposed development indicated as black dot) | not to scale | Source: EPA Online Environmental Map Viewer

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 redline boundary of the site.

17.3.2 Existing Infrastructure

17.3.2.1 Utilities

There are existing utilities on site that have previously served the proposed development site (e.g. water, power). It is assumed that these utilities are now redundant.

There is an existing 38kV line on the proposed development site but the ESB have approved 38kV relocation works and this will be rerouted.

There is capped gas supply partially located on the site. However, it is understood that this will be made redundant and potentially removed. The existing gas supply runs along Tramore Road and Kinsale Road.

There is no telecommunications infrastructure on the proposed development site.

17.3.2.2 Water Supply

There is existing potable watermain infrastructure located adjacent to the site within Kinsale Road (150mm diameter) and Tramore Road (200mm diameter).

17.3.2.3 Surface Water Drainage

It is understood there are two surface water outfalls into the Tramore River to the south of the site. These are understood to take surface water runoff from the roads and buildings located immediately north of the outfalls.

Further information on existing site infrastructure can be found in the Site Infrastructure Report which has been included as part of this planning application.

17.3.2.4 Foul Water Drainage

There is an existing Irish Water 600mm diameter combined sewer which enters the site from the west and exits to the east before ultimately draining away from the site in a north-easterly direction.

Further information on existing site infrastructure can be found in the Site Infrastructure Report which has been included as part of this planning application.

17.4 Potential 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. The construction supply is estimated to be 400-500kVa. It is predicted that this will be supplied by the existing network although generators may be required for the tower cranes. 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

It is proposed to construct a new dedicated surface water system to serve the proposed development. The intention is to discharge surface water off site to the existing surface water network located within Kinsale Road to the south of the site. This surface water pipe ultimately outfalls to the Tramore River.

A CCTV survey of this pipe was carried out which indicates a blockage along the existing pipework upstream of the outfall. The pipe blockage will be remedied and the existing gullies will be connected to the pipework.

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). 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 2,850kVA. The power will come from the existing underground network including cables running along Tramore Road and Kinsale Road.

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

Gas

There will be limited use of gas during the operation of the proposed development as it is proposed to use heat pumps. However, there is potential for metered supply to be provided for the crèche, gym and community hub area.

As such, the effect on gas supply is predicted to be slight negative and long term.

Water Supply

It is proposed to provide a new connection from the existing watermain in Kinsale Road to serve the site.

A bulk water meter will be provided immediately downstream of the 2 No. connections to the existing Irish Water watermain. Downstream of the bulk water meter a series of ring mains will be provided on site off which each development block will be fed.

The metering strategy for the development will be as follows:

- For supply to high rise blocks with multiple apartments a below ground meter will be provided outside the building to allow for metering of the entire block and a water meter room is allowed for within the block to allow for metering of individual units.
- For supply to individual units (e.g. apartments with townhouse overhead as per Block L and retail/cafe units) a below ground meter will be provided outside the building

External fire hydrants will be connected to the ring mains on site. 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. Subsequent to this, the planning design drawings were shared with Irish Water and they have issued a Statement of Design Acceptance.

The average water demand for the proposed development site is 4.88 l/s, while the peak demand is estimated to be 24.4 l/s. 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.

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 construct a new dedicated surface water system to serve the proposed development. The intention is to discharge surface water off site to an existing surface water pipework located within Kinsale Road to the south of the site. This surface water pipe ultimately outfalls to the Tramore River nearby.

The site is currently almost entirely impermeable and understood to discharge at an unrestricted rate. The proposal to construct a new dedicated surface water system to serve the proposed development will greatly the pre-development discharge rates by restricting run-off from site to a QBAR Greenfield Runoff rate of 3.17 l/s/ha.

Runoff from areas posing a risk of contamination due to hydrocarbons (e.g. in large car parking areas) will be passed through a class 1 hydrocarbon interceptor prior to discharge offsite.

Sustainable Drainage Systems (SuDs) measures will be incorporated into the development to minimise surface water runoff and mimic natural drainage, including the use of green roofs, infiltration planters/rain gardens, and permeable paving.

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

Foul Water

The existing sewer will be diverted in order to accommodate the proposed building/site layout. It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer. The remaining buildings to the south cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul effluent from the majority of the site to a centrally located Pumping Station (PS). A rising main from the PS will discharge to the combined sewer.

The estimated foul water discharge rates for the proposed development to the combined sewer will be 0.98 l/s (Dry weather flow (DWF)) and 5.88 l/s (6DWF), and to the pumping station will be 3.9 l/s (DWF) and 23.4 l/s (6DWF)

Rainwater runoff from the undercroft car park will be discharged to the foul water network via a class 1 hydrocarbon interceptor.

Irish Water have confirmed that there is capacity within their network to serve the proposed development without the need for any upgrades.

Therefore, 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 South 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 surrounding retail food and beverage establishments.

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 Mitigation

17.5.1.1 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.

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.
- Works at the existing outflow on the Tramore River will be carried out from July to August inclusive to minimise impacts on spawning fish .

Flooding

During construction phase, 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.

Land use

No mitigation measures for land-use are required.

17.5.1.2 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.

The following mitigation measures will be applied for water quality during the operational phase:

- Surface water from the proposed residential areas, town square and Primary Care Centre (subject of separate planning application) will be captured by a new drainage network for the site.
- Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to ensure safe discharge into the receiving waters.
- Measures will be put in place to ensure that foul water will be managed appropriately.
- The applicant will engage with Irish Water to ensure that there will be a sufficient water supply to the proposed development site.
- Grease traps will be installed where required within the wastewater drainage system to prevent water contamination from fats, oils and greases (FOGs).

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.

17.5.2 Monitoring

During both construction and operational phases, services will continue to be consulted throughout the design and construction processes.

17.6 Cumulative Effects

A review of Cork City Council online planning records has been completed to identify if there are other developments 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.

17.6.1 Primary Care Centre

Permission for a Primary Care Centre which is located on the Tramore Road side of the proposed development has been sought by Watfore Limited under a separate planning application.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; town square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

Construction of the Primary Care Centre is anticipated to occur within Phase 1 of the proposed development, within the planned 2.5 to 3.5-year timeline. (This is subject to the planning application outcome). During this time the retail, town square, and ancillary site development works including underground services,

pavement upgrade works, surface carparking and landscaping works will be carried out.

Although the proposed development will be constructed at the same time as the Primary Care Centre, given their temporary nature, the implementation of Construction Environment Management Plans for both projects and the capacity within the existing networks, the likelihood of any significant cumulative effect on material assets is slight and short-term.

No cumulative effects on material assets are predicted to arise during the operational phase.

17.6.2 Other Developments

A review of Cork City Council online planning records was carried out and no other developments were identified which could give rise to cumulative effects.

17.7 Residual Effects

No significant negative effects on land-use or utility services are predicted.

17.8 References

Cork City Council (2016). Cork City Development Plan 2015-2021. Available at: https://www.corkcity.ie/en/existing-cork-city-development-plan-2015-2021/ [Accessed: December 2021]

Cork City Council (2019) Cork City Council Development Plan 2015-2021 – *Variation No. 6 (Tramore Road/Kinsale Road Site).* https://www.corkcity.ie/en/media-folder/cork-city-development-plan/adopted-variation-6-tramore-road_kinsale-road-site-rezoning-copy-1.pdf [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 Corine (2018). Available at: https://gis.epa.ie/EPAMaps/

EPA (2017) Guidelines on Information to be contained in Environmental Impact Assessment Reports (draft).

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);
- 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 qualification 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[90] 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 2019 (Government of Ireland, 2019)

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

[90] 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

assessment is to identify national hazards across a broad range of emergencies, to 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.

18.3 Categorisation of the Baseline Environment

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 18.5** provides an overview of the baseline environment that has been considered for this assessment.

18.4 Impact Assessment Methodology

18.4.1 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*.

18.4.2 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 and will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

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				

18.5 Baseline Environment

18.5.1 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, Cork City Council activated its Severe Weather Plan.

With regard to disasters, severe weather conditions pose a plausible potential risk to the proposed development.

18.5.2 Major Accidents

According to Cork City the Major Emergency Plan 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 a plane crash at Cork Airport (2012).

Following the completion of risk assessments by Cork City, 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.

18.5.3 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.

Establishments which fall under the remit of the Seveso III Regulations are classified as either “lower tier” or “upper tier” sites.

There are several Seveso sites in Cork city, although none within close proximity to the proposed development site. The closest 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 2 km from the proposed development site. The activity on site includes production of a wide range of fertilisers as well as Avail technology and Granulated Lime.

In accordance with the Regulations operators of a “Lower Tier Establishment” are to develop a site-specific Major-Accident Prevention Policy (MAPP) which is implemented by site specific procedures and systems.

Industrial Emissions and Waste Licenses

The nearest site to the proposed development which has a licence issued by the EPA is Irish Pioneer Works (Fabricators) Limited. This facility is located approximately 90m southeast of the site and is involved in Steel Fabrication & Galvanizing (Licensing No. P0407-02).

The second closest is Fronville Limited, which is reported to make foam for upholstery and is located 200m north of the site. While Fronville Limited is registered with an active IPC license (License No. P0059-02) the site is known to have ceased operation.

The former Kinsale Road Landfill (License No. W0012-03) is located approximately 200m east of the proposed development. The site holds a waste license for its former use as a landfill. It is currently in use as a civic amenity site.

Approximately 610m west of the site is Galco Ltd which is involved in Hot Dip Galvanising (License No. P0391-01).

Approximately 1km Southwest of the site is Forge Hill Recycling Unlimited Company which is a commercial waste recovery facility (License No. W0291-02).

Brooks Haughton Limited lies approximately 1.1km southwest of the proposed development. Its license (No. P0343-01) no longer relates to an Industrial Emissions Directive activity.

The only other licenced facilities within relative proximity to the proposed development site is the ESB Marina Generating Station (License No. P0578-03) and Cork University Hospital (License No. W0038) which are both over 2km from the proposed development. Refer to **Table 18.4** for details.

Table 18.4 Licenced Sites in relation to proposed development

Name	Licence Ref.	Approx. Distance from Proposed Development Site	Activity
Irish Pioneer Works (Fabricators) Limited	P0407-02 (IE)	90m – Southeast	Steel Fabrication & Galvanizing
Fronville Limited	P0059-02 (IPC)	200m – North	Manufacturing of foam for upholstery (ceased)
Kinsale Road Landfill	W0012-03 (Waste)	200m – East	Landfill (former use) Civic Amenity Site (current use)
Galco Limited	P0391-01 (IE)	500m – Southwest	Hot Dip Galvanising
Forge Hill Recycling Unlimited Company	W0291-02 (Waste)	1km – Southwest	Commercial waste recovery
Brooks Haughton Limited	P0343-01 (IPC)	1.1km – Southwest	N/A (This license no longer relates to an Industrial Emissions Directive activity)
ESB	P0578-03 (IE)	2.7km – Northeast	Power Generation Station
Cork University Hospital	W0038 (Waste)	2.7km – West	Waste (License surrendered)

18.6 Potential Effects

18.6.1 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.

18.6.2 Construction Phase

Eight 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	- 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)

18.6.3 Operational Phase

Five 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 operational traffic

18.6.4 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

18.6.5 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 18.9**.

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 18.9: 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	3	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 compounds. 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 "unlikely".	2	Contamination of watercourses would result in 'Limited' consequence as it could lead to a '*limited number of people affected' and simple contamination with localised effects of short duration'.* Excessive amounts of silt and suspended solids can cause fish kill.	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 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 unlikely) could result in high levels of silt and sediment entering the water body could 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 requirements are in place prior to commencement of works.	3	In the event of an explosion/ fire the consequence would be 'Serious' in that there is the potential for *significant number of peopled in affected area impacted with multiple fatalities (>5), multiple serious or extensive injuries and large number of peopled 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;					
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	2	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 'very unlikely'.	2	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 that the closest Seveso site is >2km away, the consequence is deemed to be '*limited*'	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. Prior to the commencement of works the contractor will prepare a Construction Traffic Management Plan which will designate traffic routes, timings and parking arrangements to ensure separation of construction traffic from onsite personnel. 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	Considering the location of site utilities and infrastructure are well known the likelihood of unplanned outage / disruption to site services is "very unlikely" 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.	2	On the basis that in the event of a power-outage on site, an emergency response plan would be in place and back up 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 and implemented by the contractor to ensure designated traffic routes are in place for construction traffic, members of the public and on-site personnel. The CTMP is a live document and will be updated as the different phases of the proposed development progress. The likelihood of such an incident occurring during construction is considered 'unlikely'.	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 hospitalisation and medical treatment required.	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)
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 CMP dairy site, it is a possibility that un-surveyed Asbestos Containing Materials may be unearthed during construction works. However, given standard measures that will be in place to mitigate this risk, it 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
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	Wastewater arising from the proposed development will connect into the relevant drainage channel. Surface water will tie in with the existing drainage system. In the event exceedances are detected diversion measures will be in place, therefore the likelihood of contamination of watercourses occurring as a result of the operation of the proposed development is considered 'very unlikely'.	2	Contamination of watercourses would result in 'Limited' consequence as it could lead to a '*limited number of people affected' and simple contamination with localised effects of short duration'.*	4
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 damage to infrastructure during construction, it could cause injury and/or fatality in an extreme case.	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	- Damage to, or depletion of habitats and species (incl. aquatic habitats and species); - Contamination of groundwater resources;	2	A fire and/or explosion during the operational phase is considered "very 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.	8

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)
		- Formation / ignition of explosive atmosphere	- 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;					
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	2	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 ‘very unlikely’.	2	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”.* However, the closest Seveso site to the proposed development is over 2km away. On this basis, the consequence is considered to be ‘limited’	4
Op5	Vehicle collisions on site	- Failure of vehicular operations. - Increase in operational traffic	- 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
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	2	Similar to the construction phase, the decommissioning phase of the proposed development, a decommissioning environmental management plan will be prepared for the decommissioning phase, similar to the CEMP The likelihood of a spill or leak resulting in contamination of water bodies or soil is “unlikely”.	2	Contamination of watercourses would result in ‘Limited’ consequence as it could lead to a ‘limited number of people affected’ and simple contamination with localised effects of short duration’.	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)
			- Contamination of soils, which would have to be remediated or removed as waste					
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, a decommissioning environmental management plan will be prepared for the decommissioning phase, similar to the CEMP. Employees will be trained in pollution prevention and control.	3	If extreme weather events caused damage to infrastructure during construction, it could cause injury and/or fatality in an extreme case.	3
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;	- 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; - Generation of waste, as damaged equipment would have to be disposed of;	1	The quantities of flammable or explosive materials on site, which could leak or spill, during the decommissioning phase will be very limited, and will be confined to the Contractors Compound. All fire suppressant water will be diverted. Therefore, a fire and/or explosion during the decommissioning phase is considered “extremely unlikely”.	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.	4
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	- Injury or loss of life - Destruction of property and/or infrastructure - Damage to terrestrial / aquatic life	2	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	2	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 that the closest Seveso site is >2km away, the consequence is deemed to be ‘limited’	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)
		- Sabotage/arson leading to ignition of fuel and/or explosion	- Impact on air quality associated with emissions		an incident occurring during decommissioning is considered 'very unlikely'.			
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. 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"	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 serious injuries with hospitalisation and medical treatment required*	4

18.6.6 Risk Scores and Risk Matrix

The risk assessment in **Table 18.10** categorises each of the potential risks by their 'risk score.'

Table 18.10 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	3	2	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.	2	2	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
Op1	Contamination of water courses - surface and ground water	2	2	4
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)	2	4	8
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.	2	2	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)
D1	Contamination of waterbodies, groundwater and surface water	2	2	4
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	4	4
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.	2	2	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 18.11** 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 18.11**, all the potential risks identified during the construction, operation and decommissioning of the proposed development can be classified as low to medium risk.

Table 18.11: Risk Matrix

Likelihood Rating							
	Very likely	5					
	Likely	4		OP3			
	Unlikely	3		C1, OP2			
	Very unlikely	2		C4, C6, OP1, OP4, OP5, D1, D4, D7	C2, C3, C5, C7, C8, D5		
	Extremely Unlikely	1		D6	D2	D3	
			Minor	Limited	Serious	Very Serious	Catastrophic
			1	2	3	4	5
			Consequence Rating				

18.6.7 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 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.

18.7 Mitigation Measures and Monitoring

18.7.1 Mitigation

18.7.2 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.

As outlined in **Table 18.10 and Table 18.11** all potential risks identified during the construction phase were determined to be 'low risk scenarios'. In addition to the CEMP prepared as part of the proposed development (Appendix 5.1), a detailed CEMP will be prepared by the contractor and implemented throughout the works. The CEMP will be a live document and continuously updated to ensure the potential risks of major accidents and disasters are identified, avoided and mitigated as necessary.

18.7.3 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 18.10** and illustrated in **Table 18.11** all potential risks identified during the operational phase were determined to be 'low risk scenarios' with the exception of a 'fire/explosion' which was classified as a 'medium risk scenario'.

Fire

The fire risk mitigation for the project 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.

As outlined in the Part B (Fire Safety) of the Building Regulations Compliance Report included with this planning application, the measures will include inter alia:

- All non-residential occupancies (with the exception of the undercroft carpark and retail unit) will be of Purpose Group 5 “Assembly and Recreation” classification. These units such as the crèche, café and community facilities are situated at ground floor level in buildings throughout the scheme with independent exits direct to the open air;
- Open plan units (Buildings B, C, E, F and J) will comply with the provisions of Section 1.6 and Diagram 9A(b) in respect of bedrooms being accessed from an open kitchen/living area;
- The provision of a sprinkler installation complying with BS 9251:2021 to include additional enhancements as required under Section 1.8 of Technical Guidance Document B has been incorporated in the design;
- All apartments at upper floor levels will be accessed via common stairway enclosures and common corridors. The common corridors will be provided with smoke control systems in the form of AOV shafts. All AOV shafts have been designed as natural smoke shafts in compliance with Section 1.7.3. Mechanical ventilation is not proposed for any common corridor;
- Due to the height of a number of the buildings stairway enclosures are designed as firefighting shafts. The design of the firefighting shafts incorporates a ventilated firefighting lobby which is independent of a corridor with apartment access. All ventilation of firefighting shafts will be by natural means;
- The material selected for the internal linings will comply with the provisions of Section 2 of Technical Guidance Document B;
- The standard of fire resistance being provided will comply with the requirements of Table A2 of Technical Guidance Document B;
- The compartment size of all non-residential occupancies such as the café, community hub etc comply with the size limitations outlined in Table 3.1 of Technical Guidance Document B;
- The ventilation of heat and smoke from the carpark will be by natural means in accordance with Section 3.5.2.4 of Technical Guidance Document B. Ventilation will be provided around the perimeter of the carpark, the ventilation will be natural ventilation and will equate to 2.5% of the floor area of the carpark;
- On positioning the various buildings on site an assessment of the unprotected openings in the building facades was undertaken with reference to BRE 187 : 2014. The location of all buildings on site taking account of both notional and site boundary conditions complies with BRE 187 : 2014 in relation to the extent of unprotected openings in the facades;
- The majority of the buildings will have a façade height of greater than 18m and in this regard the external wall build up has been designed to incorporate

non-combustible insulation where external walls do not comply with Diagram 17 of Technical Guidance Document B;

- The provision of firefighting shafts in all buildings with a top floor height of 20m or more, Buildings C, E and F. The design of the firefighting shafts will comply with the provisions of BS 5588 Part 5 : 2004 and Section 5.3 of Technical Guidance Document B in particular to incorporate the requirement to provide a ventilated firefighting lobby that does not have direct access to any residential units. The ventilation of firefighting shafts will be by natural means.

18.7.4 Monitoring

18.7.4.1 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.

18.7.4.2 Monitoring during Operation

No additional monitoring is considered necessary during the operational phase of the proposed development.

18.8 Cumulative Effects

18.8.1 Primary Care Centre

Permission for a Primary Care Centre which is located on the Tramore Road side of the proposed development has been sought by Watfore Limited under a separate planning application.

The development will consist of the construction of a Primary Care Centre (c.7,767m^2), of principally 4 storeys and part 7 storeys in height above ground, to include a ground floor pharmacy (c. 289m^2); modifications to the existing entrance/exit from Tramore Road and an upgrade of the Kinsale Road/Mick Barry Road junction; 98no. car parking spaces (57no. undercroft spaces and 41no. surface spaces); bike store; all ancillary plant and facilities, including a substation; and all site development, drainage and landscaping works, including a town square.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

As such, no significant cumulative effects are predicted.

18.9 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 or operation.

18.10 References

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

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

Environmental Protection Agency (2014) Guidance on Assessing and Costing Environmental Liabilities. Available from: https://www.epa.ie/pubs/advice/licensee/EPA_OEE%20Guidance%20and%20Assessing%20WEB.pdf

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Government of Ireland (2006) A Framework for Major Emergency Management. Available from: http://mem.ie/wp-content/uploads/2015/05/A-Framework-For-Major-Emergency-Management.pdf

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National University of Ireland Maynooth (2019) Airo Mapping – Environmental Sensitivities. Available from: http://airomaps.nuim.ie/id/ESM/?mobileBreakPoint=400/ [Accessed February 2022]

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 Primary Care Centre

An application for planning permission for a Primary Care Centre, which will be located in the north-western part of the wider development site, is being submitted to Cork City Council by Watfore Ltd, in tandem with the lodgement of the proposed Strategic Housing Development consent application to An Bord Pleanála. It is anticipated that the provision of this Primary Care Centre will bring people to the town square.

The proposed development will consist of a Primary Care Centre, of principally 4 storeys and part 7 storeys in height over ground, to include a ground floor pharmacy; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

As the proposed planning boundary of the Primary Care Centre overlaps with the proposed development, it is anticipated that there may be cumulative effects from the two developments. These potential cumulative effects will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

Potential impacts are addressed in the individual assessment chapters. A summary of the main potential cumulative impacts are summarised below.

Traffic and Transportation

The impact of the proposed Primary Care Centre was taken into consideration in the Traffic and Transportation assessment by regarding it as latent development and therefore formed part of the baseline traffic.

The conclusion of the assessment stated the combined effects of the construction works are not predicted to be significant as construction traffic to and from the proposed development site will be temporary and carried out in accordance with a robust Construction Traffic Management Plan (CTMP). The CTMP will ensure that effects on the local road network are minimised.

The proposed development and the proposed Primary Care Centre will permanently generate additional vehicles on the road network in the local vicinity, however the impact is not predicted to be significant.

Refer to **Chapter 7** *Traffic and Transportation* for further details.

Townscape and Visual

The cumulative effects on townscape and visual in respect of the adjacent Primary Care Centre site are found to be Medium and Neutral in quality.

For further details, refer to **Chapter 12** *Townscape and Visual.*

Photomontages showing the cumulative effects of the proposed Primary Care Centre and the proposed development are included as **Appendix 12.1**.

Site Infrastructure and Water Quality

Construction of the Primary Care Centre is anticipated to occur within Phase 1 of the proposed development, within the planned 3-year timeline (this is subject to the planning application outcome). During this time, the retail, town square and ancillary site development works including underground services, pavement upgrade works, surface car parking and landscaping works will be carried out.

Although the proposed development will be constructed at the same time as the Primary Care Centre, 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 hydrology or material assets is slight and short-term.

No cumulative effects during the operational phase are predicted.

19.3.3 Other Developments

A review was carried out to identify other existing and/or approved projects, taking into account any existing environmental issues relating to areas of particular importance likely to be affected or the use of natural resources. The 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.

Several road/ transport infrastructure schemes have been identified within the surrounding area of the proposed development site, which are currently at either planning/design or construction phase. These include:

- **Lehenaghmore Road Improvement Scheme**, which will provide improved transport infrastructure between Lehenaghmore and the broader city. Construction will commence in Q3 2022.
- **Grange Road to Tramore Valley Park Pedestrian & Cycle Link** will include the construction of a new Cycle and Pedestrian route connecting the Grange Road to the Tramore Valley Park. Site clearance works have commenced and is expected for completion by early 2023.

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**. It is concluded that 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 or the proposed development and in particular the Construction Traffic Management Plan (due to the nature of the projects identified above).

19.3.5 Potential Cumulative Effects During Operation

The proposed development is strategically located within Cork City and is close to a large number of employment, shopping and community facilities which are within walking and cycling distance.

The proposed development along with the road improvement schemes mentioned above will have a positive impact on the local road network by promoting active travel in the area by improving the infrastructure and by increasing the viability of existing and planned public transport in the area.

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.

Table 19.1 presents the potential interactions between the environmental factors in a matrix format. It examines the potential for the environmental factor or issue in the left-hand column to have an impact on the environmental factor listed in the top row of the matrix as a result of the proposed development. As discussed above, there 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 **Table 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.

The effects matrix examines the potential for the environmental effect in the left-hand column to have an interactive or indirect effect on the environmental medium listed in the top row of the matrix.

If there is the potential for an effect during the construction, this is indicated by a ‘C’.

An ‘O’ indicates the potential for an effect during the operational phase.

‘CO’ indicates the potential for an effect during construction and/or operational phases.

If there is considered to be no potential for an effect, this is indicated by ‘-‘.

Table 19.1: Potential Interactions

Key Environmental Interaction Matrix	Traffic and Transportation	Air Quality and Climate	Noise and Vibration	Biodiversity	Archaeology, Architectural and Cultural Heritage	Townscape and Visual	Land, Soils, Geology and Hydrogeology	Water	Resource and Waste Management	Population and Human Health	Material Assets	Major Accidents and Disasters
Traffic and Transportation		CO	CO	-	-	-	-	-	-	CO	-	-
Air Quality and Climate				-	-	-	-	-	-	CO	-	-
Noise and Vibration	-	-		CO	-	-	-	-	-	CO	-	-
Biodiversity	-	-	-		-	CO	-	-	-	-	-	-
Archaeology, Architectural and Cultural Heritage	-	-	-	-			-	-	-	-	-	-
Townscape and Visual	-	-	-	-	-		-	-	-	CO	-	-
Land, Soils, Geology and Hydrogeology	C	C	C	-	-	C		C	C	C	-	-
Water		-	-	-	-	-	-		-	-	-	-
Resource and Waste Management	CO	-	-	-	-	-	-	-		-	-	-

Key Environmental Interaction Matrix	Traffic and Transportation	Air Quality and Climate	Noise and Vibration	Biodiversity	Archaeology, Architectural and Cultural Heritage	Townscape and Visual	Land, Soils, Geology and Hydrogeology	Water	Resource and Waste Management	Population and Human Health	Material Assets	Major Accidents and Disasters
Population and Human Health	O	-	-	-	-	-	-	-	-		-	-
Material Assets	-	CO	C		C	-	C	CO	-	-		-
Major Accidents and Disasters	-	-	-	-	-		-	CO	CO	-	-	

19.4.2 Potential Interactions

The potential effects of noise and vibration during construction and operation on human health and biodiversity are addressed in **Chapter 9** *Noise and Vibration* and **Chapter 10** *Biodiversity*. Mitigation measures are proposed to ensure there will not be a significant effect. Similarly, the potential for air quality impacts during construction are addressed in **Chapter 8** *Air Quality and Climate* and **Chapter 5** *Construction Strategy*.

Controls on emissions to water and groundwater are described in **Chapter 5** *Construction Strategy*, **Chapter 13** *Land, Soils, Geology and Hydrogeology* and **Chapter 14** *Water*. **Chapter 12** *Townscape and Visual* addresses the potential townscape and visual effects of the proposed development in relation to a range of other environmental topics, including *Archaeology*, *Architectural and Cultural Heritage* and the residential amenity for the *Population and Human Health*. (**Chapters 11** and **16** respectively). **Chapter 7** *Traffic and Transportation* describes the predicted effect of the proposed development on local traffic and road infrastructure. Other effects of increased traffic are considered in **Chapter 8** *Air Quality and Climate* and **Chapter 9** *Noise and Vibration.*

Chapter 17 *Material Assets* addresses the potential effects of the proposed development on local assets such as land use and infrastructure.

No other interactive effects of environmental significance have been identified.

No significant negative interactive effects are predicted.

19.5 References

An Bord Pleanála (2020) Strategic Housing Developments. Available at: http://www.pleanala.ie/shd/applications/index.htm

An Bord Pleanála (2020) Strategic Infrastructure Developments. Available at: http://www.pleanala.ie/lists/2018/sid/index.htm

Cork County Council (2021) Search for a Planning Application Available at: http://planning.corkcoco.ie/ePlan/SearchTypes=

Department of Housing, Planning and Local Government (2020) EIA Portal. Available at: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1

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).

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 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.

The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- During very dry periods when dust generation is likely, construction areas will be sprayed with water.
- Scaffolding will be erected around the site during construction along with hoardings at ground level. Mesh netting will be erected around the scaffolding during construction if necessary as a mitigation measure to minimise dust emissions from the site.
- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery.
- Vehicle speeds will be limited in the construction site.
- Surrounding roads used by trucks to access to and egress from the site will be cleaned regularly using an approved mechanical road sweeper. Roads will be cleaned subject to local authority requirements. Site roads will be cleaned on a daily basis, or more regularly, as required.
- Wheel-wash facilities will be provided with rumble grids to remove excess mud from wheels. These facilities will be located at the exit from the site and away from sensitive receptors, where possible.

The technique adopted for all works shall minimise the release of dust into the atmosphere.

Daily visual inspections will be carried out at locations around the site boundary as required. These inspections will monitor the effectiveness of dust mitigation measures.

20.2.1.2 Debris

The following are some of the measures that will be taken to ensure that the site and surroundings are maintained to a high standard of cleanliness:

- 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.

- 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.

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.

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.

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

20.2.1.4 Soil and Water

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off or groundwater. 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.

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

- 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.
- 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.
- 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.
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land.
- Minimise the use of cleaning chemicals.
- Use trigger-operated spray guns, with automatic water-supply cut-off.
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt.
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference.

The above measures will be implemented, as appropriate along with the following site-specific measures:

- 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, on an impermeable base away from drains or watercourses.
- 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.
- Silt traps will be located around the site to collect run off, with settled solids removed regularly and water recycled and reused where possible.
- 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.
- Bypass petrol 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.
- Any contaminated material encountered that requires disposal off-site will be managed and disposed of in accordance with all relevant waste management legislation, to appropriately licensed sites.

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

General

Waste generated during the construction phase will be carefully managed according to the accepted waste hierarchy which gives precedence to prevention, minimisation, reuse and recycling over disposal with energy recovery and finally disposal to landfill.

This hierarchy will be implemented by identifying opportunities to firstly prevent waste from being produced, and secondly minimise the amount of waste produced. Where prevention and minimisation will not be feasible, ways to reuse or recycle waste will be sought, preferably on-site to avoid the impacts arising from transportation. If this is not feasible, opportunities to reuse or recycle the waste off-site will be investigated. If this is not feasible, then waste will be sent to an energy recovery facility, and only where there is no alternative, will waste be disposed of to landfill. To achieve this, existing waste management programmes and networks will be used such as the National Waste Prevention Programme (implemented by the Environmental Protection Agency).

All waste removed from the site will be collected only by contractors with valid waste collection permits (under the Waste Management (Collection Permit) Regulations 2001 as amended). All facilities to which waste will be taken will be audited in advance, to ensure that they have appropriate waste licences or permits allowing them to accept the type of waste that is to be sent there (under the Waste Management Act 1996 as amended by the Protection of the Environment Act 2003, and the regulations thereunder). Hazardous waste generation will be minimised, and such waste will be recovered where feasible, and only disposed of if recovery is not feasible. Hazardous waste – including any asbestos-containing materials – will be managed in accordance with the relevant hazardous waste regulations. Any asbestos-containing materials will be disposed of in accordance with appropriate legislation by a qualified and certified specialist contractor.

Waste Arisings

In general, construction waste materials which will arise during the project include demolition waste, general construction debris, piling arisings, scrap timber and steel, machinery oils and chemical cleaning solutions and standard compound waste. The practice of excessive purchase of materials and equipment to allow for anticipated wastage will be avoided.

Typically, and where possible, excavated material that is unsuitable for use as backfill will be re-used on site as non-structural fill material. There will be arising material mainly from the bulk excavations and piling works for the buildings,

ducting and chambers, drainage and attenuation tanks. Excavated soil (including contaminated soils) which is not re-used will be recovered or disposed of to an appropriate permitted and/or licensed waste facility in accordance with the relevant waste legislation and requirements.

Asbestos Containing Materials (ACMs) were identified in a previous asbestos survey and during standard geo environmental sampling undertaken as part of site investigation works at the proposed development site. A formal asbestos audit will therefore be undertaken prior to any demolition and excavation works. Any asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit. Further details have been included in **Section 20.2.2.7.**

Waste Management Plan for the Construction Phase

An outline site-specific waste management plan will form part of the CEMP (**Appendix 5.1**). The Contractor will be required to further develop, implement and maintain this plan during the construction works. A senior manager will be responsible for the waste management plan. The manager will be competent in waste management, and will receive training, where necessary, such as the Solas Construction and Demolition Waste Management module.

The key principles underlying the plan will be to minimise waste generation and to segregate waste at source. The measures to achieve these aims include:

- Ordering of appropriate quantities of materials, with a just-in-time philosophy.
- Immediate and careful storage of materials delivered to the site.
- Storing materials which are vulnerable to damage by rain under cover and raised above the ground.
- Careful handling of materials, using appropriate equipment, to avoid undue damage.
- Designation of separate storage areas for different types of waste, in order to maximise the reuse and recycling potential of the waste.

The contractor will take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the construction phase:

- Source Segregation: Where possible, metal, timber, glass and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- 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.
- Material Management: ‘Just in time’ delivery will be used so far as is reasonably practicable to minimise material wastage.
- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving the site during the demolition works. 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 disposed of.
- 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.
- The contractor will ensure that any off site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.

Waste storage areas will be set up to handle incoming waste from construction activities. These will be designed to facilitate the segregation of key waste streams to maximise the opportunity to re-use, recycle and return wastes generated on site. The segregated waste will be placed in skip containers. Waste will be placed in the skips in such a way as to minimise ‘empty’ space. The skips will be labelled to clearly highlight the waste stream for each skip. As a minimum skips and containers will be provided for segregating the following key waste streams:

- Mixed metal
- Timber
- General waste
- Packaging
- Hazardous.

Hazardous waste will be kept in a secure area away from other wastes to ensure no contamination takes place. Separate areas within the waste storage areas shall also be allocated for the storage of plastic piping awaiting return to supplier, waste tyres and WEEE (where applicable).

Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licensed facility.

The waste management plan will be updated to outline how residual waste will be handled as follows:

- The identification of disposal sites.
- The identification of quantities to be excavated and disposed of and classification of this material.
- The identification of measures to prevent nuisance, etc.
- The identification of the amounts intended to be stored temporarily on site and the location of such storage.
- The contractor's approach to waste management.
- The names, roles, responsibilities, and authority of the key personnel involved in the waste management.

The plan will include documented procedures for dealing with waste management including liaison with third parties, statutory undertakers and other companies

The plan will meet the requirements of the voluntary initiative by the construction industry. The National Construction and Demolition Waste Council (NCDWC) prepared these requirements. The NCDWC has been established by the Forum for the Construction Industry.

20.2.1.7 Construction Traffic

Construction mitigation measures in relation to traffic are discussed in **Section 20.2.2** below.

20.2.2 Construction Mitigation Measures (Assessment Chapters)

20.2.2.1 Traffic and Transportation

Construction Traffic Management Plan

A Construction Traffic Management Plan has been prepared and is included with this application. The Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

The CTMP provides details of intended construction practices for the development, including:

- A one way in and out system will be developed where construction traffic enters the site at the Tramore Road access and exits at the Kinsale Road access;
- Location of materials compound(s) including area(s) identified for the storage of construction refuse;
- Location of areas for construction site offices and staff facilities;
- Details of site security fencing and hoardings;

- Details of on-site car parking facilities for site workers during the course of construction;
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;
- Measures to obviate queuing of construction traffic on the adjoining road network;
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works;
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
- Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
- Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil; and
- Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.

Overview

The potential temporary impacts of the scheme on the road network are as follows:

- Temporary impacts during construction due to the excavation of materials in order to facilitate construction, and the associated movements of excavation vehicles;
- Temporary impacts associated with the importing of construction materials to the works areas, and the relevant movements of delivery and construction vehicles and construction workforce;
- Construction staff commuting to and from the construction compounds; and
- General service traffic associated with construction activities (i.e. plant deliveries, visitors, traffic between compounds and working areas, etc.)

Traffic Generation from Proposed Scheme

The level of construction traffic associated with the proposed development will vary over the course of the construction programme. It is envisaged that construction will take place in four phases, starting at the northern part of the site with phase 1 and gradually moving towards the south as the remaining construction phases commences.

Although both applications, the Strategic Housing development and the Primary Care Centre site boundaries overlap, they are separate applications, and it is assumed for the purpose of this CTMP that both applications will be granted planning permission and therefore that the construction of each development will occur concurrently.

Heavy and Light Construction Vehicles

The movements of HCVs and LCVs 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.

Refer to **Chapter 7** *Traffic and Transportation* for details of the predicted traffic impact of the construction phases of the proposed development.

Workforce

The most intensive phase of construction for workforce numbers is also the fit-out and landscaping phases, when a total of 250 construction personnel are expected to be on site per day. Due to the site benefiting from bus services in the vicinity and 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.

Construction hours are expected to be from 08:00-18:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. This can be done by agreeing with Cork County Council that site personnel should arrive before or after peak hour traffic. The prevailing peak hours should be determined closer to the time of construction by carrying out new link counts or by reviewing traffic data collected by permanent counting stations on the N40 and the N27.

Envisaged Construction Equipment

Construction equipment and vehicles required for each construction element/operation will be delivered to site by appropriate vehicles. Specific equipment and vehicles which are deemed to be required for the proposed development by the principal contactor, suppliers and staff are to be confirmed and included in the updated CTMP, prior to the commencement of construction.

Matters to be Addressed in More Detail

The contractor will be required to ensure that the contents of this CTMP are further developed prior to the commencement of works. The contractor will implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the CTMP. The updated CTMP will address the following issues:

- Site/works area access and egress;
- Traffic management signage;
- Timings of material deliveries to site;
- Traffic management speed limits;
- Road cleaning;
- Vehicle cleaning;
- Road condition;
- Road closures;
- Enforcement of traffic management plan;
- Emergency procedures during construction; and
- Communication.

These items are explained in detail in the CTMP which has been included the CEMP (**Appendix 5.1**) to this EIAR.

20.2.2.2 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 is provided in **Chapter 5** *Construction Strategy*.

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

- The Construction Traffic Management Plan 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.

20.2.2.3 Noise and Vibration

The 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 will also be implemented, where relevant and 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 2.4m 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.

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 Tramore River 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 in **Chapter 14** *Water* 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 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)**.

Invasive Species

In addition to the possible advance treatment works and pre-construction survey, when the works areas become available to the contractor for fencing and commencement of site clearance, areas identified as requiring specific invasive species treatment will be demarcated and the designated control measures implemented at the earliest possible stage to reduce the risk of spread along the proposed development or beyond the land take.

There are a number of management options that may be implemented to control and prevent the spread of invasive species. Those involved in the application of herbicides/pesticides will be competent to do so and will have sufficient experience and knowledge in the area of herbicides/pesticides application.

All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

As noted in **Chapter 10** *Biodiversity*, there is no statutory obligation to remove Buddleia and Himalayan Honeysuckle. However, all invasive species will be removed via mechanical movement and herbicide treatment prior to the commencement of construction. Further detail on this in included in **Appendix 5.1** Invasive Species Management Plan (ISMP) as appended to the CEMP.

20.2.2.5 Archaeology, Architecture and Cultural Heritage

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by a record, i.e. written and photographic record will be made.

20.2.2.6 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.

During construction works, measures such as site hoardings and cleaning roads to remove any track out will be undertaken to reduce temporary effects on visual amenity.

The proposed remedial measures relate to implementation of appropriate site management procedures – such as the control of site lighting, delivery of materials and site boundary hoarding to minimise impacts on receptors in the vicinity of the site.

20.2.2.7 Land, Soils, Geology and Hydrogeology

During the construction phase it was highlighted that without mitigation spills of fuels or chemicals could lead to a moderate to significant impact on water quality in the limestone aquifer. The CEMP (**Appendix 5.1**) includes a number of standard practices that can mitigate any potential impacts, including:

- 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;
- 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;
- Use trigger-operated spray guns, with automatic water-supply cut-off.
- 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.
- 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.

Implementation of the above measures will reduce the potential effect to negligible hence the impact on the aquifer will be imperceptible.

Exposure of site workers to soil contamination and air borne 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 members of the public in the vicinity of the site 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.

Removal of soil from site

Across a large area the cumulative loss of soil from numerous construction sites could have a significant impact on the availability of engineering materials. To mitigate against this, 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).

The made ground is unlikely to be suitable for re-use under current environmental regulations. However, the natural soils will be suitable. Dependant on the volume that can be reused the significance of the impact could be reduced to moderate or slight.

20.2.2.8 Water

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

- 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;
- A designated bunded refuelling area on an impermeable surface will be provided at a minimum distance of 15m away from any watercourse. No vehicles will be left unattended when refuelling;
- Dedicated fuel storage areas will be introduced on-site which will be a minimum of 15m from watercourses or drains or, alternatively, fuelling will take place offsite;
- 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;
- Oily water associated with construction activities will pass through an oil separator before discharging into the surface water drainage system which discharges into the local watercourse to the west of the site;
- 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;
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land;
- Minimise the use of cleaning chemicals;
- Use trigger-operated spray guns, with automatic water-supply cut-off;
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt;

- 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, on an impermeable base away from drains or watercourses;
- 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;
- Silt traps will be located around the site to collect run off, with settled solids removed regularly and water recycled and reused where possible; 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, 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;
- 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.

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.

Flooding

No construction materials or temporary stockpiles will be stored in flood plains or in areas which would impede flood flow paths.

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.

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 45,920m^3 of made ground and subsoil. The historical use of this site suggests that there is limited potential to encounter contaminated land when undertaking these groundworks and undercroft car park excavations.

Should the removal of any of this material be necessary, it will require removal offsite for appropriate reuse, recovery, recycling and/or disposal.

A planned approach to waste management and adherence to the site-specific Construction and Demolition Resource and Waste Management Plan (**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.

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; and
- 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.

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.

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.
- Any asbestos encountered will be removed in accordance with the relevant legislation and disposed of by specialist contractors to an appropriately licenced facility.
- 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.

20.2.2.11 Material Assets

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

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/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 update CTMP as included in **Appendix 5.1** CEMP, which will be agreed with Watfore 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.

As outlined in **Chapter 18** *Major Accidents and Disasters,* all potential risks identified during the construction phase were determined to be ‘low risk scenarios’. In addition to the CEMP prepared as part of the proposed development (**Appendix 5.1**), a detailed CEMP will be prepared by the contractor and implemented throughout the works. The CEMP will be a live document and continuously updated to ensure the potential risks of major accidents and disasters are identified, avoided and mitigated as necessary.

20.2.3 Operational Mitigation Measures

20.2.3.1 Traffic and Transportation

The traffic signals at the junction between Kinsale Road and Mick Barry Road will have to be reconfigured to accommodate the new traffic arm. The impact of the development on the operational phase will be non-significant. There is however a concern that vehicles exiting the proposed development will struggle to enter the vehicle queues during peak hour periods. To mitigate this impact, it is proposed that yellow boxes are provided on Tramore Road opposite the access to ensure that there is space for vehicles exiting the site to join the vehicle queue on Tramore Road.

To limit the number of cars visiting the proposed development, limited car parking spaces are provided for the development to operate with. This is a measure that would encourage residents and other users of the site to make use of public transport, walking and cycling.

Generous pedestrian walkways are provided on the ground floor level of the proposed development. These walkways connect buildings with one another through landscaped areas. The site is highly permeable from both Kinsale Road and Tramore Road to further encourage walking and cycling as viable modes of transport.

The buildings on the site have been set back along Kinsale Road to provide generous space to accommodate wide walking and cycling routes along the length of the road and to accommodate the future BusConnects route currently proposed.

Following the occupation of the residential dwelling units, a detailed Mobility Management Plan will be prepared. At this stage, it is not possible to prepare a full MMP as there is no management body for the operation of the development available yet. It is however important to set out the aims and potential contents of such a Plan. This section outlines therefore the framework on which an MMP for the development will be based upon once the development is operational.

MMP Manager/ Co-ordinator

A mobility Manager / Travel Co-ordinator will be appointed at the development by the management company. It is envisaged that the management company will oversee the implementation of the Mobility Management Plan including the Mobility Manager and can update the plan regularly following feedback from staff and residents of the development once occupied.

The duties of the Mobility Manager will include inter alia:

- Conducting travel surveys at regular intervals once the development is completed and operational. These surveys will provide detailed and up-to-date information on travel habits which can be used to develop new strategies that encourage travel by alternate modes;
- Implementation of various schemes / plans aimed at encouraging the uptake of more sustainable means of travel;

- Acting as an information point;
- Negotiating with public transport companies and other service providers;
- Setting up and administering registers for particular measures such as taxis if the need arises;
- Branding of the plan; and
- Ongoing promotion and marketing of the plan through various mediums.

Travel Surveys

Six months after the first phase of the development is fully operational, a travel survey will be carried out to establish travel trends within the complex and to identify measures to further promote access by alternative means. This will allow baseline travel patterns to be established, targets to be set and be a forum for staff to comment on any issues relating to their commute.

Transport Information

Information on sustainable travel options for residents will be provided to the local area.

A transport pack will be provided to each resident and will include information on nearby public transport routes and journey times, and other transport options, such as GoCar and taxis.

Cycle and Pedestrian Facilities

The Mobility Manager will continue to promote cycling through various schemes and promotions which may include:

- Bike to Work Week;
- Cycle safety training;
- Site visits from trained mechanics to check / repair bikes;
- Discounts on bikes and accessories from various stores;
- On-site pool bike scheme; and
- Provision of high visibility vests.

The Mobility Manager will also investigate the possibility of setting up a ‘buddy cycle database’ where people choosing to begin cycling to and from work can get in touch and travel with more experienced cyclists with the aim of increasing confidence and safety. Further schemes such as the Cycle to Work Scheme will also be continually promoted bat the development.

Similarly walking will also be promoted through various schemes such as the Pedometer Challenge, as part of the Smarter Travel to Workplace programme.

Bicycle Parking

The proposed development includes a large number of bicycle parking bays (1,141 spaces) and these spaces will be actively managed by the facility

management team to ensure any abandoned bikes are removed and recirculated. The MMP coordinator will also facility feedback from the cycle community to identify any improvements which can be implemented on site to improve cycle usage.

Car Parking Management

Restricting access to car parking has the greatest impact on reducing travel by private car and encouraging use of alternative travel means.

The current proposal includes the provision of 209 car park spaces. The car parking spaces included in the development will be actively managed by the facility management team. Spaces available will be offered as an option with the purchase of an apartment / townhouse. The number of spaces available for purchase will be limited. Spaces for purchase will be proportionately available to the number of residential units available in each development phase. Parking will include wheelchair accessible spaces and car sharing spaces.

Car Sharing

The Mobility Manager will ensure that car sharing would be promoted via schemes such as encouraging the use of existing car sharing services, an action which forms part of the Smarter Travel Workplaces programme. Residents will be able to avail of this service in order to get in contact with other people who are travelling to and from similar destinations with the aim of sharing the costs and increasing the number of people travelling as passengers.

The car sharing company GoCar, or similar will have access to some car parking spaces located within the basement car parks. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents' access to a car without the need for a personal car. The Mobility Manager will liaise regularly with the car sharing service provided to ensure the needs of the residents are being met in this regard.

Taxis also provide an opportunity for people who require the flexibility of car travel while also removing the requirement to commute by car. Information on local taxi services will be provided and the possibility of negotiating deals/discounts with providers will also be investigated by the Mobility Manager.

Bus Use

The Mobility Manager will encourage and facilitate the use of the numerous existing bus facilities operating in the local area and any future services that may come on-stream, particularly Bus Connects. Timetables and information on routes, ticket prices etc. will be kept on hand at all times and made available.

The Mobility Manager will also promote and distribute information on any special tickets available such as tax-saver tickets, integrated ticket systems etc. on an ongoing basis. All information will be updated on a regular basis, with workers/residents being informed of any changes/disruptions to services.

The Mobility Manager will also keep in contact with all bus service providers working in the area with the aim of improving/creating new services locally where

possible. Furthermore, the possibility of having local service providers set up onsite at various times in order to promote their services and any special offers available will also be investigated.

Use of Technology

Recent advancements in technology present a number of additional opportunities in relation to encouraging positive modal shift. As part of this MMP residents will be informed of a variety of potentially useful tools including the following:

- The NTA / TII Journey Planner
- Public Transport Providers
- RealTime Ireland

Further details on the above tools have been included in **Chapter 7** *Traffic and Transportation*

20.2.3.2 Air Quality and Climate

Operational 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 and car sharing schemes to reduce the reliance on private motor vehicles. These measures will contribute towards reducing potential traffic emissions during operation of the proposed development.

Odours

Due to the proposed pumping station's proximity to both residential units (Blocks B, I and J) and public realm areas, the design has incorporated the following features to ensure minimal disturbance and odours during operation:

- The pumping station will be carefully located/configured to ensure the distance between access covers linked to the wet well and nearby dwellings is at least 15m. Covers will be double sealed to prevent odour escape.
- The landscaping design will consider the requirement for the pumping station to ensure the above ground features (e.g., control kiosk) are screened as best possible while still maintaining adequate access for operations/maintenance.
- The wet well will be circular and will incorporate steep benching to promote self-cleansing of the flow into the wet well and reduce the risk of solids settling out on the benching itself.
- The vent stack from the wet well will be taken to roof level of the nearest building and will be fitted with an activated carbon filter. Furthermore, an additional vent stack will be provided at the highest point on the gravity network and will similarly be vented to building roof level and fitted with a filter. It is anticipated that specialist design input will be sought to design the venting system.

- The pumps themselves will be 2 No. Flygt Concertor XPC configured duty/standby. This specific pump is proposed due its following features:
    - Self-monitoring functionality
    - Built in/automatic sump and pipe cleaning to reduce odour and maintenance
    - Automatic clog detection and integrated pump cleaning functions to ensure clog-free operation.
    - It can come with a smaller/simplified control kiosk design to reduce visual intrusion on surrounding landscaping.

The foul water scheme has been designed in line with Irish Water Code of Practice Section 5.11. It is intended this pumping station will be taken in charge by Irish Water.

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:

- A Building Energy Rating (BER) certificate will be provided for each apartment, duplex apartment and duplex townhouse, to provide detail of the energy performance and carbon emissions associated with each of the dwellings;
- Building Fabric Efficiency will be implemented to reduce heat loss;
- Energy-efficient lighting will be implemented;
- Max flow rates and volumes for showers and baths to reduce water consumption; and
- White goods provided by the developer will be have a high energy rating.

In addition, the following Low Energy / Carbon and Renewable Energy Solutions are also being considered for the proposed development:

- Use of Exhaust Air Heat Pumps (EAHP) to conserve energy;
- Condensing gas boilers which have a higher operating efficiency than standard boilers.
- Mechanical ventilation heat recovery to minimise associated energy use;
- Photovoltaic (PV) panels will be used to generate electricity and contribute towards the Near Zero Energy Building requirements and other regulations; and
- E-CAR Charging Points to cater future E-Car demand of residents.

Wind

The following mitigation measures will be implemented, should predicted wind conditions exceed the threshold:

- Landscaping: the use of vegetation to protect buildings from wind;
- Sculptural screening (solid or porous): to either deflect the wind or bleed the wind by removing its energy; and
- Canopies and Wind gutters: horizontal canopies are used to deflect the wind and redirect the wind around the building and above the canopy.

Daylight and Sunlight

The design, layout and separation distances of the building blocks have been designed to optimize the ingress of natural daylight/ sunlight to the proposed dwellings and provide good levels of natural light. This will reduce the running costs of the proposed development by reducing the reliance on artificial lighting.

20.2.3.3 Noise and Vibration

Noisy equipment will be housed within acoustic enclosures which will limit noise breakout to atmosphere. Noise levels from plant and equipment will be minimised to remain within CIBSE guidelines.

20.2.3.4 Biodiversity

No mitigation measures were identified for the operational phase of the proposed development.

20.2.3.5 Archaeology, Architecture and Cultural Heritage

No mitigation measures were identified for the operational phase of the proposed development.

20.2.3.6 Townscape and Visual

Mitigation by design was carried out during the design development process.

The development has been designed to deliver a high-quality residential development town square in response to the zoning of the site. The primary objective has been to deliver attractive and safe neighbourhoods with excellent amenities for residents. The development will have distinctive landmark qualities and will provide a new pedestrian/cyclist boulevard along Kinsale Road which will significantly improve connectivity to and from the city centre. Remedial mitigation includes a comprehensive tree planting programme to mitigate the loss of existing site boundary trees and scrub willow.

20.2.3.7 Land, Soils, Geology and Hydrogeology

No mitigation is required as no impacts were identified for the operational phase of the proposed development.

20.2.3.8 Water

The following mitigation measures will be employed during the operational phase of the proposed development:

- Surface water from the proposed residential areas, town square and Primary Care Centre (subject of separate planning application) will be captured by a new drainage network for the site.
- Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to ensure safe discharge into the receiving waters.
- Measures will be put in place to ensure that foul water will be managed appropriately.
- The applicant will engage with Irish Water to ensure that there will be a sufficient water supply to the proposed development site.
- Grease traps will be installed where required within the wastewater drainage system to prevent water contamination from fats, oils and greases (FOGs).

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**) will be prepared which will provide 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

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 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' except for a 'fire/explosion' which was classified as a 'medium risk scenario'.

Fire

The fire risk mitigation for the project 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.

As outlined in the Part B (Fire Safety) of the Building Regulations Compliance Report included with this planning application, the measures will include inter alia:

- All non-residential occupancies (with the exception of the undercroft carpark and retail unit) will be of Purpose Group 5 "Assembly and Recreation" classification. These units such as the crèche, café and community facilities are situated at ground floor level in buildings throughout the scheme with independent exits direct to the open air;
- Open plan units (Buildings B, C, E, F and J) will comply with the provisions of Section 1.6 and Diagram 9A(b) in respect of bedrooms being accessed from an open kitchen/living area;

- The provision of a sprinkler installation complying with BS 9251:2021 to include additional enhancements as required under Section 1.8 of Technical Guidance Document B has been incorporated in the design;
- All apartments at upper floor levels will be accessed via common stairway enclosures and common corridors. The common corridors will be provided with smoke control systems in the form of AOV shafts. All AOV shafts have been designed as natural smoke shafts in compliance with Section 1.7.3. Mechanical ventilation is not proposed for any common corridor;
- Due to the height of a number of the buildings stairway enclosures are designed as firefighting shafts. The design of the firefighting shafts incorporates a ventilated firefighting lobby which is independent of a corridor with apartment access. All ventilation of firefighting shafts will be by natural means;
- The material selected for the internal linings will comply with the provisions of Section 2 of Technical Guidance Document B;
- The standard of fire resistance being provided will comply with the requirements of Table A2 of Technical Guidance Document B;
- The compartment size of all non-residential occupancies such as the café, community hub etc comply with the size limitations outlined in Table 3.1 of Technical Guidance Document B;
- The ventilation of heat and smoke from the carpark will be by natural means in accordance with Section 3.5.2.4 of Technical Guidance Document B. Ventilation will be provided around the perimeter of the carpark, the ventilation will be natural ventilation and will equate to 2.5% of the floor area of the carpark;
- On positioning the various buildings on site an assessment of the unprotected openings in the building facades was undertaken with reference to BRE 187 : 2014. The location of all buildings on site taking account of both notional and site boundary conditions complies with BRE 187 : 2014 in relation to the extent of unprotected openings in the facades;
- The majority of the buildings will have a façade height of greater than 18m and in this regard the external wall build up has been designed to incorporate non-combustible insulation where external walls do not comply with Diagram 17 of Technical Guidance Document B;
- The provision of firefighting shafts in all buildings with a top floor height of 20m or more, Buildings C, E and F. The design of the firefighting shafts will comply with the provisions of BS 5588 Part 5 : 2004 and Section 5.3 of Technical Guidance Document B in particular to incorporate the requirement to provide a ventilated firefighting lobby that does not have direct access to any residential units. The ventilation of firefighting shafts will be by natural means.

20.3 Summary of Monitoring (Construction and Operation)

20.3.1.1 Traffic and Transportation

Construction Phase

The effectiveness of the construction traffic management plan will be continually monitored to ensure the effects on traffic flows and road users on the surrounding road network are minimised and additional mitigation measures are introduced as required to assist where necessary. The monitoring regime will consider all modes of traffic including pedestrians, cyclists and public transport.

Operation Phase

A critical part of any MMP is ongoing monitoring by the management company. It is proposed that an initial evaluation of the operation of the plan will take place 6 months into its operation. The plan will be appropriately adjusted at that stage based on the results.

The MMP will be monitored and regularly reviewed on a minimum yearly basis with regular travel surveys being carried out. The plan will be refined based on experience, new data and consultations with respective stakeholders.

Decommissioning Phase

The monitoring measures described for the construction phase, updated to reflect best practice at the time, will be implemented for the decommissioning phase.

20.3.1.2 Air Quality and Climate

Construction Phase

Dust monitoring will be undertaken at a range of nearest sensitive receptors during the construction phase. The TA Luft[3] dust deposition limit values of 350 mg/m²/day (averaged over one year) will be applied as a 30-day average.

Operational Phase

As outlined in **Section 20.2.1.1,** the traffic will be monitored through the continual review of the CTMP and MMP.

Potential odours will be minimised through the monitoring and maintenance of the pumping station, which has self-monitoring functionality.

20.3.1.3 Noise and Vibration

Construction

Monitoring of typical levels of noise and vibration during critical periods and at sensitive locations for comparison with limits and background levels will be carried out during the construction phase.

20.3.1.4 Biodiversity

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 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 details on-site inspections and audits are included in the **CEMP** (**Appendix 5.1**).

20.3.1.5 Archaeology, Architecture and Cultural Heritage

It is possible that remnant remains of the former Cork to Macroom railway line exist beneath hard standing at the southern end of the site.

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made.

20.3.1.6 Townscape and Visual

No monitoring is proposed in relation to townscape and visual impacts.

20.3.1.7 Land, Soils, Geology and Hydrogeology

Construction Phase

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 ensure 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

The best practice water management measures outlined in **Section 20.2.2.8** will be implemented during the construction phase. In addition, in line with best practice measures and in accordance with CIRIA guidance, a monitoring

regime/programme for water quality will be put in place during the construction phase.

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

Construction

Monitoring required as part of the CEMP as set out in **Appendix 5.1**, in relation to waste management will be undertaken and recorded by the Contractor(s).

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, service providers will continue to be consulted throughout the design and construction processes.

20.3.1.12 Major Accidents and Disasters

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.

Monitoring during Operation

No additional monitoring is considered necessary during the operational phase of the proposed development.

20.4 Residual Effects

Residual effects have been identified in the assessment chapters outlined below.

20.4.1.1 Traffic and Transportation

Construction Phase

The residual effects of the construction works are predicted to be not significant as construction traffic to and from the site will be temporary and carried out in accordance with the robust CTMP. The CTMP will ensure that effects on the local road network during construction are minimised. This CTMP will be updated by the Contractor, prior to the commencement of construction.

All areas where temporary works are required will be restored to their existing condition.

Operational Phase

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. In addition, with the proposed development being strategically located within walking and cycling distance of a vast number of employment, shopping and community facilities, this contributes to an improved city form by reducing the need for long distance travel and also contributes to increasing the viability of existing and planned public transport within the area.

Decommissioning Phase

The decommissioning phase will require less extensive works than the construction phase but will nevertheless require similar mitigation measures. Residual effects, similar to the construction phase, are predicted to be not significant.

20.4.1.2 Air Quality and Climate

Construction Phase

Following the implementation of the mitigation measures outlined in **Section 20.2**, no significant impacts on air quality or climate are predicted during the construction phase.

Operational Phase

No significant impacts on air quality or climate are predicted during the operational phase.

20.4.1.3 Noise and Vibration

Construction Phase

There will be temporary slight to moderate noise impacts intermittently at the closest commercial receptors for a period of up to a month during the initial concrete breaking activity.

Operational Phase

No significant noise and vibration impacts are predicted during the operational phase.

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). There will be no perceptible effect on habitats within the Douglas River Estuary pNHA or any other NHA/pNHA.

The residual effects on habitats at the proposed development site will be imperceptible.

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

There will be a net loss of foraging habitat for bats, birds and invertebrate species. Impacts from loss of habitat will be localised, long-term and slight.

No significant effect due to habitat fragmentation or significant effects on commuting routes for fauna will occur. Impacts on fauna will be localised, long-term and slight.

The impact on birds due to collision during operation will be localised long-term and negligible.

Other plans 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 this application, concluded the proposed development will not pose a significant risk to SCI species within the Cork Harbour SPA.

20.4.1.5 Archaeology, Architecture and Cultural Heritage

The proposed development site has already been subjected to extensive ground reduction thereby negating the presence of any archaeological finds or features on the site. The CCDP (2015-2021) and NIAH do not list any protected structures or features of architectural merit within the proposed development site. Any remnant

remains of the former Cork to Macroom Railway line which ran through the southern end of the site will be preserved by record.

There will be no likely significant residual effects on the archaeological, architectural or cultural heritage arising from the construction and operation of the proposed development.

20.4.1.6 Townscape and Visual

Residual impacts associated with the proposed development relate to the scale and height of the buildings which will remain visible in views locally. The buildings will be evident in the local landscape into the future which would be expected for developments of this scale and massing with landmark elements. The extent of residual effect will reduce as the tree avenue along Kinsale Road matures.

Landscape effects

As described in **Chapter 12** *Townscape and Visual*, internally and externally, the proposed development will constitute a significant intervention in the local suburban landscape which will change the character of the site and influence the character of the locality. The proposed development site will be transformed from its redundant condition to a residential neighbourhood and town square.

The landscape effect is considered to be **significant,** on the site and its immediate vicinity. The overall quality effect on landscape will be **beneficial** reflecting the delivery of an attractive and vibrant neighbourhood.

Visual Effects

As described in **Chapter 12** *Townscape and Visual*, visual effects vary from No Change to Very Significant.

The large number of neutral effects recorded, nineteen in total, reflects the capacity of the site and locality to accommodate development of this scale without adversely affecting landscape or visual quality.

Beneficial outcomes associated with the development relate to the delivery distinctiveness, sense of place, quality of materials and finishes and green infrastructure in the form of specimen tree planting along adjoining roads.

There are no protected views or prospects affected by the proposed development and there are no overshadowing or overlooking issues arising in respect of residential properties in the vicinity of the site (the nearest residential property to the site is approx. 170m to the west along Tramore Road).

The nature and quality of the residual effects is set out in further detail in **Chapter 12** *Townscape and Visual*.

20.4.1.7 Land, Soils, Geology and Hydrogeology

Construction Phase

With the implementation of the proposed mitigation measures and monitoring during construction, as outlined in **Section 20.2.2.7 and Section 20.3.2.7**, the effect of the proposed development on land and soils is considered to be of negligible magnitude and imperceptible significance during construction phase.

Operational Phase

No residual effects of significance on land and soils were identified during the operational phase.

20.4.1.8 Water

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

20.4.1.9 Resource and Waste Management

Following the implementation of the mitigation measures described in **Section 20.2,** 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.

20.4.1.10 Population and Human Health

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.

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.

Following the implementation of these mitigation measures there will be no significant residual effects on population and human health:

- Following implementation of the mitigation measures as detailed in the CEMP e.g., spraying of exposed earthwork activities, stockpiles and site haul roads during dry weather; sweeping of hard surface roads etc the residual effect of dust is not significant.

- To minimise the effects of noise on human health, abatement measures such as the provision of acoustic barriers, standard working hours, site representatives and noise minimisation will be provided. Following implementation of such mitigation measures the residual effect is predicted to be not significant.
- With the implementation of the Construction Traffic Management Plan the residual effect of traffic is predicted to be intermittent, temporary and slight.

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

Following implementation of mitigation measures outlined in **Section 20.2,** no significant negative effects on land-use or utility services are predicted.

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 or operation.