



**COAKLEY O'NEILL**  
town planning

# **Environmental Impact Assessment Report (EIAR)**

Strategic Housing Development at  
Kilbarry on the Old Whitechurch Road, Cork City

## **Volume I – Non Technical Summary**

Prepared in June 2022 on behalf of



**CORK COUNTY GAA BOARD**

Coakley O'Neill Town Planning Ltd.



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## KILBARRY SHD – VOL I - NON-TECHNICAL SUMMARY

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## 1.0 Introduction

This is the non-technical summary of the environmental impact assessment report (EIAR) for the Kilbarry SHD, 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. The location of the proposed development is outlined in Figure 1.1.

The subject site is located to the northeast of Cork City Centre, and measures c. 15.52ha in area. The lands comprise open fields under grass, scrub, and gorse with established boundaries. An old hurling manufacturing factory lies derelict at the western side.



**Figure 1. Site Location (site generally outlined in red)**

The lands are bounded to their north by the Glennamought River and Valley. Here, the lands slope steeply down to the river and informal walking paths are evident. To the east, the lands are bounded by the Delaney's GAA grounds. Along the southern boundary is an old roadway running between the GAA club and the Old Whitechurch Road. Further to the south, and to the southeast beyond the GAA grounds, lie IDA employment lands within the Kilbarry Business and Technology Park. Cork City Council's Whitechurch LIHAF development lands are to the immediate southwest of the site.

## 2.0 Planning Process

As the proposed development comprises a residential development of 319no. units, a planning application will be made direct to An Bord Pleanála.

The proposed development requires the preparation of a mandatory EIAR.

The developer/applicant is the Cork County GAA Board., and the competent authority is An Bord Pleanála.

A Natura Impact Assessment has also been prepared in respect of the proposed development.

## 3.0 Consultation

Consultation has been undertaken with a range of stakeholders during the preparation of the EIAR and planning application, including:

- Cork City Council
- An Bord Pleanála
- Department of Housing, Planning and Local Government
- Arts Council
- Fáilte Ireland
- Minister for Culture, Heritage, and the Gaeltacht (National Monuments and Nature Conservation)
- An Taisce
- Inland Fisheries
- Transport Infrastructure Ireland (TII)
- Irish Water
- Heritage Council
- HSE
- Minister for Communications, Climate Action, and Environment, and
- Irish Aviation Authority (IAA)

Issues discussed with Cork City Council and An Bord Pleanála during the formal pre-application consultation phase included: response to site zoning objectives, rationale for the density proposed; visual impact; impact on services; requirement for childcare; public and private open space, the route of the proposed Northern Distributor Road and general traffic impacts.

Formal responses to consultation were received from TII, HSE, Department of the Environment, Climate and Communications, the Department of Tourism, and Inland Fisheries Ireland. Copies of formal responses are attached at Appendix 1.1 of Volume III of this EIAR.



#### 4.0 Background and Need for the Proposed Development

The applicants' vision for the proposed development site can be summarised as follows:

- To create a high quality residential development that supports the intensification of Cork City in a sustainable location within the city development boundary, served by public transport and facilities nearby.
- To utilise an adequately residential zoned site to provide much needed housing units in Cork City.
- To secure the high level of objectives promoting the growth of the northside to help spatially rebalance development in the city of Cork.

The need for the proposed development is premised on:

- National policy drivers which underline the requirement for a significant uplift in population in Ireland's urban centres, including Cork,.
- The critical need for new housing supply within urban centres such as Cork to address the national housing crisis.

The need for new residential development in Cork City and the wider Cork Metropolitan Area is self-evident, as is the obligation to make the most efficient use of zoned land in the existing built-up area of Cork City.

The proposed development will also contribute towards the achievement of the target of an average of 33,000 homes per year set out in the Government's 'Housing for All Plan'.

#### 5.0 Alternatives

A 'Do Nothing' scenario will perpetuate the current deficit in the supply of housing in Cork City.

The EIA Guidelines note that some projects may be "site specific" so the consideration of alternative sites may not be relevant or warranted.

The entire site, which is located in the built-up area of Cork City, is zoned for residential development under the new Cork City Development Plan 2022-2028, as was the case for the majority of the site in the previously applicable Cobh Municipal District Local Area Plan 2017. As such, it is considered that the site is entirely suitable for the nature of the development as proposed in the application.

There is the alternative option of developing more housing in the rural towns and villages outside Cork City. However, it is considered that rural villages and locations within and outside the Metropolitan Cork Greenbelt would not facilitate residential development proposals of scale to achieve the target population uplift for Cork City as envisaged in national policy. From an environmental perspective, there is potential for significant adverse impacts arising from water (lack of services) and transportation (lack of alternatives to the private car) in this alternative option. This option will also result in a less efficient use of land with

lower densities (to meet market requirements for more family housing on relatively large plots), and there would be building height constraints.

In this context, the proposed development site is, therefore, the preferred location from an environmental perspective.

Principal environmental considerations in the consideration of alternative layouts and designs included private amenity space and communal amenity space, permeability and connections, height of the proposed development, impacts on visual amenity, sunlight, daylight and overshadowing and transportation, up to the formalisation of the final scheme, which is now being submitted to An Bord Pleanála for approval.

## **6.0 Proposed Development**

The proposed development will consist of a strategic housing development of 319no. residential dwellings which will comprise 85no. two and three-storey semi-detached units (17no. 4-bed units and 68no. 3-bed units), 118no. two and three-storey terraced units (8no. 4-bed units, 60no. 3-bed units and 50no. 2-bed units), 53no. three-storey duplex units (26no. 1-bed units, 25no. 2-bed units and 2no. 3-bed units) and 63no. apartments in 3no. part 4 storey and part 5-storey blocks (15no. 1-bed units and 48no. 2-bed units). The development also includes the provision of a two-storey crèche facility (519sqm) and a riverside amenity park to the north and northeast of the site. The proposed total gross floor area is c. 33,738.70sqm.

The proposed development will also consist of the demolition of a disused single-storey hurley manufacturing factory and associated out buildings, the removal and replacement of the southern and eastern boundary treatments, as well the creation of formalised walking paths to replace the informal walking paths located to the north of the site, a new through road from the proposed site access on the Old Whitechurch Road to Delaney's GAA Grounds and accessing the Upper Dublin Hill Road, with associated new boundary treatments at Delaney's GAA club, all associated ancillary site development and hard and soft landscaping works, to include the provision of private, communal and public open space, waste storage areas, bicycle and car parking, including EV and disabled parking, 4no. ESB substations, groundworks, foul drainage works, stormwater drainage proposals including directional drilling for the stormwater outfall, water supply proposals, public lighting, and all new boundary treatments.



Figure 2. Proposed Development (DMNA Architects)

The construction of the proposed development will be completed in three phases, with the first phase of 109 units serviceable without the requirement for infrastructure upgrades outside of the site by Irish Water. The second and third phases of the development will include approximately 105 units in each phase, subject to final detailed agreement with the Local Authority and utility providers.

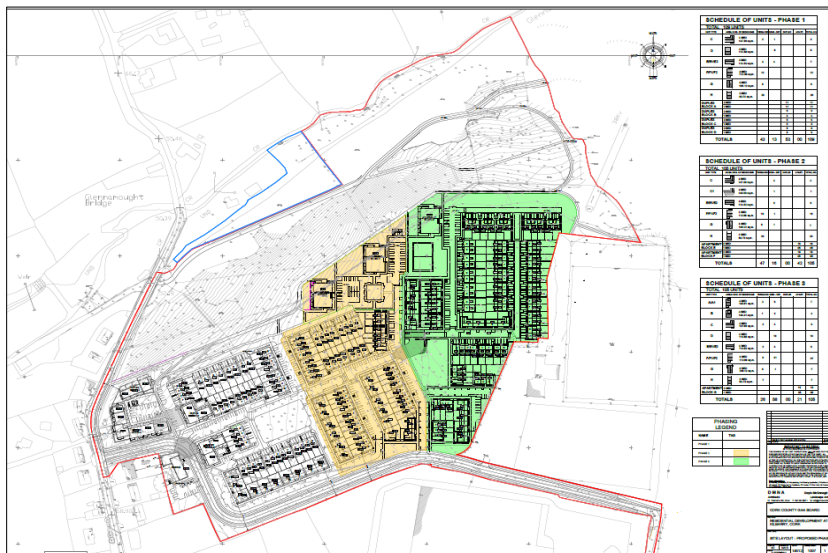


Figure 3. Proposed Phasing Plan (DMNA Architects)

It is estimated that the proposed phases will take 36 months to complete, with approximately 12 months construction for each of three phases. A Construction and Environmental Management Plan, prepared by JB Barry Consulting Engineers, outlining the process is included with the planning application.

Proposed roads, houses, apartments and the crèche will be developed as close to existing ground levels as is possible. However, given the relatively steep existing topography and the need to achieve reasonable longitudinal gradients along roads and Part M access into residential units and the crèche, it will be necessary to excavate and fill across the site to achieve acceptable levels. The design of the development will balance the extent of cut and fill, in so far as practically achievable, to ensure that there is not a significant surplus or deficit of material required.

Prior to any Phase 1 construction works being carried out, the proposed development will initially involve some site clearance, the demolition of existing, disused commercial buildings and stone houses structures and earthworks in order to clear and grade the site to accommodate the construction of all associated engineering works and subsequently the building foundations.

Development will commence at the western side of the site adjoining the Old Whitechurch and move across to the site's eastern side and the boundary with Delaney's GAA Club.

#### Phase 1

Phase 1 of the proposed development is to comprise the construction of 109no. residential units at the western side of the site, adjoining the Old Whitechurch Road. These units are the comprise:

- 3no. Type C 4-bed dwellings, each 137.69sqm in area
- 8no. Type D 3-bed dwellings, each 114.68sqm in area
- 7no. Types E/E1/E2 3-bed dwellings, each 114.52sqm in area
- 12no. Type F/F1/F2 3-bed dwellings, each 112.96sqm in area
- 6 no. Type G 3-bed dwellings, each 109.12sqm in area
- 20no. Type H 2-bed dwellings, each 83.73sqm in area
- 4no. duplex blocks comprising
  - Block A: 11no. 1-bed units and 11no. 2-bed units
  - Block B: 4no. 1-bed units and 5no. 2-bed units
  - Block C: 5no. 1-bed units and 5no. 2-bed units
  - Block D: 6no. 1-bed units and 6no. 2-bed units

The phase will include the construction of the east-west distributor roadway along the site's southern boundary. This phase will also see the construction of the community crèche and associated parking adjacent the roadway.

This phase also incorporates the development of a public park in the area of the Glennamought River along the northern side of the site, which will form part of a wider parkland area along the river corridor once adjoining areas are developed. While the park terrain here is too severe to accommodate active play in terms of games, it is proposed to provide walking and bicycle routes in excess of 2kms. Mown turf open space areas for passive recreation are to be provided where the slope condition is least severe and where more severely sloped, it is proposed to accommodate a range of woodland and open meadows with long

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and short grass management interspersed with parkland specimen tree planting to keep the landscape sufficiently open to view.

### Phase 2

Phase 2 comprises the central area of the site and is to comprise the construction of 105no. residential units. These units are the comprise:

- 4no. Type C 4-bed dwellings, each 137.69sqm in area
- 1no. Type C1 4-bed dwelling, 149.50sqm in area
- 9no. Types E/E1/E2 3-bed dwellings, each 114.52sqm in area
- 19no. Type F/F1/F2 3-bed dwellings, each 112.96sqm in area
- 7 no. Type G 3-bed dwellings, each 109.12sqm in area
- 23no. Type H 2-bed dwellings, each 83.73sqm in area
- 2no. apartment blocks comprising
  - Block E: 5no. 1-bed units and 16no. 2-bed units
  - Block F: 5no. 1-bed units and 16no. 2-bed units

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### Phase 3

Phase 3 comprises the eastern area of the site and is to comprise the construction of 105no. residential units. These units are the comprise:

- 7no. A/A1 4-bed dwellings, each 146.91sqm in area
- 4no. Type B 4-bed dwellings, each 146.31sqm in area
- 6no. Type C 4-bed dwellings, each 137.69sqm in area
- 10no. Type D 3-bed dwellings, each 114.68sqm in area
- 6no. Types E/E1/E2 3-bed dwellings, each 114.52sqm in area
- 37no. Type F/F1/F2 3-bed dwellings, each 112.96sqm in area
- 7 no. Type G 3-bed dwellings, each 109.12sqm in area
- 7no. Type H 2-bed dwellings, each 83.73sqm in area
- 1no. apartment block comprising
  - Block G: 5no. 1-bed units and 16no. 2-bed units

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Figure 4. View from Delaneys GAA Car park



Figure 5. View from Old Whitechurch Road 1



Figure 6. View from Old Whitechurch Road 2

### Key Development Statistics

A detailed floorspace schedule is set out in the Housing Quality Assessment prepared by DMNA Architects and submitted with the planning application in their Architectural Design Statement. The principal development statistics are as follows:

Development Statistic	Proposed Development
<b>Site Area</b>	15.52ha
<b>Gross Demolition Area</b>	695sqm
<b>No. Residential Units</b>	319 No. residential units, to include: <ul style="list-style-type: none"> <li>• 85 no. semi detached</li> <li>• 118 no. terraced</li> <li>• 53 no. duplex units</li> <li>• 63 no. apartments</li> </ul>
<b>Gross Floor Area</b>	33,738.70m <sup>2</sup> to include: <ul style="list-style-type: none"> <li>• 33,199.70m<sup>2</sup> residential</li> <li>• 539m<sup>2</sup> crèche and substations</li> </ul>
<b>Building Height</b>	House Types A/A1/B – 3 Storeys House Types C/C1/D/E/E1/E2/F/F1/F2/G/H/J – 2 Storeys Duplex Blocks A/B/C/D – 3 Storeys Apartment Blocks E/F/G – 5 Storeys Crèche – 2 Storeys
<b>Resident Support Facilities</b>	Crèche – 519 m <sup>2</sup>
<b>Resident External Amenity Space</b>	Total Open Space Provision on overall lands – 7.051ha (45%) Total Active Open Space on overall lands – 2.777ha (18%) Active Open Space within developable area 1.22ha (14%)
<b>Part V</b>	64no. units, as follows: <ul style="list-style-type: none"> <li>• 8no. Type F/F1/F2 Terrace Units</li> <li>• 2no. Type F/F1/F2 Semi-Detached Units</li> <li>• 2no. Type G Terrace Units</li> <li>• 10no. Type H Terrace Units</li> <li>• 32no. 2-bed Apartments</li> <li>• 10no. 1-bed Apartments</li> </ul>
<b>Plot Ratio</b>	0.41
<b>Site Coverage</b>	17%
<b>Residential Density</b>	38.77 units/ha on developable area
<b>Aspect</b>	100% of Duplex Units benefit from dual aspect 81% of apartments benefit from dual aspect
<b>Cycle Spaces</b>	124no. cycle spaces
<b>Motorbike Spaces</b>	12no. parking spaces
<b>Car Spaces</b>	534no. parking spaces
<b>Substations (4no.)</b>	20m <sup>2</sup> (in total)

Table 1. Key Development Statistics



## 7.0 Construction Strategy

A Construction and Environmental Management Plan (CEMP) has been prepared as part of the planning application.

The applicant/developer will be responsible for ensuring that an appropriate Environmental Management Framework is adhered to, that competent parties are appointed to undertake construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

The construction of the development will include the construction and completion of 319 no. residential dwellings comprising of 85no. semi-detached units, 118no. terraced units, 53no. duplex units and 63no. apartments. The development also includes the provision of a crèche facility and a riverside amenity park to the north and northeast of the site and associated site development works and all ancillary works.

Prior to any Phase 1 construction works being carried out, the proposed development will initially involve some site clearance, the demolition of existing, disused commercial buildings and stone houses structures and earthworks in order to clear and grade the site to accommodate the construction of all associated engineering works and subsequently the building foundations.

To develop the site, the following works will be required to be carried out:

- Provision of a temporary construction access from the Old Whitechurch Road and the Upper Dublin Hill Road into the site, provision of a safe and secure site compound including welfare facilities for workers and the erection of temporary boundary fencing.
- Measures, including temporary fencing, to reduce the potential risk of impacts to retained trees, the butterfly habitat area and open space areas in the northern sector of the site.
- Fencing to protect the Marsh Fritillary habitat area in the north-west sector of the site
- Creation of a storage area for surplus plant and materials.
- Creation of a site batch concrete area.
- Installation of silt fencing and creation of silt traps to the north of the construction area of the site to prevent construction runoff towards natural vegetation, the butterfly habitat area and the Glenamought River watercourse.
- Demolition of existing commercial and stone buildings and sheds.
- Trenching for underground services including foul sewer, surface water drainage including attenuation and outfall pipework, water mains, gas, telecommunications, electricity, and lighting.
- Construction and connection of underground services to existing underground services, principally connections to the Old Whitechurch Road.
- Surface water connection will be made to the existing Glenamought River on the northern boundary of the site. This outfall pipe will require to be directionally-drilled under the Marsh Fritillary habitat area to avoid impact on that habitat. This will involve the use of a specialist contractor. The final outfall to the river will be constructed as an open channel through existing vegetated areas to ensure minimum environmental impact.
- Watermain connections will be made to the existing watermain in Old Whitechurch Road.
- Foul sewer connection will be made to the existing foul sewer in Old Whitechurch Road.

- No dwelling unit will be occupied prior to the completion of an approved foul sewer connection and no hard-standing area will be completed without the final surface water outfall being in place.
- Excavation and concrete works for strip and pad footing foundations.
- Piling to some blocks, in areas of previously-placed fill, likely to be bored piles with in-situ concrete and rebar infilling.
- Construction of the apartment buildings and houses, likely to be constructed in reinforced-concrete frames and timber frames respectively, and construction of all plant and storage areas.
- Construction of ancillary site works including the provision of 4 substations, outdoor amenity areas, landscaping, car parking spaces, motorbike spaces, bicycle parking spaces, bin stores, public lighting, and all supporting site development works.
- Erection of permanent boundary fencing, landscaping, and lighting.

For later phases of the development, foul sewers and watermains on Old Whitechurch Road will have to be upsized to serve the proposed development. This work will be carried out by Irish Water and specific construction controls will be put in place by Irish Water and their contractors for this work. The details of this work and the associated construction controls will be a matter for later detailed agreement between Irish Water and Cork City Council but will involve traffic management and traffic controls on Old Whitechurch Road to facilitate safe construction while facilitating existing traffic.

It is estimated that the full construction of the development will take 36 months to complete, with approximately 12 months construction for each of three phases.

It is envisaged that normal working hours will be between 7:00am and 6:00pm, Monday to Friday and 8:00am to 2:00pm on Saturdays

The proposed construction site compound is located off south-east corner of the site via the existing road which serves the Delaneys GAA complex and the existing IDA lands to the south-east and which links to Upper Dublin Hill further to the east. The site was previously accessed off the Old Whitechurch Road. The proposed development is approximately 620m from the junction with Upper Dublin Hill and is immediately adjacent to the Old Whitechurch Road to the west. These two entrances will be the main access points from the wider road network and will form the preferred haulage route to/from the site in agreement with Cork City Council.

It is anticipated that heavy goods vehicles, HGVs, will be restricted to off-peak times on the local road network to reduce the impact on the road network during the morning and evening peaks. It is expected that HGV movements and general deliveries will otherwise arrive/leave throughout the day at a steady rate.

The level of construction traffic throughout the working day is expected to be low to moderate, the highest volume of vehicles is expected when workers arrive to and leave work.

Deliveries and HGV movement numbers are expected to be low to moderate and evenly spread throughout the day. A competent traffic co-ordinator and banksmen will be appointed by the contractor

to oversee the control measures which will be implemented as part of the final CTMP to reduce the risks associated with construction traffic.

## 8.0 Planning Policy

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 (2021)
- 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)
- Design Manual for Urban Roads and Streets (2013)
- Guidelines for Planning Authorities on Childcare Facilities (2001)
- 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 2022-2028

National Planning Framework (NPF) under Project Ireland 2040, is the overarching policy and planning framework for the social, economic, and cultural development of the country. One of the ultimate objectives of the NPF is to guide the country in future developments with the need to creating jobs and providing housing.

Section 2.2 on "Ireland's Cities" notes that the NPF supports:

*"...ambitious growth targets to enable the four cities of Cork, Limerick, Galway, and Waterford to each grow by at least 50% to 2040 and to enhance their significant potential to become cities of scale".*

Section 2.2 also emphasises the need for compact growth,

*"...making better use of under-utilised land and buildings, including 'infill', 'brownfield' and publicly owned sites and vacant and under-occupied buildings, with higher housing and job densities, better serviced by existing facilities and public transport".*

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.

The proposed development aligns with the objectives of the NPF in that it will:

- contribute to the target of an additional 340,000-380,000 people in the Southern Region (NPO 1b)
- deliver future population growth in Cork City (NPO 2a)
- assist in delivering at least 50% of all new homes within the existing built-up footprint of Cork (NPO 3b)
- assist in creating an attractive, liveable, well-designed, high quality urban place (NPO 4)
- assist in enabling Cork City to compete internationally and to be a driver of national and regional growth (NPO 5)
- encourage more people and generate more activity within Cork City (NPO 11)
- provide a well-designed high quality development in an urban area without compromising public safety or the environment (NPO 13) and
- provide new homes at a location that can support sustainable development, that is of an appropriate scale relative to its location (NPO 33)

As such, the proposed development is fully supported by the NPF.

In line with the Cork Metropolitan Area Strategic Plan 2020, the proposed development:

- will strengthen the role of the Cork Metropolitan Area as an international location of scale and the primary driver of population growth in the Southern Region (MASP1)
- will make a significant contribution to the regeneration of the Kilbarry area of the northside city (MASP2)
- will support the case for the reopening of the Blackpool/Kilbarry Rial Station through the provision of new residential populations (MASP8)

Having regard to the objectives of the Cork City Development Plan 2022-2028, the proposed development aligns with the Plan objectives in the following ways:

- Will comply with the Z0 1 Sustainable Residential Neighbourhoods zoning objective for the site. Will comply with Z0 15 Open Space objective through the provision of a public park.
- 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.
- Will support the objectives of the Cork MASP.

- Aligns with the objectives of CMATS, particularly in terms of the opening of the Blackpool/Kilbarry Rail Station, BusConnects and walking and cycling routes and infrastructure, including the proposed Northern Distributor Road.
- Will contribute to the realisation of a 15-minute neighbourhood in the Kilbarry area that is walkable and permeable, with a high degree of passive surveillance designed into the scheme.
- 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 Kilbarry area of the northside.
- 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.

## 9.0 Traffic and Transportation

To assess the impact of the proposed development on the local road network, an examination of the existing traffic flows in the area was carried out. The aim of Traffic and Transportation Assessment carried out was to identify the characteristics of the site of the proposed development and surrounding area, examine the likely transport implications, ensure sustainable accessibility is maximised and appropriate infrastructure provided to accommodate the proposed development.

A total of 3 no. turning count surveys were undertaken as part of the study on Tuesday 5th April 2022, on Dublin Hill, the Old Whitechurch Road and in Blackpool Village. These surveys were carried out simultaneously using video cameras at each of the junctions for a 12-hour period.

The following junctions were identified as the key junctions in the area surrounding the proposed development and were assessed on this basis.

- Junction 1: Access Road junction with Old Whitechurch Road
- Junction 2: Old Whitechurch Rd./ Old Mallow Rd.
- Junction 3: Redforge Rd./ Dublin Hill
- Junction 4: Kilbarry Enterprise Centre Rd./ Upper Dublin Hill
- Junction 5: Upper Dublin Hill/ Lower Dublin Hill

The publication of the CMATS (Cork Metropolitan Area Transport Study) document proposes major upgrades to public transport provision to serve the City Public Transport Network. These measures will contribute to an expected increase in modal shift towards sustainable travel resulting in a reduction in traffic generation from residential developments.

As part of the assessment, allowance was made for a modal shift of 40% (current sustainable travel usage in the area as per 2016 census was 19%) for development traffic only, in the Design Year 2040. This represents a 21% increase in modal shift over current levels and has been applied to 'new development traffic' only. The use of an increased modal shift for development traffic is justified based on the expected

increase in public transport options available in the vicinity of the development brought on by BusConnects and the proposed infrastructure improvements per CMATS.

The route for a proposed Northern Distributor Road is included within CMATS and extends in very close proximity to the development site.

Per the Cork Metropolitan Area Transport Strategy (CMATS), future road infrastructural projects such as the Northern Distributor Road and the Outer Ring Road will have a fundamental effect on traffic in this area, including within the development. The completion of these road projects, in close proximity to the development, will allow for the continued expansion of BusConnects services creating a greater supply for the transport needs of the residents. In addition, CMATS proposes the development of the Kilbarry Train Station which will provide a direct link to the city centre and to further afield.

The following mitigation measures are proposed to further reduce the traffic impact of the development.

- To encourage bicycle usage, the development includes 124 no. bicycle parking spaces, provided as internal bike storage areas in each of the 3 apartments Blocks E, F and G, covered bike storage for the 4 duplex blocks, and additional bike storage at the crèche.
- The proposed development includes pedestrian access to the existing footpaths along Old Whitechurch Road and on Kilbarry Enterprise Centre Rd leading to Upper Dublin Hill granting access to the wider footpath network and bus service.
- The development includes the creation of formalised walking paths to replace the informal walking paths located to the north of the site. The provision of these formal paths should encourage residents to exercise locally, removing the desire to travel via less sustainable modes of transport to other exercise destinations.

As part of the construction works, the contractor shall prepare a Construction Traffic Management Plan (CTMP) which will outline their approach to the construction of the project, and detail measures to mitigate impacts on the public road system. The CTMP shall be agreed with Cork City Council in advance of the works.

## 10.0 Air Quality and Climate

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

Air quality assessments are concerned with the presence of airborne pollutants in the atmosphere. The likely significant effects of the proposed developments on air quality have been assessed by considering the background concentration levels of pollutants in the atmosphere and the potential for construction and operation effects associated with the proposed development.

The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site, a description and assessment of how construction activities and the operation of the development may impact existing air quality, the mitigation measures that will be implemented to control

any potential impacts on local air quality and the local climate and the residual potential for impact, if any, of the project with mitigation measures in place.

A review of the surrounding area was undertaken with specific focus on land use and sensitive receptors.

The main air quality impacts that may arise during the proposed construction / demolition activities are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, as a result of dust generating activities on site;
- To a lesser extent, increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on site.

The site is classed as medium risk for dust emissions during all phases of development. The sensitivity of the area for human health and ecological effects are medium to low overall. The combined classification for risk of impacts is medium. The classification indicates the level of control and mitigation required during the different phases of development. In particular the demolition phase will require strict best practice measures and monitoring to ensure the potential for impact is negligible.

The site will operate in accordance with a Construction Environmental Management Plan. This plan includes dust control measures and monitoring procedures

In order to ensure that dust nuisance does not occur, a series of preventative measures and a dust management plan will be formulated for the demolition and construction phase of the project.

The impact of the proposed development on ambient air quality and human health during the operational stage is considered long-term, localised, negative, and imperceptible, therefore no mitigation is required.

## 11.0 Noise and Vibration

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

It includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential noise and vibration impact associated with the proposed development during both the short-term construction phase and the long-term operational phase on its surrounding environment.

The assessment of direct, indirect, and cumulative noise and vibration impacts on the surrounding environment have also been considered as part of the assessment.

Mitigation measures are included, where relevant, to ensure the proposed development is constructed and operated in an environmentally sustainable manner in order to ensure minimal impact on the receiving environment.

An environmental noise survey was conducted in order to quantify the existing noise environment in the vicinity of the proposed development. The survey was conducted in general accordance with *ISO 1996-2: 2017: Acoustics - Description, measurement, and assessment of environmental noise*.

Three measurement locations were selected:

- **Location 1** is located adjacent to the rear gardens of the dwellings located along Old Whitechurch Road near the barricaded site entrance to the Delaney Rovers GAA Club. The noise levels measured at this location would be indicative of the ambient noise environment of the dwellings along Old Whitechurch Road to the southwest of the proposed development.
- **Location 2** is located adjacent to the rear gardens of the dwellings located along Old Whitechurch Road to the west of the proposed development.
- **Location 3** is located in the vicinity of the Delaney Rovers GAA Clubhouse.

There is no published statutory Irish best practice guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project (other than for roadways). Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard *BS 5228 - 1: 2009+A1: 209 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise*.

A variety of items of plant will be in use during the construction phase of the proposed development, such as excavators, lifting equipment, dumper trucks, compressors, and generators. There will be vehicular movements to and from the site that will make use of both existing roads and the new internal roads.

Due to the nature of the activities undertaken on a large construction site, there is potential for generation of significant levels of noise.

The Old Whitechurch Road residential dwellings are located along the western boundary of the site at a distance of the order of 20m from the proposed development building facades at the nearest point. The Delaney Rovers GAA clubhouse is approximately the same distance at its nearest point and the nearest City North Business Park office building (Flex) is located at an approximate distance of 45m away.

It must be stated that for the majority of the time, plant and equipment will be at a greater distance from these buildings than that used for the calculations and consequently will have lesser impact. Our assessment would therefore be representative of a "worst-case" scenario that considers construction works conducted at the proposed dwellings located around the perimeter of the development.

The following assumptions have been made in the preparation of these construction noise predictions:

- a utilisation of equipment of 75% over a working day;
- construction site along the perimeter development boundary will be screened by site hoarding a minimum of 2m in height.



There should therefore be no significant disturbance caused to these noise sensitive receptors.

There are four principal sources of noise which are expected to arise during the operational phase of the proposed development:

- Activity noise from the proposed crèche;
- car parking activity;
- vehicular traffic on new internal roads; and
- additional vehicular traffic on surrounding public roads.

Although it is acknowledged that noise emissions from the crèche will alter the current characteristic of the ambient noise environment in its vicinity, given that the predicted noise level emission predictions from the crèche will be both within criteria and consistent with or below the existing noise levels at the nearest noise sensitive locations, the likely amount of noise transmission to the local environment would therefore not be considered sufficient to constitute a significant noise impact.

The likely amount of noise transmission from car park activities to the local environment is not expected to exceed criteria or result in any significant increase in noise level.

Levels of noise from vehicular traffic on new internal roads would be within both the daytime and night time noise criteria. No additional mitigation measures are therefore required in respect of the new internal roads.

In terms of vehicular traffic on public roads receptors located along Old Whitechurch Road to the south of the development are expected to experience a 5dB increase in noise level. An increase in noise level of this order would result in a slight noise impact to these residential dwellings. Given the proximity of the dwellings in this area to the road, there are no practicable mitigation measures that could be provided in this instance. However, a 5dB increase in noise level would not be sufficient to increase roadway noise emissions from Old Whitechurch Road to near or above the minimum threshold criteria detailed in the National Roads Authority's (NRA) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* document

The scheme contractor will be obliged to give due regard to BS5228, which offers detailed guidance on the control of noise from construction activities. In particular, it is proposed that various practices be adopted during construction, including:

- limiting the hours during which site activities likely to create high levels of noise are permitted;
- establishing channels of communication between the contractor / developer, local authority, and residents;
- appointing a site representative responsible for matters relating to noise;
- ensuring all site access roads are kept as even as possible so as to mitigate the potential for vibration from lorries;
- monitoring typical levels of noise during critical periods and at sensitive locations (at representative locations along the perimeter of the development only).

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed, including:

- selection of plant with low inherent potential for generation of noise;
- siting of noisy plant as far away from sensitive properties as permitted by site constraints.
- provision of 2m high hoarding to block line of sight with adjacent dwellings located along the perimeter of the development.

## 12.0 Biodiversity

An assessment was conducted to determine the potential impacts of the proposed development on the biodiversity of the site and surrounding area.

A range of on-site field surveys were completed to inform the baseline biodiversity conditions at and surrounding the project site. Habitat and vegetation surveys were undertaken during September 2020; October and November 2021; and on a monthly basis between April and July 2022. Surveys for the presence of non-volant mammals, with particular attention given to the presence of badgers within and in the immediate vicinity of the proposed development footprint and otters along the Glenamought River to the north of the proposed development footprint and bounding the available landholding. Breeding bird surveys were completed by DEC during the 2022 breeding bird season between April and July. Non-breeding season bird surveys were completed during the 2020 non-breeding bird season in September 2020 and during the 2021 and 2022 non-breeding bird season in October and November 2021. Detailed bat surveys were undertaken during the 2022 bat activity season. Detailed marsh fritillary surveys were undertaken during the autumn season of 2020 in September, 2020 and during the late spring and early summer season of 2022 during May and June 2022.

The proposed development and the landholding in which the proposed development is located are not located within or subject to any statutory nature conservation designations.

The nearest European Site to the project site is Cork Harbour SPA, located approximately 5km to the east, overland from this project site. The nearest SAC to the project site is the Great Island Channel SAC, located approximately 10.5km to the southeast of the project site. There are no Natural Heritage Areas (NHAs) occurring in the wider area surrounding the project site. The nearest proposed NHAs (pNHAs) to the project site is the Blarney Bog pNHA, located approximately 3.5km to the west of the project site. The Cork Harbour SPA to the east and southeast of the project site is also listed as a pNHA.

The project site is located within the River Bride sub-catchment (EPA name: Kiln\_SC\_010) of the River Lee catchment and will result in the discharge of attenuated surface water from the proposed development to this sub-catchment. The River Bride drains to the lower River Lee, which in turn drains to the River Lee Estuary, along which a section of the Cork Harbour SPA and pNHA is located. As such, there is a hydrological pathway connecting the project site to the River Lee Estuary and the section of the SPA and pNHA occurring at this location.

No other designated conservation areas are connected to the project site via other pathways. Along with the EIA Report, a Natura Impact Statement (NIS) has been prepared to assess the potential impacts of the proposed development on Natura 2000 sites. The NIS concludes that, with mitigation, there are no significant impacts on any Natura 2000 sites.

The recolonised grassland mosaic habitat within the footprint of the project site consists of a restricted range of species and is considered to be species-poor. It is of low heritage value, representative of a habitat of low importance (lower value, Rating E). The scrub habitat to the north of the project site provides an area of semi-natural woodland in an area otherwise dominated by artificial and intensively managed agricultural and urban land cover. The woodland habitat to the north of the project site provides an area of semi-natural woodland in an area otherwise dominated by artificial and intensively managed agricultural and urban land cover. The hedgerows and treelines bounding the project site provide links to the woodland to the south and connectivity to the wider linear network of hedgerows and treelines in the surrounding area. These linear woodland features support a range of fauna, including foraging and commuting bat species and nesting birds. They are of high local value (Rating D).

The section of the Glennamought River downstream of the project site that will receive surface water from the project site during the operation phase is representative of a freshwater habitat of county importance (Rating C) owing to the populations of brown trout and Annex II species such as river lamprey and otters that are known to rely on this habitat for spawning and breeding/foraging.

Three non-native invasive species have been recorded within the landholding and the proposed development footprint. These include *Fallopia japonica*, *Buddleja davidii* and *Petasites fragrans*.

No bird species that are representative of high; or very high sensitivity were identified as relying on the proposed development site as a breeding site during bird surveys in 2022. No breeding or resting places of protected non-volant mammals were recorded.

High levels of Leisler's bat activity and low levels of activity for all other species was recorded in the area within and bounding the proposed development footprint. The presence of Leisler's bat, Common pipistrelle and Soprano pipistrelle foraging within and surrounding the proposed development footprint is not unexpected. In the absence of any roosting activities within the proposed development footprint or the surrounding landholding, the landholding is considered to be representative of a site of local importance for bats (Rating D). The project will not result in any direct or indirect disturbance to bat roosts. An imperceptible magnitude impact to the local populations of other bat species will represent an effect of negligible significance.

While no marsh fritillary adults or larvae was recorded during surveys at the landholding this species has been recorded within the landholding to the north of the proposed development footprint in recent years, with the most recent record of this species dating from April 2019. Records for marsh fritillary in this area are held from multiple years spanning the timeframe of 1901 to 2019. Marsh fritillary is a species listed on Annex II of the EU Habitats Directive. The grassland habitat occurring to the north of the proposed development footprint in which marsh fritillary have previously been recorded support abundant stands of *Succisa pratensis* and is representative of habitat in good condition (GC) for support marsh fritillary colonies.

There will be no loss of suitable (GC) marsh fritillary to the footprint of the proposed development. The horizontal directional drilling of the operation phase surface water pipework under the area of suitable marsh fritillary habitat will not result in disturbance to this habitat. The area of currently identified marsh fritillary suitable habitat (GC) occurring within the landholding will be subject to specific landscape and habitat management measures during the operation phase. A boundary will be placed around this habitat in the form of a protective boundary that will deter recreational walking, dog walking and other recreational activities within this area.

An Ecological Clerk of Works (ECoW) as well as a Project Landscape Architect will be appointed prior to the commencement of construction. The ECoW will be an ecologist with experience of baseline ecological surveys, pre-construction surveys and construction phase supervision. The ECoW will be responsible for completing pre-construction surveys and supervising construction works and advising on the implementation of biodiversity enhancement measures that will be commenced during the construction phase.

- Pre-construction surveys required in advance of the construction phase will include as a minimum:
- Otter surveys along the Glenamought River – surveys to be completed a minimum distance 150m upstream and downstream of the proposed confluence point of the new constructed stream and the Glenamought River.
- Bat surveys of the structures occurring within the proposed development footprint that are to be demolished; and
- Marsh fritillary suitable habitat surveys and mapping of the abundance of *Succisa pratensis* within the landholding.

The other mitigation measures outlined for the construction and operation phase of the project are taken from established best practice guidelines that have been successfully implemented for a wide range of project-level infrastructural developments.

These measures have undergone extensive and rigorous monitoring for their effectiveness at development sites where they have previously been applied to ensure adverse environmental impacts are avoided.

### **13.0 Archaeology and Cultural Heritage**

The archaeology and cultural heritage assessment undertaken describes the impacts of the proposed development on the known and potential cultural heritage resource concerning the integrity, continuity, and context of same for future generations.

The assessment presents the results of a desktop study of relevant published sources and datasets undertaken in order to identify all recorded and potential archaeological, architectural, and other cultural heritage sites/features/areas within the study area. The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP). The Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted for assessing the designated architectural heritage resource.

A suitably qualified archaeologist carried out an inspection of the proposed development site in May 2022. The site was assessed in terms of historic landscape, land use, vegetation cover, presence, and potential for undetected archaeological and architectural heritage sites/features.

The Archaeological Survey of Ireland (ASI) records no known archaeological sites within the boundary of the proposed development site. The ASI records 14 archaeological sites within 1km of the proposed development footprint. The nearest of these is a corn mill (CO063-067----) which is located c.25m to the north of the proposed development boundary. None of the archaeological sites within the study area are designated as National Monuments in State Care or have been assigned Preservation Orders.

There are no NIAH-listed buildings or Protected Structures within the boundary of the proposed development site. There are three Protected Structures and eight structures listed by the NIAH within 1km of the proposed development site, the nearest of these to the PDS is Glennamought Bridge (20906320) which is located circa 40m north of the development site boundary.

A large portion of the lands can be considered to possess a low archaeological potential due to steeply sloping ground conditions (north and northwest areas), as well as modern ground disturbance. Extensive ground disturbance has occurred in the eastern and north-eastern portions of the site. The more level and less disturbed central and south-western portions of the site can be considered to possess a moderate archaeological potential.

The derelict remains of a number of 19th century farm buildings are located within the proposed development site. While these buildings are not listed in the RPS or NIAH they do comprise features of local (low) cultural heritage interest.

In conclusion, the proposed development site does not contain any recorded archaeological sites or designated architectural heritage structures and it is not located within an Architectural Conservation Area. In addition, no potential unrecorded archaeological sites were identified within the proposed site during the desktop research and field survey studies carried out as part of this assessment.

#### **14.0 Landscape and Visual**

This section of the NTS provides an overview of Chapter 12 of the EIAR which assesses the proposed development at Kilbarry in terms of landscape and visual impact. It was prepared by DMNA Ltd., Architects.

The proposed development is located on the northern edge of the expanded Cork City development boundary lying to the east of the Old Whitechurch Road and west of Dublin Hill. There is a severely sloped section falling to the Glenamought River and a plateau area on the southern section of the lands. There is road frontage onto the Old Whitechurch Road and some dwellings backing onto the western boundary. The northern boundary is shared with Millhouse (T23 T2H9) and the Glenamought River defines the remainder of the northern edge. To the north 250m across the glen are a group of six dwellings on the Old Whitechurch Road, to the north east again on the opposing side of the glen is the Rosemount Estate a residential development. To the east there are further lands zoned for park use further upstream and on higher ground land is owned by the Industrial Development Authority (IDA). These lands are currently in

agricultural use as meadows. Also to the east on adjoining land is Delaney's Hurling & Football Clubhouse and grounds (T23 A594). To the south, the development site bounds with the Kilbarry Business Park, where two large Units together with parking, yards, and landscaping back on to the southern boundary of the proposed development.

The significant landscape feature within, bordering, extending up stream to the east and downstream to the west is the steeply sided narrow glen or river valley of the Glenamought River. The existing meadows and woodland together with the narrow river's twists and turns gives the development site on the plateau space above and to the south a unique landscape setting situated on the northern edge of the city. Across the Glen there is extensive visibility out across farmland to the north. To the east the land rises and prevents visibility with Upper Dublin Hill Road and the existing development along it. Along the southern boundary there is screen landscaping in place within the Kilbarry Business Park. To the south and west in the distance parts of Upper Fairhill are visible (1.75km) and to the south and south west the southern valley wall of the Lee is visible in the distance (8km). To the west the site has frontage with the Old Whitechurch Road. The road is climbing up from the Glenamought Bridge and is below the site with an existing hedgerow with mature trees currently preventing visibility.

Where the existing terrain and vegetation allows development the site is zoned for medium density residential use together with a crèche. Situated between the Old Whitechurch and Upper Dublin Hill roads the development brings with it an opportunity to create an east/west link through the development connecting these two routes extending the existing road accessing the Kilbarry Enterprise Centre west.

The lands are located in the City Harbour and Estuary, a landscape character designation of national importance. The site is, however, very well upstream of the Lee with the Glenamought River feeding in to the Bride valley which then flows south through the city to its confluence with the Lee in the city centre. Perched on high ground the development site has vistas out to the west and north over broad fertile lowland plains below to the west, and beyond towards Hilly River and Reservoirs valleys and to the north the views are out onto the landscape area designated as fissured fertile middle ground.

The proposed development will read as a group of distinct neighbourhoods punctuated by open space areas and existing stands of woodland. Rooflines and varied materials play an important role, as many of the views will be from higher elevations from across the valley in other parts of the town. The key elements of the proposal include the following:

- Conservation & regeneration of existing woodland.
- Conservation & regeneration of existing perimeter hedgerows.
- Commencement of a public park area (part of the former NE-O-03 Open space zoning) with new pedestrian and cycleways linking for the development through this park with potential connections to neighbouring lands.
- Some remodelling of the site levels.
- Provision of new junctions and a through distributor road linking the Old Whitechurch Road to Dublin Hill via the access road to Delaney's GAA pitch.
- Integrating the existing Delaney's GAA facility into the wider area.
- Construction of 319 dwelling units, along with a crèche.

- Delivers a range of outdoor amenities; 1 kickabout, a playground, external gym, and a number of pocket parks.
- Integrates biodiversity and Bat Conservation planting strategies with reserved areas.
- Comprehensive street hard and soft landscaping to create 'homezones' with native and naturalised trees selected for street landscaping.

The proposed development is set upon a plateau type space on the southern side of the Glennamought Valley and this allows existing woodlands and hedgerows to act as a buffer of vegetation. This will not restrict views in and out of the site area due to the development areas elevation above the screening in place. The development will remain exposed to view and due to conservation strategies for pollinator species on the upper levels of the Glen slopes which need to be retained as acidic meadows. The existing woodland offsite and downstream in the glen will restrict exposure of the proposed development from viewpoints such as the Old Mallow Road and the Kilnap Railway Viaduct to the west.

The site itself has strong and features and landscape character with open pasture, hedgerows and woodlands and the deep glen and the tumbling river below. There are very few neighbouring residences fronting or backing on to the site at close quarters. At a further remove there are again few dwellings and the area to the north is zoned as a metropolitan greenbelt. Existing residential development, individual dwellings and the Rosemount Estate visible across the valley compromise the rural nature of the outlook to the north and existing pylons and overhead powerlines are a visual intrusion. With the specific zoning objectives realised in the proposed masterplan there is a potential for positive impact with a good interface being created on the rural/urban divide. This site is at a key location within the boundary of the city and has the capacity to absorb a high degree of change. The level of change is then dictated by the sensitivity of the viewpoint location (receptor).

Eight viewpoints were selected and agreed with the planning department, located to view the site at its most exposed or to assess the exposure of the site from key locations such as from the Old Mallow Road and the Upper Dublin Hill Road. The varied valley and undulating terrain, intervening and on site vegetation and adjacent development result in a limited visual envelope, considering the prominent hilltop location of the site. Table 2. is a table indicating the visual impact from each of the viewpoint locations.

VIEWPOINT NO.	LOCATION	IMPACT DURATION	TYPE OF IMPACT	DEGREE OF IMPACT
01	Old Whitechurch Road	Permanent	Neutral	Slight
02	Old Whitechurch Road	Permanent	Neutral	Slight
03	Old Whitechurch Road	Permanent	Neutral	Slight
04	Old Whitechurch Road Entrance	Permanent	Negative	Moderate
05	Kilnap Bridge, Old Mallow Road	Permanent	Neutral	Moderate
06	Delaneys Hurling & Football	Permanent	Neutral	Moderate
07	Blackman Bar, Upper Dublin Hill	None	None	Imperceptible
08	Upper Dublin Hill	None	None	Imperceptible

**Table 2. Visual Impact Summary**

Positive impacts arise when the viewpoint takes into context the existing urban landscape of the city relative to the site. Negative impacts generally occur when the view presents a rural landscape with natural

features such as rolling terrain and woodland vegetation dominating the scene with minimal encroachment of development. The duration of some impacts is short term, as a future noise abatement fence may eliminate the viewpoint opportunity. Some private residences adjacent to the site will be impacted moderately. Once the proposed development completes and when the landscape plan is implemented and beginning to mature, the visual impact typically reduces.

Proposed mitigation measures

To minimise any adverse impacts on views from the selected viewpoint locations and impact on greater landscape character, a series of mitigation measures should be incorporated into the development process. These are as follows:

- Augment Woodland Planting where opportunities arise
- Improve the woodland edge screening with new planting & regeneration
- Improve & augment the perimeter hedgerows as vegetative buffers
- Proposed crèche in a back to back relationship to existing houses is to be appropriately fenced and landscaped
- Front dwellings onto site perimeters with street landscaping
- Locate taller and larger structures appropriately

There are architectural similarities between the proposed Kilbarry development and other residential neighbourhoods on the northern periphery of the city. Visually, the residual impact is the removal of a large meadow area together with some trees and its replacement with an urban (plateau area) and a park landscape (valley area). In the context of the site the visual envelope is quite restricted. When it is visible it will be a noticeable change in the landscape.

As existing, the first visual impression of this entrance to Cork city northern suburb of Kilbarry is a country road with some ribbon development, with a narrow wooded glen cutting across the route from east to west. The proposed Kilbarry development will create a new first impression with the development looking outward to the north above the woodland on the valley slope below. This change will maintain and enhance the integrity of the wooded glen landscape character with the masterplan incorporating part of the Glenamought River, a range of meadow and woodland spaces on the valley wall terrain as a phase one of a larger public park zoning. This contributes to the landscape character and setting of the town.

Access to amenity for the environs in general is also improved. For the first time, the public will have access to a shared walking and bicycle trail network that loops through the open amenity park spaces. These trails can extend up and down stream as further sections of the park zoning are added and when the new amenity route downstream on the river corridor is developed.

The change from a meadow area at the edge of the City sitting at the rear of a Sports grounds and a Business Park to an urban context is significant in isolation. This development will bring definition to a currently undefined city edge as it will take the town up to the edge of a plateau area where it can front out to the rural Greenbelt landscape and form a high quality entrance point to the city on the Old Whitechurch Road. Individual residences may be negatively impacted by the change development brings, but the positive impacts to the greater community can be substantial.



## 15.0 Lands and Soils

This chapter presents the findings of an impact assessment of the proposed development on the soils, geology, and hydrogeology. The objectives of this assessment are:

- To review and characterise the baseline soils and geological conditions of the existing environment within the study area.
- To evaluate the impact of the design for the project on these attributes and establish the activities associated with the construction and operation of the proposed development.
- To address interactions with other disciplines.
- To identify and assess any potential impacts on any geological heritage sites or sites of geological interest.
- To identify and incorporate appropriate mitigation measures, that would prevent, reduce, or remediate the identified impact.
- To conclude any residual impacts that would remain or arise from the mitigation measures identified.

A number of statutory and non-statutory consultees were contacted to ascertain any commentary or observations in relation to the project, including:

- Geological Survey Ireland
- An Taisce;
- Inland Fisheries Ireland;
- Transport Infrastructure Ireland;
- The Heritage Council; and
- The HSE,
- Department of the Environment, Climate and Communications.

The primary study area for the purpose of this assessment covers a 2 km zone beyond the boundary of the proposed development, in accordance with the IGI Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (2013), taking account potentially significant impacts which could arise at a greater distance away

A ground investigation, comprising cable percussion boreholes, trial pitting, in situ testing including standard penetration tests and hand vane tests, and laboratory testing, was carried out by Priority Geotechnical Limited (PGL) at the site between 07<sup>th</sup> August and 13<sup>th</sup> September 2019.

The development of the Kilbarry SHD will result in the following construction activities:

- Overburden and rock excavation
- Reuse and processing of site won material
- Foundations for structures
- Disturbance of soft soil

The proposed development will impact on the geological and hydrogeological environments through these activities. This is an unavoidable consequence.

The cut and fill required to reach the line and levels required to achieve the required site layout will result in the excavation of high fertility soils, rock of a high aggregate potential and the removal or re-use of construction and demolition waste.

Soft clays were identified within the Made Ground in trial pits excavated on the site. The bulk of these soft subsoils will remain in place and will be piled or ground improvement techniques employed to support proposed roads and structures in this area. Other soft soil deposits not encountered in the site investigation underlying the proposed development will require excavation and replacement with suitable fill materials.

Whilst every effort will be made to minimise the requirement for the importation of material and to maximise the reusability of materials within the site, it is expected that a portion of this material will be removed from site for appropriate offsite reuse, recovery, recycling and / or disposal. However, the soil to be excavated is a mix of made ground and granular glacial till and of low commercial value. The effect on Land and Soils is likely to be short-term, significant, and negative, but following appropriate mitigation measures, this potential impact is considered imperceptible (NRA 2008) and would be classified under the EPA guidelines as having an irreversible neutral effect, of imperceptible significance and permanent duration (EPA, 2022).

Sterilisation of the bedrock due to the proposed development is considered an imperceptible impact (NRA, 2008), and a neutral, imperceptible effect of permanent duration (EPA, 2022).

The removal of topsoil, overburden material and rock and the treatment of those materials shall require its temporary storage, handling, and reuse on site. The impact is classified as having a slight negative impact for a temporary duration (EPA, 2022) and a Moderate / Slight significance (NRA, 2008).

The potential occurrence of suspended sediments in rainfall runoff from work areas would be a potentially brief to temporary negative impact (EPA, 2022), if the runoff were to migrate to the Glennamought River at the north bound of the site. Groundwater pollution is more extensively addressed in Chapter 14 Water.

In terms of excavation of soil/fill material for transfer off-site, the previous investigation did not include for full waste classification only for waste acceptance criteria. Verde has been provided with laboratory certificates for the 5no samples and has completed a waste classification exercise using approved HazWasteOnline™ software. The outcome from this exercise confirmed material characterised by the five samples is non-hazardous and can be appropriated described under List of Waste Code, 17 05 04 (non-hazardous soil and stone).

Should any waste material be encountered during construction, it will be removed to a suitably licensed facility.

## 16.0 Water and Hydrology

This section of the EIAR describes the existing water bodies in the vicinity of a subject site and provides an assessment of the likely significant effects on the nearby water bodies (surface water and groundwater) during the construction and operational phases of the proposed development.

The information on hydrology and hydrogeology underlying the proposed development site was obtained through assessing databases and archives available. The following are the sources of datasets for this chapter:

- Environmental Protection Agency (EPA) – database information and website mapping
- EPA/Water Framework Directive Map Viewer ([www.catchments.ie](http://www.catchments.ie))
- National Flood Hazard Mapping ([www.floodinfo.ie](http://www.floodinfo.ie)) – past flood event data
- Geological Survey of Ireland (GSI) On-line Geological datasets ([www.gsi.ie](http://www.gsi.ie))

The main hydrological feature of the area is the Glennamought River / River Bride. The River Bride is a tributary to the River Lee and flows in a south westerly direction forming the northern boundary of the site.

The site is bound to the north by the Glennamought River, a tributary to the River Bride, which is itself a tributary to the River Lee. The Lee Estuary is a designated Water Framework Directive (WFD) transitional water body (IE\_SW\_060\_0950), with an ecological status of Moderate, and deemed to be At Risk.

Mitigation measures will ensure that surface runoff from the developed areas of the site will be of a high quality and will therefore not impact on the status of underlying groundwater bodies.

The CFRAMs map and Cork City Council flood maps both indicate that the northern portion of the proposed development site is at risk to flooding. However, no development will take place at this portion of the site. All development including highly vulnerable development will occur outside of any fluvial flood extent. Therefore, the proposed development site lies within the Fluvial Flood Zone C – low flood risk.

Therefore, the proposed development is deemed 'Appropriate' in accordance with the Office of Public Work (OPW) Flood Risk Management Guidelines.

According to the GSI the vulnerability classification for the proposed development site is 'Extreme' vulnerability rating with some 'rock or near surface rock' identified at the north end of the site. Small areas of the south end of the site with 'High' vulnerability.

No wells were mapped in the area of the proposed development site. Based on the GSI well database, there are no mapped source zones (Group Scheme and Public Supply Source Protection Areas) mapped within ~3km of the development site. GSI mapping of 'Groundwater Wells and Springs' indicates that there are 18 no. wells recoded within the 2 km study area

Impacts on the regional groundwater quality during the construction stage are predicted to be negligible in magnitude and imperceptible in significance.

Commented [DD4]: Site description from Service Infrastructure Report / Land and Geology chapter– TBC

At operational stage it is considered that the overall impact on the groundwater resource due to reduction in recharge area will be imperceptible.

To prevent any increased flooding arising from the proposed development, it is proposed to implement SuDS measures in order to limit the discharge from the site to the current greenfield discharge rates. The implementation of these SuDS measures will mitigate the risk of flooding outside of the development site. Therefore, any potential impacts arising from this activity may be characterised as imperceptible and neutral.

A series of best practice mitigation measures will be put in place to minimise and mitigate the potential impacts to the ground and surface water at the site at construction and operational stages.

An overall analysis of the impacts considering the proposed mitigation measures concludes that all of the potential impacts (both construction and operational impacts) are predicted to be reduced to a neutral quality, imperceptible significance.

No significant cumulative impacts on the water environment are anticipated during the construction phase of the development as long as mitigation measures outlined are put in place.

No potential for significant cumulative impacts on water – hydrology and hydrogeology in combination with other projects is anticipated during the operational phase of the proposed development.

## 17.0 Resources and Waste Management

This section of the EIAR comprises an assessment of the likely impact of the proposed development and the waste generated from the development as well as identifying proposed mitigation measures to minimise any associated impacts. This includes the potential waste generated from excavation, temporary and permanent construction works and operation of the proposed development.

Construction and demolition waste is included in the Construction and Environmental Management Plan (CEMP) prepared with reference to the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects (EPA 2021a)* document. The chapter has been prepared in accordance with the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022).

These documents will ensure the sustainable management of waste arising at the development site in accordance with legislative requirements and best practice standards.

Cork City Council (CCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. CCC's waste management activities are governed by the requirements set out in the Southern Region Waste Management Plan (SRWMP) 2015-2021. The Proposed Development Site is currently a greenfield site and has no waste management requirements.

There will be demolition of existing, disused buildings and outbuildings required for this project. All material generated from the construction of the proposed development will be considered for reuse in the construction of the proposed development or in other construction projects in accordance with Article 27 of the *Waste Directive Regulations*.

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc.

In addition, topsoil, subsoil, clay, and rock will require excavation to facilitate site levelling, construction of foundations, along with the installation of underground services. The overall volume of material to be excavated has been estimated by J. B. Barry and Partners Limited from Ground Investigation and 3D design to be 53,615 m<sup>3</sup>. Whilst every effort will be made to reuse excavated material onsite, in the creation of proposed roads, platforms for proposed buildings and open space areas, it is expected that approximately 18,071 m<sup>3</sup> (including topsoil) of this excavated material will have to be removed off-site as there will be a surplus of this material. This surplus material will be removed from site for appropriate offsite reuse, recovery, recycling and / or disposal.

If the material that requires removal from site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended).

A specialist assessment of the fill material in the existing made ground area and its waste classification was undertaken by Verde Environmental Consultants. Their report (Review of Existing Ground Investigation Data relating to Proposed Residential Development \_June 2022) is contained in the Appendix 13.1 of this EIAR. The site investigation and soil sampling results from the site investigations were reviewed, Verde has completed a waste classification exercise using approved HazWasteOnline™ software. The outcome from this exercise confirmed material characterised by the sampling undertaken is non-hazardous and can be appropriated described under List of Waste Code, 17 05 04 (non-hazardous soil and stone). Trial pit logs and associated photographic evidence indicate a generally clean, uncontaminated fill material that would be suitable for on-site reuse.

Notwithstanding this, environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills.

During the operational phase of the proposed development waste will be generated within the residential buildings and crèche including dry mixed recyclables, organic waste, mixed non-recyclables waste. The dry mixed recyclables will include waste glass, batteries, WEEE, textiles and furniture.

The residents will be encouraged to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents. As required, the residents will need to bring these segregated wastes from their units to their waste receptacles for collection by approved waste collection contractors.

In terms of mitigation during the construction stage, a Construction and Demolition Resource and Waste Management Plan (C&D RWMP) will be prepared, and this will be implemented by the appointed contractor in line with the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects (EPA 2021a)*.

Adherence to the high-level strategy presented in this C&D RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the Proposed Development.

The development will be taken in charge by the Local Authority or will be managed by a Management Company or by a combination of both such that residents will be provided with colour coded bins or other suitable receptacles to assist with segregation of wastes.

During the construction phase excavated soil and stone (c. 53,615 m<sup>3</sup>) will be generated from the excavations. It is envisaged that 35,544 m<sup>3</sup> of the excavated soils and stones will be reused on site with remaining 18,071m<sup>3</sup> taken offsite it will be taken for reuse or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 13 of this EIAR and the requirements of the C&D WMP, will ensure the effect is long-term, imperceptible, and neutral.

## 18.0 Material Assets

This chapter assesses and evaluates the likely significant impacts on the material assets serving the subject lands relating to foul sewage, water supply, gas supply, electricity, and telecommunications.

There is no existing formal surface water network within the proposed development site. There is an existing 225mm diameter Cork City Council storm sewer in the Old Whitechurch Road to the south-west of the site. The head of the run is located close to the junction with the Bridgfield Estate, and it runs in a north-south direction.

There is no formal foul water network within the proposed development site. There is an existing 225mm diameter public foul sewer in the Old Whitechurch Road to the west of the site. This sewer runs in a north-south direction eventually discharging to the Railway Yard Wastewater Pumping Station in Cork City.

The water main records indicate there is a 150mm diameter ductile iron watermain in the Old Whitechurch Road to the west of the site. This main runs north to south before turning in a westerly direction and increasing downstream to a 300mm diameter main.

From utility maps received from ESB Networks, the existing dwellings on the Old Whitechurch Road are served by an overhead LV network. There is an overhead MV network traversing the site on a south-west to north-east axis. To the east of the site there is a 38KV underground power supply which runs through the Delaney's GAA grounds before entering the site. It remains underground for approximately 30m before going overground from a pylon.

From utility maps received from Gas Networks Ireland, there is a gas supply serving the existing dwellings in the Old Whitechurch Road which terminates approximately 120m south of the proposed entrance to the development site. The network in the area is a medium pressure network.

From utility maps received from EIR, there are telecommunications networks serving the existing dwellings along the Old Whitechurch Road. Delaney's GAA club to the east of the site is fed from a separate network to the east. Also, from the Department of Environment, Climate and Communications online mapping the area surrounding the proposed development is serviced by High-Speed Broadband.

The proposed surface water network will include a storm drainage pipe network, attenuation storage and several SuDS features which will aid the reduction of runoff volumes by slowing surface water flows, providing the opportunity for evapotranspiration, and providing the opportunity for infiltration to ground. The restricted discharge from the site will discharge to the Glenamought River/River Bride to the north of the site.

Wastewater collection within the proposed development will be via a network of 150mm and 225mm diameter gravity sewers, which will direct the flows to the western boundary of the site and will connect directly to the foul sewer in the Old Whitechurch Road. See drawings 19215-JBB-00-XX-DR-C-04000 - 4003 for details.

Foul Water from the proposed development will ultimately discharge to the Carrigrennan WWTP for treatment and disposal. This discharge will incrementally increase over a four to five-year period as the development is completed and occupied with a final estimated daily discharge of 146 m<sup>3</sup>/day.

A Pre-Connection Enquiry was submitted to Irish Water, the response to which confirmed that the proposed development can be serviced by the existing wastewater infrastructure network in the area. The Confirmation of Feasibility (COF) states that sufficient capacity is available in the IW network to facilitate a wastewater connection of 330 units. IW have advised that in order to facilitate the wastewater connection, it will be required to upgrade approximately 150m of foul sewer on the Old Whitechurch road from 225mm to 300mm at a minimum. It is likely that further sewer network upgrades will be required downstream.

IW have been consulted in order to agree a high-level solution for any further works and they have confirmed these works will consist of upsizing the existing pipe diameters only. The works will be in public roads and will not involve provision of infrastructure that would require planning approval. Agreement on the optimum procurement methods for the provision of this infrastructure can be a matter for later detailed agreement with Irish Water.

The confirmation of feasibility states that sufficient capacity is available in the IW network to facilitate a water connection of 330 units. IW have advised that the connection is to be made via a 250mm diameter watermain to the 300mm watermain in the Kilbarry Business Park to the south. This can be done by upgrading approximately 750m of watermain on the Old Whitechurch road to 250mm or finding another route with a wayleave through the adjoining business park. An initial phase of approximately 100 houses can be connected without upgrade requirements.

Power supply, and the requirement for any alterations to the existing power supply network for the development of the site, will be agreed with ESB Networks in advance of construction. It is estimated that at a minimum 4 sub stations will be required to be supplied subject to ESB calculations, geography, routing, etc.

All current energy analysis for the development have been based on electric heat pumps. Although not totally excluded it is unlikely a gas supply will be required. To the west of the site, there is an existing medium pressure pipe that could supply the development if required. If it is required any alterations to the existing gas supply network for the development of the subject site, will be agreed in advance of construction with Gas Networks Ireland.

The existing infrastructure serving the housing to the west of the development, shall be extended into the proposed development as is normal practice for developments of this type. The development will install, in ground, vendor neutral ducting to allow for any user to be provided by any vendor.

Telecommunications supply, and the requirement for any alterations to the existing telecommunications network for the proposed development, will be agreed in advance of construction with the relevant telecommunications providers.

The potential adverse impact on the local infrastructure during the construction phase of the development would be temporary and imperceptible

The diversion of the overhead power lines to underground ducting will be carried out by ESB under planned outages. There may also be a potential temporary loss of connection to the ESB, gas and telecommunications infrastructure while carrying out works to provide connection to the proposed development. These likely adverse impacts may be characterised as a temporary, regionally short term, moderate impact.

As discharge to the Glennamought River/River Bride will be at a restricted rate equivalent to the greenfield runoff any impact without mitigation will be permanent but slight. The increased impermeable areas will reduce local ground water recharge and potentially increase surface water runoff if not attenuated to greenfield runoff rate. Any impact will be permanent and slight without mitigation.

The impact of the proposed development on the foul drainage network will be to increase the quantity of foul water entering the collection network and discharging to Carrigrennan WWTP for treatment and disposal. The estimated discharge on completion of the development site is approximately 146 m<sup>3</sup>/day. The potential impact from the operational phase of the development on the existing wastewater treatment plant at Carrigrennan will be long-term and minimal.

The impact of the operational phase of the proposed development on the public water supply is likely to be to increase the demand on the existing water supply by approximately 161 m<sup>3</sup>/day. As such additional water quantities would need to be treated and supplied through the existing network to the site. This will result in extra cost as well as increasing abstraction volumes from the existing source.



The impact of the operational phase of the proposed development on the gas supply (if required) would be the requirement for an additional gas load to accommodate the development of the lands. The Proposed Development will not be connected to the natural gas network. Heat Pumps powered by electricity will be used for space heating and domestic hot water during the Operational Phase. As such, the potential impact from the Operational Phase on the gas supply network is likely to be permanently neutral and imperceptible.

A series of best practice mitigation measures will be put in place to minimise and mitigate the potential impacts to drainage, water, power, and telecommunications services infrastructure at construction and operational stages.

With appropriate mitigation measures in place, no significant negative impacts on material assets are predicted as a consequence of the construction or operational phases of the development.

## 19.0 Population and Human Health

This chapter addresses potential effects of the proposed residential development scheme at Kilbarry on population and human health. Potential effects of this proposal on population and human health arising from: traffic and transportation; air quality and climate; noise and vibration; landscape and visual; material assets, and; the risk of major accidents and/or disasters, are dealt with in the specific chapters in the EIAR dedicated to those topics.

The application area and surrounds were visited on a number of occasions for the purposes of this assessment. The purpose of the site walkovers was to identify neighbouring industry and dwellings and to assist in the characterisation of land use. Ordnance Survey maps and aerial photography were also examined to assist in this survey.

The latest Government housing plan, *Housing for All*, was published in September 2021 and addresses the time period to 2030. The Plan sets out a strategy to achieve a steady supply of housing in the right locations. It estimates that the country will need an average of 33,000 new homes each year between 2021 and 2030.

The subject site is located within the Kilbarry area of the city, and is, along with a series of other significant sites adjoining, zoned for residential development. Therefore, the principle of residential development on the zoned Z01 lands is acceptable, subject to the consideration and acceptability of the site-specific matters.

Population figures from the Central Statistics Office (CSO) Electoral Divisions data was used to create a profile of the area surrounding the site. The catchment area, defined as with 2km of the site, incorporates 11no. No. Electoral Division Areas (EDs). The population of this catchment increased from 28,488 people in 2011 to 32,258 no. people in 2016, representing a significant increase of over 13% over the 5-year period. The overall population trend is expected to continue with increased population growth and urbanisation, putting pressure on the need for more homes.

This chapter assesses the existing community and social infrastructure within the defined catchment area of the site of the proposed development under the following headings:

1. Education/Training	2. Social/Community Services
3. Childcare	4. Arts and Culture
5. Health	6. Faith
7. Sports/Recreation and Open Space	8. Other Features

**Table 3. Social and Community Infrastructure**

According to the 2016 Census, there were approximately 3,114 no. children of primary school-going age and approximately 2,716 no. children of post-primary school-going age living in the defined catchment area of the proposed development in 2016. There are 13 no. existing primary schools and 6 no. existing post-primary schools within the catchment area

While there are no Third Level Facilities in the immediate vicinity of the site, the site is well served by public transport and, as a result, there are 10 no. further and third level education facilities accessible from the site.

Data from TUSLA's website, combined with responses from 7 no. of the 8 no. the childcare providers, was used to ascertain the number of existing registered childcare facilities in the defined catchment area, their maximum capacity and the current number of children availing of their services.

While there is some availability of childcare places within the existing local childcare facilities, this availability is somewhat limited in its capacity to fully cater for the increased demand for childcare places that the proposed development may result in. On this basis, a crèche facility is included in the proposed development.

A total of 73 no. health facilities were identified in the area comprising: 1no. hospitals; 17no. GP practices; 24 no. pharmacies; 12 no. dental surgeries; 11no. physiotherapists; and 8no. opticians.

Desktop research during October 2021 and June 2022 was employed to ascertain the number and nature of sports/ recreation facilities and open spaces located within the catchment area of the proposed development. There are several clubs and open spaces allocated to provide for sports and recreational related activities, comprising as follows: 1no. regional park; 4no. local parks; 1no. sports stadium; 9no. outdoor playing pitches; and 4no. playgrounds. There are also 14no. sports clubs in the area.

There are 33 no. social and community facilities and services within the area as follows: 7no. Civic Facilities and Services; 16no. Social/Community Organisations; 5no. Adult Education/Training and Employment Services, and; 5no. Youth Services. There are 18no. arts and culture facilities in the area.

There are 21no. centres of religious worship located within the catchment area. The catchment area appears to be well-served by centres of worship, predominantly in respect of the Roman Catholic faith, but also in respect of the Church of Ireland, various other Christian faiths, and the Muslim faith.

The application area is a significant landbank at a pivotal location and, left unoccupied for any significant period, it would likely go into decline. In terms of this subject matter, Population and Human Health, vacant sites can have adverse effects on the character of an area resulting in urban blight and decay. Anti-social behaviour is often associated with vacant sites, and this would have a negative effect on the local population.

The proposed development complies with the statutory land use zoning. There will be no severance of land, loss of rights of way or amenities as a result of the proposed development. Development of the subject site is aligned with the objective to achieve compact growth contained within the NPF and will realise the efficient use of currently underutilised brownfield land with higher housing density that is well served by public transport.

A key characteristic of the proposed development in terms of its potential economic impact relates to its capital value, of which a significant portion will be for the purchase of Irish sourced goods and services. The construction phase will provide a boost for the local construction sector in terms of employment generation and capital spend on materials and construction labour costs.

Given the existing housing crisis, it is anticipated that a high-density development at this location would result in a likely significant positive impact with a permanent duration as it would realise the objectives of urban consolidation through the efficient use of a zoned and serviced landbank to provide *inter alia* much needed housing, together with high-quality amenities for future occupants.

The provision of 319no. quality homes within the proposed development will have a likely significant permanent positive impact on the population of Cork City, contributing to the city's growth in a compact manner and accommodating a substantial portion of the planned population growth of the city. It is envisaged that the proposed development will accommodate a projected full-time residential population of approximately 877 persons<sup>1</sup>. The proposed development has been designed to avoid negative impacts on population and human health through;

- Incorporating extensive leisure and amenity facilities within the layout, including the provision of a large amenity park and extensive provision for walking and cycling throughout the development;
- Landscaping to mitigate against issues arising from microclimate conditions;
- The inclusion of a comprehensive foul and surface water management system;
- Energy efficient measures; and,
- High quality finishes and materials.

No significant risks to population and human health have been identified in relation to the operational phase of the development. Accordingly, no further mitigation measures are required.

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<sup>1</sup> Based on the average national household size of 2.75 people per household (CSO, 2016).

## 20.0 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.

Potential risks during the construction phase will be managed through the Construction and Environmental Management Plan (CEMP). Prior to the commencement of works the contractor will prepare and implement a detailed CEMP. This plan, which will be specific to the site and its activities, will work to ensure that potential risks of major accident and/or disaster are identified, avoided, and mitigated, as necessary.

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.

Seveso and EPA licenced sites are heavily regulated by the relevant enforcement agencies. Iarnród Éireann and the Port of Cork both have a comprehensive and accredited safety and environmental management system in place. As a result, the likelihood of major accidents and/or disasters is considered 'extremely unlikely'. The completed risk assessment determined that all potential risks were considered 'Low Risk Scenarios'.

## 21.0 Cumulative and Interactive Effects

This chapter summarises the residual effects that have been identified in Chapters 7 – 18 and determines whether they give rise to cumulative and/or interactive effects based on best scientific knowledge. Accordingly, when a topic is not mentioned, the authors have concluded that there are no likely residual significant effects that could give rise to cumulative and/or interactive effects. Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from and this EIAR will look at:

- the interaction between all of the different permitted and planned projects in the same area in combination with this proposed development; and
- the interaction between the various effects within 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 will consider the interaction between the various environmental aspects, for example the interaction between noise and ecology.

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.

Potential interactions between environmental factors are set out and assessed.

The assessment specifically considers whether any of the proposed and/or recently approved schemes in the local area have a potential to exacerbate (i.e., alter the significance of) effects associated with the proposed development based on best scientific knowledge. Proposed and existing developments in close proximity to the proposed development site which are most likely to result in cumulative effects arising from the construction and operation of the proposed development are outlined.

Possible cumulative effects during construction are outlined in the individual assessment chapters of this EIAR – Chapter 7 through Chapter 18. It is concluded that should the construction of any of the developments mentioned occur concurrently, the potential cumulative construction effects are not considered significant, given the implementation of standard construction environmental measures, the Construction Environmental Management Plan for the proposed development and a Construction Traffic Management Plan.

Potential cumulative operational effects are not considered significant.

The potential significant impacts have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant residual negative interactive effects are predicted.