APPENDIX A. CUMULATIVE DEVELOPMENTS

Application Details	Development Description	Decision & Grant Date
Applicant: Galway County Council **Reference**: ABP-318220-23 (Reactivated, old case no. ABP-302848-18) **Location**: Galway	N6 Galway City Ring Road	**Decision:** TBD (Lodged) **Date:** (Date Lodged 12/10/2023)
Applicant: Leadlane (Cappagh) Limited **Reference**: 21264 (As amended by 23118) **Location**: Lenabower, Cappagh Road, Galway	Permission for development which will consist of: (A) Demolition of 2 no. derelict houses. (B) Provision of 3 no. blocks of Duplexes split over 1 and 2 stories. Duplex Block 01 will consist of 6 no. units; this block will be made up of 6 no. 2 bedroom apartments. Duplex Block 02 and 03 will consist of 12 no. units each; each block will be made up of 10 no. 2 bedroom apartments and 2 no.1 bedroom apartments. (C) Provision of surface car parking for Duplexes. (D) Provision of new entrance onto the public road, access road, bin stores, cycle parking and all ancillary site works and services	**Decision:** Permitted (Conditional) **Date:** 14/02/2022
Applicant: Kegata Limited **Reference:** ABP-308175-20 (GCC: 19375) Location: Lenabower, Cappagh Road, Galway	Permission for development which will consist of: the development of 43 no. residential units (21 apartments, 22 houses) upgrade of existing site access, demolition of existing residential dwelling, demolition of existing sheds, demolition and reinstatement of existing wall along Cappagh Road, associated landscape and open space works. All associated services and site works. The planning application is accompanied with a Natura Impact Statement (NIS)	**Decision:** Permitted (Conditional) **Date:** 12/08/2020
Potential Future Project: Soccer Pitches to immediate north of site		Not yet in planning system

APPENDIX B. ECOLOGICAL IMPACT ASSESSMENT

Ecological Impact Assessment

Cappagh Road Park & Ride

Galway City

Doherty Environmental Consultants Ltd

September 2025

Cappagh Road Park & Ride

Galway

September 2025

Document Stage	Document Version	Prepared by
Final	1	Pat Doherty MSc, MCIEEM

This report has been prepared by Doherty Environmental Consultants Ltd. with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for the NTA. and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. has been commissioned by CSEA Consulting Engineers on behalf of the NTA to undertake an Ecological Impact Assessment (EcIA) for a proposed Park and Ride development at Cappagh Road, Galway. The location of the proposed site is shown on Figure 1.1 while an aerial view of the proposed site is shown on Figure 1.2.

1.1 LEGISLATION

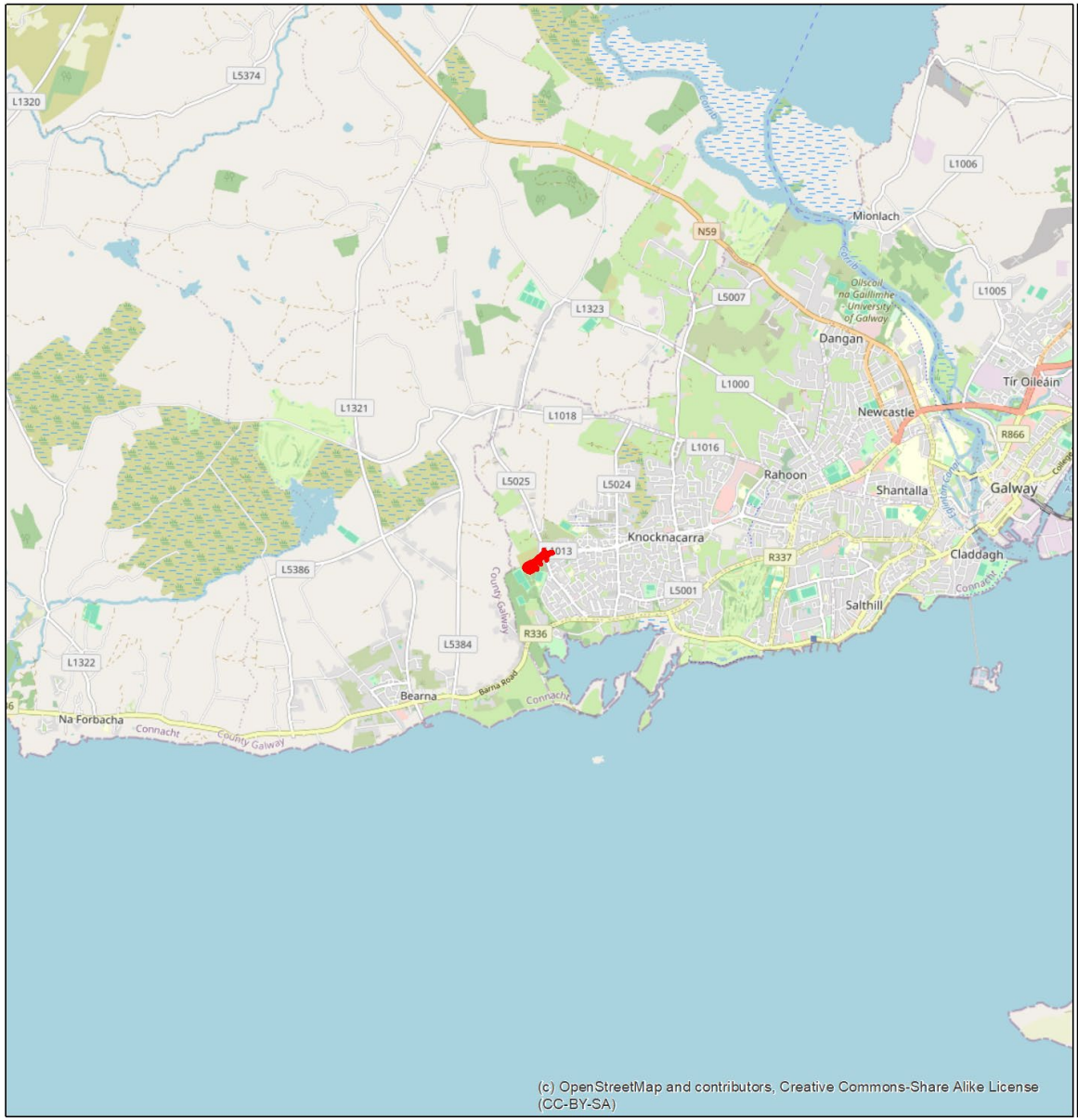
Flora and fauna in Ireland is protected at a national level by the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000 and the Flora (Protection) Order, 1999 (SI 94/1999). They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC).

The transposition of the EU Habitats Directive by the European Communities (Natural Habitats) Regulations 1997 – 2011 (referred to as the Habitat Regulations) provides the legal basis for the protection of habitats and species of European importance in Ireland.

The legislative protection of habitats and species provided by the Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network (with individual sites being referred to as Natura 2000 Sites). The N2K network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive. SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more than 20,000 waterfowl. Under the National Habitat Regulations all designated Natura 2000 Sites are referred to as European Sites.

The Wildlife Act 1976 (as amended) also provides for the statutory designation of nature conservation areas. These areas are referred to under the Wildlife Acts as Natural Heritage Areas and are designated in areas that support habitats and/or species of national importance. Other relevant national legislation concerning the protection of flora, fauna and fisheries include the:

- Planning Act 2010;
- European Communities (Quality of Salmonid Waters) Regulations, 1988;
- The Freshwater Fish Directive 1978 (78/659/EEC); and
- The Surface Water Regulations, 2009.



Cappagh Road Park & Ride

Figure 1.1

Site Boundary

Site Boundary

N
W E
S

0 0.5 1 2 Km

Drawn By	PD
Date	07/07/2025
Data Source	Bing

Cappagh Road Park & Ride

Figure 1.2

Aerial View of the Project Site

Site_Boundary

N
W E
S

0 0.015 0.03 0.06 Km

Drawn By	PD
Date	07/07/2025
Data Source	Bing

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

There is a significant number of people living in regional towns, rural hinterlands, and to a lesser extent; in the metropolitan area who do not have ease of access to high-quality public transport by walking or cycling. This can be due to their physical distance to high-quality public transport networks, limited pedestrian, and cyclist facilities (particularly in rural areas), or due to reduced mobility (e.g., elderly or mobility impaired).

Appropriately located and designed Park & Ride facilities can enable these people to access public transport and enhance their transport options to a wide range of destinations in a sustainable manner.

Park & Ride can intercept car trips where people are reliant on a private car at an early viable point in their journey thereby reducing the distances travelled by private cars with a corresponding reduction in carbon emissions and congestion.

The provision of high-quality Park & Ride facilities will enhance the accessibility of public transport to a wider catchment of people. This will increase the usage of public transport in the future and protect the investment in existing and new public transport schemes.

The Bearna Road (R336) extends south from Killary Harbour at Leenaun, passing through Maum, where it intersects with the R345, and Maam Cross, where it crosses the N59. The route continues through Screebe, meeting the R340, and Costelloe, where it connects with the R343 and R372. The R336 then turns east, following the coastline of Galway Bay, passing through Inverin, Spiddal, Furbogh, Bearna, and Salthill, before reaching Galway City, where it links with the N6 and N83 roads.

The majority of journeys along the Bearna Road (R336) corridor during peak hours mostly consists of single-occupancy private vehicles. These motorists occupy a substantial amount of road space per person, in stark contrast to the comparatively smaller space used per person when utilising public transport.

The Cappagh Road diverges from the Bearna Road (R336) corridor near Rusheen Bay, extending northwards through Knocknacarra. It intersects with the Western Distributor Road at the roundabout before continuing north to connect with Rahoon Road at Boleybeg East.

This location was identified in the Galway Park & Ride Strategy as an intervention point on the Bearna Road (R336) corridor for transferring a portion of these single-occupancy car trips to public transport.

2.2 PURPOSE OF THE SCHEME

The number of commuters travelling by car to various key destination zones in Galway City using the Bearna Road (R336) corridor from areas that are currently lacking easy access to high-quality Public Transport services demonstrates the need to develop a Park & Ride facility in the vicinity of this corridor with good Public Transport services to the Galway City. The overall objectives of the Park & Rides are-

- To maximise the opportunities provided by on-going investment in public transport infrastructure and services, particularly in relation to the commencement of service of new public transport projects.

- To provide the appropriate type and scale of Park and Ride at the right location, with connectivity to the road and public transport networks and design that supports integration with the surrounding walking and cycling network.

- Reduce reliance on the private car, reduce distances travelled by car and ensure Park and Ride facilitates greater use of sustainable modes.

- Deliver an enhanced customer experience through safe, secure, and user-friendly facilities that consider opportunities for interchange and to address barriers to public transport use.

It is anticipated that there will be a significant rise in public transport demand, driven by forecasted population growth along this corridor and a shift in transport mode share to cater for the expected increase.

Strategically placed Park & Ride will enable this wider catchment to access high-quality public transport options and, in facilitating this, will help reduce road congestion along the corridor.

Travel Demand Analysis and a review of the current Public Transport services on the Bearna Road (R336) corridor conducted by the Park & Ride Development Office concluded that intervention through a Park & Ride facility would be most effective in the vicinity of the roundabout on Cappagh Road.

This facility aims to intercept private car traffic that originates in catchment areas further west of this location (Example: Wider Connamara Region, Inverin, Spiddal, Furbogh etc.) and transfer them to a bus suitable for their destination at the facility.

The overall objective of this scheme is to provide the appropriate type and scale of Park & Ride at Cappagh Road Roundabout, with connectivity to the road and the future Bus Connect Galway services with a design that supports integration with the surrounding walking and cycling network.

Another key objective of this scheme is to provide appropriate infrastructure, including lay-bys, for Bus Connects Galway Network Redesign service 7 and 9A to facilitate the termination of these services at the proposed Park & Ride facility..

2.3 SCHEME DESIGN

2.3.1 Existing Conditions

2.3.1.1 Scheme Location

The selected site for the Park & Ride facility is located on Cappagh Road, approximately 900 metres north of its junction with the Bearna Road (R336). The site is located immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road. It is a greenfield site comprising uneven topography with scrub, wet grassland and dry calcareous and neutral grassland. The field is owned by Galway City Council and extends to approximately 2.9 hectares.

The proposed site location is shown in Figure 1.1 and Figure 1.2 above.

2.3.1.2 Access Arrangement

The subject field is accessible via a field access gate located near the existing roundabout on Cappagh Road; however, no blacktop or hardstanding surfaces are present to facilitate vehicular access into the field.

2.3.1.3 Facilities for Vulnerable Road Users

Footpaths, varying in width from 1.2 metres to 2.0 metres, are currently provided on both sides of Cappagh Road, extending from its junction with the R336 to the south, up to approximately 150 metres north of the existing roundabout. Additionally, 2.0-metre-wide footpaths are present on both sides of the Western Distributor Road to the east of the roundabout.

No dedicated cycle facilities are currently provided on either Cappagh Road or the Western Distributor Road within the immediate vicinity of the roundabout.

2.3.2 Proposed Design

2.3.2.1 Scheme Description

The proposed development is located on Cappagh Road, approximately 900 metres north of Bearna Road (R336), immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road.

The proposed Park & Ride facility will provide 176 car parking spaces, including 9 spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large), and 17 spaces designated for electric vehicles, along with 4 bus bays and passenger shelters. Provisions for active travel will include a hardstanding area for a bike shelter. The scheme will also incorporate both hard and soft landscaping, planting, lighting, boundary treatments, surface and foul water drainage, public lighting, CCTV, an ESB substation, and all other associated and ancillary works.

The Proposed Layout of the Park & Ride facility is detailed in Planning Drawing: 20_008D - CSE - GEN - XX - DR - C – 2200 and 2201, provided under separate cover with the planning application documentation.

2.3.2.2 Access Arrangement

Access to and from the Park & Ride facility will be provided via a proposed new arm off the existing roundabout on Cappagh Road.

As outlined earlier in the report, the position of the existing roundabout introduces a degree of deflection to traffic travelling on Cappagh Road. Our analysis has shown that the current geometric configuration of the roundabout does not permit the addition of a new western arm. Consequently, it is proposed to relocate the roundabout 11 metres to the west.

The new roundabout layout has been designed in accordance with the Cycle Design Manual as a Protected Roundabout with Cycle Priority. It will feature an inscribed circle diameter of 33 metres and a 6-metre-wide circulatory carriageway, consistent with the existing roundabout. The design also includes dedicated 2-metre-wide footpath and 2-metre-wide one-way cycle lane around the roundabout, both physically segregated from the circulating traffic. Controlled crossing facilities will be provided on each arm of the roundabout, with priority given to pedestrians and cyclists at these crossing points.

The northern and southern arms of the new roundabout will feature a 7.3-metre-wide carriageway with a 2.0-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway which will tie into the existing carriageway of Cappagh Road within approximately 50-60 metres of the roundabout.

The western arm of the roundabout will feature a 7.0-metre-wide carriageway with a 2.0-metre-wide cycle lane and footpath on either side providing access for buses and car park users to designated areas within the car park.

The eastern arm of the roundabout will feature a 6.3-metre-wide carriageway with a cycle lane and footpath on either side. This will tie into the "*Galway Western Distributor Road (WDR) Cycle Scheme*" within approximately 80 metres of the roundabout.

An alternative tie-in proposal for the eastern arm of the roundabout has also been developed, for the existing road cross-section of the Western Distributor Road. This option is intended to accommodate the scenario in which the proposed Park and Ride facility is delivered in advance of the "*Galway Western Distributor Road (WDR) Cycle Scheme*".

2.3.2.3 Traffic Signals

Controlled crossing facilities (Belisha Beacon) will be provided on each arm of the roundabout.

2.3.2.4 Facilities for Vulnerable Road Users

Provisions for active travel infrastructure have been incorporated both within the car park and around the roundabout.

Dedicated footpaths and cycle lanes are also proposed along the Park & Ride access road and the Western Distributor Road, providing a seamless active travel connection into the facility, enhancing accessibility for pedestrians and cyclists within the wider area. The main car park area will also include footpaths spine to facilitate movement of pedestrians within the carpark.

In addition to the above, two new pedestrian links have also been proposed to connect the existing footpaths located to the north of Cappagh Park with the proposed development. These links are intended to ensure compliance with the relevant land use zoning requirements. *As previously noted in this report, the surrounding area is densely vegetated and supports a variety of flora, fauna, and habitats. Hence introduction of any infrastructure wider than a pedestrian footpath (such as a motorable road connection) would likely result in further ecological disturbance and adverse impacts on the local environment*.

2.3.2.5 Tonabrocky Stream Diversion

The Tonabrocky Stream flows through the site from the northeast to the southwest before merging with the Barna Stream towards the southern part of the site. It is proposed to realign a short section of the stream, approximately 130 metres in length, in order to mitigate potential impacts on its associated habitats. This diversion aims to reduce the required length of culvert or bridge beneath the proposed new access road at the Cappagh Road Roundabout. Further details on this proposal are available on Appendix-A (Watercourse Realignment Plan) of the Planning Engineering Report.

2.3.2.6 Cross Drainage Structures

As part of the proposed development, 4 new cross-drainage structures are being introduced, along with the widening of 1 existing structure.

3 new bottomless portal frame culverts are proposed to span the Tonabrocky Stream. One of these will be located beneath the new Park and Ride access road, while the remaining two are to be situated beneath the proposed pedestrian links connecting Cappagh Park with the Park and Ride facility.

One pipe culvert is proposed to cross the existing drainage ditch that flows from the northern field into the Tonabrocky Stream.

In addition, the existing twin-pipe culvert conveying the Tonabrocky Stream beneath the northern arm of the Cappagh Roundabout is proposed to be lengthened by approximately 10.0 metres to accommodate the revised roundabout layout.

2.3.2.7 Retaining Wall

As previously noted in this report, the site features uneven topography, particularly in the south-western corner, where the ground slopes steeply towards the Barna Stream and generally in a southerly direction. This topographical condition necessitates earthwork embankment proposals along this section, with the base/toe of the embankment footprint extending in close proximity to the stream.

However, The development has been designed to maintain a 15-metre-wide riparian buffer along the Barna Stream, situated along the western boundary of the proposed site. This buffer will be provided with the help of a green-faced retaining wall, which will also extend around the southern boundary of the car park. The retaining wall will be approximately 90 metres in length, with its height ranging from 0.0 metres to 3.2 metres.

2.3.2.8 Cross Sectional Elements

2.3.2.8.1 Road and Active Travel Infrastructure

The Cappagh Road section approaching the northern and southern arms of the roundabout will feature a 7.2-metre-wide carriageway, 2.0-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway.

The Western Distributor Road section approaching the eastern arm of the roundabout will feature a 6.3-metre-wide carriageway, with a 2.0-metre-wide footpath and a 2.-metre-wide cycle track on both sides of the carriageway.

The Park & Ride access road approaching the western arm of the roundabout will comprise a 7.0-metre-wide carriageway, with a 2-metre-wide footpath and 2-metre-wide cycle track on both sides of the carriageway.

All internal roads within the car park will have a 6.0-metre-wide carriageway.

The footpath connections between Cappagh Park and the proposed Park and Ride Facility will be 3.0-metre-wide.

2.3.2.8.2 Parking Bays

Standard parking spaces will measure 5.0m x 2.5m.

Parking spaces designated for electric vehicles will measure 6.0m x 2.5m.

Parking spaces for mobility-impaired users will measure 6.0m x 2.4m, with a 1.2-metre buffer on both sides to facilitate ease of access.

2.3.2.9 Proposed Surface Water Drainage

This drainage strategy consists of two separate sections: the eastern section, where a section of the existing road and roundabout layout are being upgraded, and the western section, where a new road and the car park is being constructed.

Eastern Section- Existing Road and Roundabout

As part of the road and roundabout upgrade, the existing gullies and manholes will be relocated to accommodate the revised road layout while maintaining connectivity to the existing surface water line.

To introduce SuDS elements, bioretention areas have been proposed at key locations:

- Around the roundabout
- Along the northern and southern cycle tracks

The bioretention areas will help improve water quality, provide attenuation, and contribute to biodiversity enhancement.

Western Section- New Road Construction

The western section features two separate surface water drainage systems designed to manage runoff effectively:

(i) Traditional Drainage System (Road Drainage)

This system is designed for the Park & Ride access road and follows a conventional approach:

- Road gullies collect surface water runoff from the carriageway.
- Pipes network to transfer runoff to the downstream system.
- An oil interceptor is installed to remove hydrocarbons and pollutants before discharge.
- Flow control structure (Hydrobrake) to regulate outflow from the storage system. The design discharge has been set at 4.57 L/s, corresponding to the calculated greenfield runoff rate.
- Outfall to the receiving watercourse, with the outlet level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure resilience under extreme events.

(ii) Sustainable Drainage System for the Parking Area

Runoff from the parking area is managed using SuDS principles to enhance the quality of surface water runoff and reduce peak runoff. This system includes:

Permeable asphalt with an underlying storage layer, allowing infiltration and temporary retention. The proposed permeable asphalt system will manage surface water runoff by allowing water to infiltrate through a porous surface layer. The water will then percolate through several underlying layers designed to filter and store runoff before it reaches the drainage network. The system consists of:

- A porous surface course, which facilitates water infiltration while providing structural integrity.
- Binder course ensures structural integrity and permits vertical water movement.
- Choker course provides an even surface for the placement of the sub-base and assists in water conveyance.
- Sub-base storage layer (600 mm) – composed of coarse aggregate, designed to temporarily store infiltrated runoff and provide load-bearing capacity.
- Perforated underdrain pipe wrapped in geotextile, installed at the base of the sub-base to collect excess water and convey it into the wider surface water drainage system.
- Geotextile membrane – placed at the base and sides of the construction to prevent the migration of fines, protect permeability, and maintain long-term system performance.

The perforated pipe beneath the permeable paving is connected to the main surface water drainage line, which originates at the roundabout and runs southwards across the site. This main pipe collects surface water from:

- Road gullies along the Park & Ride access road
- Perforated pipes from the permeable asphalt in the car park

All surface water from both the traditional and SuDS systems converges into drainage lines, which then flows toward the southern part of the site.

Before discharging into the receiving waterbody, the combined runoff passes through the following key treatment and control components:

- An oil interceptor, which removes hydrocarbons and other pollutants
- A hydrobrake flow control device, located within a downstream manhole, which limits the discharge to a design flow of 4.57 L/s, corresponding to the calculated greenfield runoff rate.

The final discharge is directed into the existing stream, at a level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure that the outfall remains operational during extreme flood events.

2.3.2.10 Pavement

The proposed pavement along Cappagh Road, Western Distributor Road, and the new Park & Ride access road includes both overlay and full-depth construction zones.

The main car parking area will feature permeable asphalt, as outlined in the previous section.

2.3.2.11 Traffic Signs and Road Markings

Park & Ride Site

Appropriate road markings and traffic signs will be proposed within the main car park and the link roads in accordance with TSM Chapters 5, 6, and 7.

2.3.2.12 Public Lighting and Closed-Circuit Television

The proposed facility will be illuminated by a new public lighting system to enhance the safety of the users.

A new CCTV system will also be installed at the bus stop area and throughout the car parking area in order to enhance the personal safety of the users and provide security for parked vehicles and Bicycles.

2.3.2.13 Electric Vehicle Charging

The proposed facility will have 17 no. parking and charging points for Electric Vehicles which represents ~10% of the total parking capacity of the facility.

In addition, 17 no. standard parking spaces (~10%) will be futureproofed with ducting etc. to facilitate easy conversion to EV parking in the future.

2.3.2.14 Provision of Parking for Mobility Impaired

The proposed scheme shall provide 9 no. parking spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large), which represents ~5% of the total parking capacity of the facility. One (1 no.) of these spaces will be equipped with electric vehicle charging capability.

2.3.2.15 Utility Connection (including Relocation)

Several overhead and underground ESB cables, along with an electricity pylon and pole, are currently located within the planning application boundary, as shown on the map below. While the electricity pylon will remain unaffected by the proposed development, a 10kV overhead electricity pole may require relocation or adjustment.

Multiple underground pipelines serving drinking water, foul sewer, and stormwater networks are present within the surrounding road network, as illustrated on the maps below. Additionally, a Virgin Media underground telecommunications duct runs beneath both Cappagh Road and the Western Distributor Road.

Although the existing pipes and ducts are not anticipated to be directly impacted by the development, several associated chambers, manholes, and similar infrastructure elements may require minor relocation or adjustment to accommodate the proposed new roundabout layout and active travel scheme along Cappagh Road and the Western Distributor Road.

A new substation will be required to power the various electrical equipment within site.

2.4 CONSTRUCTION PHASE

The construction of the proposed development will be carried out in the following phases:

The follow represents the likely sequence of construction activities required for the construction of the park and ride facility:

- Site clearance and removal of footing bases and underground services
- Excavation of site to formation level. Excavations to be completed on site will comprise:
    - Top soil stripping to 300mm amounting to c. 6,220m^3.
    - Earthwork stripping of existing ground to formation level amounting to c. 4,680m^3
- Deposition of fill volume for level build up amounting to c. 16,470 m^3 of which 12,010m^3 will be imported to site.
- Construction of the foundations
- External works, roads & footpaths

2.4.1 Construction Phase Surface Water Management

During the construction phase surface water runoff will be to ground as per the existing surface water runoff regime at the project site.

During periods of high rainfall when precipitation exceeds infiltration surface water runoff will flow to the south and west following the natural fall in topography to the east.

Any groundwater ingress to excavations will be pumped to a construction phase treatment train that will comprise a mobile attenuation tank and buffered outfalls over vegetated ground to the east of the project site.

If surface water discharge to the existing stormwater drain is required during construction temporary on-site settlement ponds/tanks/silt busters will be installed to ensure adequate silt removal prior to discharge the detail of this system will be presented in the CEMP.

A silt fence will be provided along the southern and western boundaries of the construction phase to retain any fines entrained within the surface water runoff. The outfall of the buffered outfalls will be situated to the west of the silt fence.

2.4.2 Construction & Environmental Management Plan

A Construction & Environmental Management Plan (CEMP) will be prepared for the proposed development and provided to the planning authority prior to the commencement of construction.

2.4.2.1 Construction Waste Management Plan

The Resource Waste Management Plan (RWMP) provides a Waste Management Plan for the proposed development. It is anticipated that all excavated topsoil (6,220m^3) and 7988m^3 of subsoil will be reused on site. It is anticipated that 7,988 m^3 of subsoil material will need to be removed offsite for appropriate reuse, recovery and/or disposal. Soils for disposal from the site are classified as waste and must comply with waste management legislation. The relevant legislation is the EU council decision (2003/33/EC) which has been implemented in all member states and sets out the criteria for the acceptance of waste at Landfills.

Final certification for all materials removed off site will require to be provided by the main contractor on completion of the excavation works.

2.4.3 Construction Plant, Equipment & Materials

The following construction materials will be required for the works:

- Concrete: This will be delivered by bottle truck and placed directly in prepared forms.
- Hardcore: This will be stored in the Construction compounds and delivered to site location by dump truck.
- The materials and equipment to be stored in the construction compound will be provided in the CEMP to be submitted prior to the commencement of construction

3.0 METHODS

3.1 EXTENDED PHASE 1 HABITAT SURVEY

Multidisciplinary ecological surveys of the project site were undertaken by DEC Ltd during October and November 2024 and during May and July 2025. The methodology used during this survey was based on the Heritage Councils *Best Practice Guidance for Habitat Survey and Mapping* (2011). The classification of habitats recorded during the field survey is based on the Heritage Council's *A Guide to Habitats in Ireland*.

The *Guide to Habitats in Ireland* classifies habitats according to a hierarchical framework with Level 1 habitats representing broad habitat groups, Level 2 representing habitat sub-groups and Level 3 representing individual habitat types. The Phase I Field Survey focused on identifying habitats to Level 3 of the *Guide to Habitats in Ireland*.

The annotation of vegetation occurring within sites was undertaken using the DAFOR scale. This scale refers to plant species in terms of dominance, abundance, frequency, occasional and rare (DAFOR). Plant nomenclature in this report follows Webb (1996) for vascular plants and Smith (2004) for mosses.

A survey for field signs indicating the presence of otters or other protected non-volant mammal species such as Irish stoat and badgers was undertaken during the field surveys on the on the 15th October, 22nd November, 1st May and 3rd July 2025. The stretch of the Tonabrocky Stream for approximately 150m upstream of Cappagh Road and downstream to its confluence with the Bearna River was searched for field signs indicating the presence of otters. The stretch of the Bearna River downstream as far as the R336 Barna Road was also searched for field signs. This survey was undertaken during the daytime and particular attention was given to habitat features normally associated with otters. The surveys were completed subsequent to periods of dry weather conditions and outside times of flood conditions, when otter field signs are more likely to persist on the ground. Any otter or other mammal field signs typical of otter activity

were recorded during the surveys. These field signs, as described in Neal & Cheeseman (1) and Bang & Dahlstrom (2), include:

- mammal breeding and resting places, such as setts, holts, couches, lairs;
- pathways;
- prints;
- spraints and faecal deposits;
- latrines (and dung pits used as territorial markers);
- prey remains and feeding signs (snuffle holes);
- hair; and
- scratch marks.

All bird species seen using the site (as opposed to simply flying over it) were recorded.

An appraisal of habitats occurring within the project site for their potential to support bat species was completed during the field surveys. These appraisals involved the inspection of tree on site and the one remaining structure on site during the daytime for field signs indicating the presence of bats, roost emergence surveys and bat activity surveys on site.

(1) Neal, E., & Cheeseman, C., (1996). 'Badgers'. Poyser Natural History, London.

(2) Bang, P., & Dahlstrom, P., 'Animal Tracks and Signs'. Oxford University Press, Oxford.

3.2 ECOLOGICAL EVALUATION

Commentary on the ecological value of habitats is provided in Section 4 of this report.

The nature conservation value of habitats and ecological sites occurring within the proposed site are based upon an established geographic hierarchy of importance as outlined by the National Roads Authorities (NRA, 2009). The outline of this geographic hierarchy is provided below and this has been used to determine ecological value in line with the ecological valuation examples provided by the NRA (see NRA, 2009). The geographic evaluation hierarchy is as follows:

- International Sites (Rating A);
- National Importance (Rating B);
- County Importance (Rating C);
- Local Importance (higher value) (Rating D); and
- Local Importance (lower value) (Rating E)

The evaluation of bat activity recorded during static monitoring surveys follows the approach outlined by Kepel (2011) who assigned bat activity based on bat passes per hour as follows:

Pipistrelle species and Leisler's bat: Low = <3.5 passes per hour; Moderate = 3.6 – 6.5 passes per hour; High = >6.5 passes per hour

All Other Bat species: Low = <4.0 passes per hour; 4.1 to 10 passes per hour; high = >10 passes per hour.

These categories are apply to the median bat pass per hour per night recorded during monitoring. The median bat pass per hour per night has been recommended by Lintott & Matthews (2018) as the most accurate representation of bat activity as bat activity levels between nights can be highly variable.

3.3 IMPACT ASSESSMENT

The 'zone of influence' for a development is the area over which ecological features may be subject to significant impacts as a result of the Development and associated activities. The Zone of Influence (ZoI), or distance over which a likely significant effect may occur will differ across the Ecological Receptors identified for the proposed Development, depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken has established the habitats and species present at and surrounding the Site. The ZoI is then informed and defined by the sensitivities of each of the ecological receptors present, in conjunction with the nature and potential impacts associated with the Development.

The ZoI of the proposed development in relation to terrestrial habitats is generally limited to the footprint of the proposed development, and the immediate environs. Disturbances to the hydrological regime of wetland/aquatic habitats from impact sources can often result in impacts occurring at distances beyond the immediate adjacent areas of the impact source. For instance the distances over which aqueous pollutants are likely to remain at concentrations that have potential to result in perturbations to water quality and associated wetland/terrestrial habitats is difficult to quantify. The potential for such effects to occur are also highly site-specific and related to the predicted magnitude of any pollution event. The impact of a pollution event will depend on the volumes of discharged waters, concentrations and types of pollutants (in the case of the proposed development these being comprised of sediment, hydrocarbons, cement-based products and other related construction solutions), volumes of receiving waters, and the sensitivity of the ecology of the receiving waters. With respect to the Development, this includes all freshwater habitats and fauna at and downstream of the Development that have been identified as ecological receptors.

The ZoI for terrestrial mammals in terms of potential impacts to breeding and resting places is 150m from the Development. This distance is in line with the maximum distance for potential disturbance to terrestrial mammals (otters and badgers) as specified by TII guidance documentation (NRA, 2009 a & b).

The ZoI for birds is species-specific and relates to the assemblage of avifauna recorded at project site and their sensitivity to disturbance. Goodship & Furness (2022) have published a review of disturbance distances for a range of bird species listed on Annex 1 of the EC Birds Directive. The habitat occurring at project site is not suitable for many of these species e.g.

waders, geese etc.. However suitable breeding and foraging habitat for songbirds/passerines occur in woodland habitat beyond the eastern and northern boundaries of the project site. The only passerine species for which Goodship & Furness (2022) have assigned disturbance distances are crested tit and crossbill. For the purposes of this assessment and defining the ZoI for birds the disturbance distance for crested tit and crossbill is applied for the range of passerines occurring at project site.

The disturbance distance sensitivity assigned for passerines (based on crested tit and crossbill) is <50m. In light of the above the ZoI of the proposed development for birds is up to 50m.

The ZoI for herpetofauna is considered to be limited to the direct habitat loss arising from the Development.

3.3.1 Identification & Characterisation of Effects

When describing the scale of ecological impacts reference should be made to the following characteristics:

- Positive or negative
- Extent: the size of the affected area/habitat and/or the proportion of a population affected by the effect
- Duration: the period of time over which the impact will occur. The EPA's guidelines on information to be included in Environmental Impact Assessment Reports (EPA, 2022) sets out the following terms for defining the duration of an impact: Momentary Effects - effects lasting from seconds to minutes; Brief Effects - effects lasting less than a day; Temporary Effects - effects lasting less than a year; Short-term Effects - effects lasting one to seven years; Medium-term Effects - effects lasting seven to fifteen years; Long-term Effects - effects lasting fifteen to sixty years; Permanent Effects - effects lasting over sixty years.
- Frequency & Timing: how often the effect will occur; particularly in the context of relevant life-stages or seasons; and,

- Reversibility: will the effect be permanent or temporary. Will an impact reverse, either spontaneously or as a result of a specific action.

The assessment describes those characteristics relevant to understanding the ecological effect and determining the significance, and as such it does not need to incorporate all stated characteristics (CIEEM, 2018 v.1.1).

3.3.2 Significant Effects on Ecological Receptors

For the purpose of Ecological Impact Assessment, a 'significant effect', is an effect to an ecological feature from an impact, that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as important. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). As such, effects can be considered significant in a wide range of geographic scales from international to local. Consequently, 'significant effects' should be qualified with reference to the appropriate geographic scale (CIEEM, 2018 v.1.1).

In order to predict likely ecological impacts and effects, the assessor must take account of the relevant aspects of the ecosystem structure and function, which include (CIEEM, 2018 v.1.1):

- The resources available (e.g. territory, prey availability, habitat connectivity etc.);
- Environmental processes (e.g. eutrophication, drought, flooding etc.);
- Ecological processes and relationships (e.g. population / vegetation dynamics, food webs etc.);
- Human influences (e.g. fertilisation, turbary, grazing, burning etc.);
- Historical context (natural range, trends etc.);
- Ecosystem properties (e.g. the carrying capacity, fragility etc.); as well as,
- Other environmental influences such as air quality, hydrology, water quality, nutrient inputs and salinity etc.

The determination of significance is made in line with the terminology set out in the EPA's guidelines on information to be included in Environmental Impact Assessment Reports. These criteria are as follows:

- No change – no discernible change in the ecology of the affected features
- Imperceptible effect - An effect capable of measurement but without noticeable consequences
- Not Significant - An effect which causes noticeable changes in the character of the environment but without significant consequences.
- Slight effect - An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- Moderate effect - An effect that alters the character of the environment that is consistent with existing and emerging trends.
- Significant effect - An effect which, by its character, its magnitude, duration or intensity alters a sensitive aspect of the environment
- Very Significant - An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
- Profound effect - An effect which obliterates sensitive characteristics

3.3.3 Integrity

The integrity of an ecological receptor refers to the coherence of the ecological structure and function that enables the ecological receptor to be sustained (NRA, 2009). The term 'integrity' is most often used when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can often be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites' habitats and/or species; affect the nature, extent, structure and functioning of component habitats; and/or, affect the population size and viability of component species.

3.3.4 Conservation Status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status.

As per the definitions provided in the EU Habitats Directive, the conservation status of a habitat is favourable when:

- Its natural range and areas it covers within that range are stable or increasing
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- The conservation status of its typical species is favourable as defined below under species

The conservation status of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

According to the TII/CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance

of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a habitat which is considered to be internationally important. However, an impact may occur at a lower geographic scale on this internationally important habitat. Under such a scenario, such an impact on an internationally important habitat is considered to be significant only at the lower scale e.g. local, county, rather

4.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

4.1 SITE OVERVIEW

The proposed Park & Ride facility is located at the western fringe of Galway City boundary, to the west of Cappagh Road. The project site is bounded to the east by Cappagh Road, to the south and west by Cappagh Park and to the north by an agricultural landholding that appears to be subject to minimal agricultural activity.

The Tonabrocky Stream flows through the project site from the northeast to the southwest and drains into the Bearna River to the south of the project site. The Bearna River flows from north to south adjacent to the project site's western boundary.

4.2 DESKTOP ASSESSMENT

4.2.1 Review of Historical Mapping

A review of the historic 6-inch and 25-inch mapping from 1839 and 1902 indicates the presence of the Barna Stream flowing through the site, the presence of the Cappagh Road along the western boundary of the site and the enclosed nature of the site with its sub-division into a number of fields.

Aerial mapping from the 1995 to 2000 depicts the site option and the lands to the west and south as unimproved. Construction of the playing pitch that occur to the south of the site is depicted on this aerial image. The 2001 to 2005 aerial imagery shows the presence of the playing pitches and associated pedestrian paths to the south and west of the site option. No

further changes in the surrounding land cover immediately adjacent to the site option is apparent on later aerial imagery. The imagery from 1995 to current indicates little change at the site option, suggesting that the site has remained unimproved.

4.2.2 Soils & Geology

Mapping from the Geological Society of Ireland (GSI, 2025) indicates the bedrock underlying the site is part of two formations: the Murvey Castle formation (code IDGAGRM), made up of Non-porphyritic syenogranite (pink), and the Errisbeg Townland Granite formation (code IDGAGRE), made up of megacrystic pink/grey monzogranite.

The GSI/ Teagasc (2025) mapping database of the quaternary sediments in the area of the subject site indicates that the principal subsoil type underlying the Proposed Development is Till derived from granites. Much of the site is underlain by bedrock outcrop or subcrop.

4.2.3 Hydrogeology

Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones'. The GSI currently classifies the aquifer vulnerability in the region as 'Rock at or near Surface or Karst' or 'Extreme' throughout the site.

The Proposed Development is within the 'Spidal' groundwater body (EU Code: IE_WE_G_0004). The most recent WFD groundwater status for the Spidal groundwater body (2016-2021) is 'Good', and the WFD risk score is 'Not at Risk' of not achieving good status.

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. This current index does not show any wells drilled or springs at the site. This current index, however, indicates there are no groundwater wells within a 2 km radius of the development site. The site is not located near any public groundwater supplies or group schemes. There are no groundwater source protection zones in the immediate vicinity of the site.

There are no sensitive soil receptors, no identified areas of geological heritage or groundwater supplies in the vicinity of the site boundary.

Based on the NRA methodology (2009), criteria for rating site importance of geological features, the importance of the bedrock and soil features at this site is rated as 'Low' importance with low significance or value on a local scale, due the aquifer beneath the site being rated as a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones'.

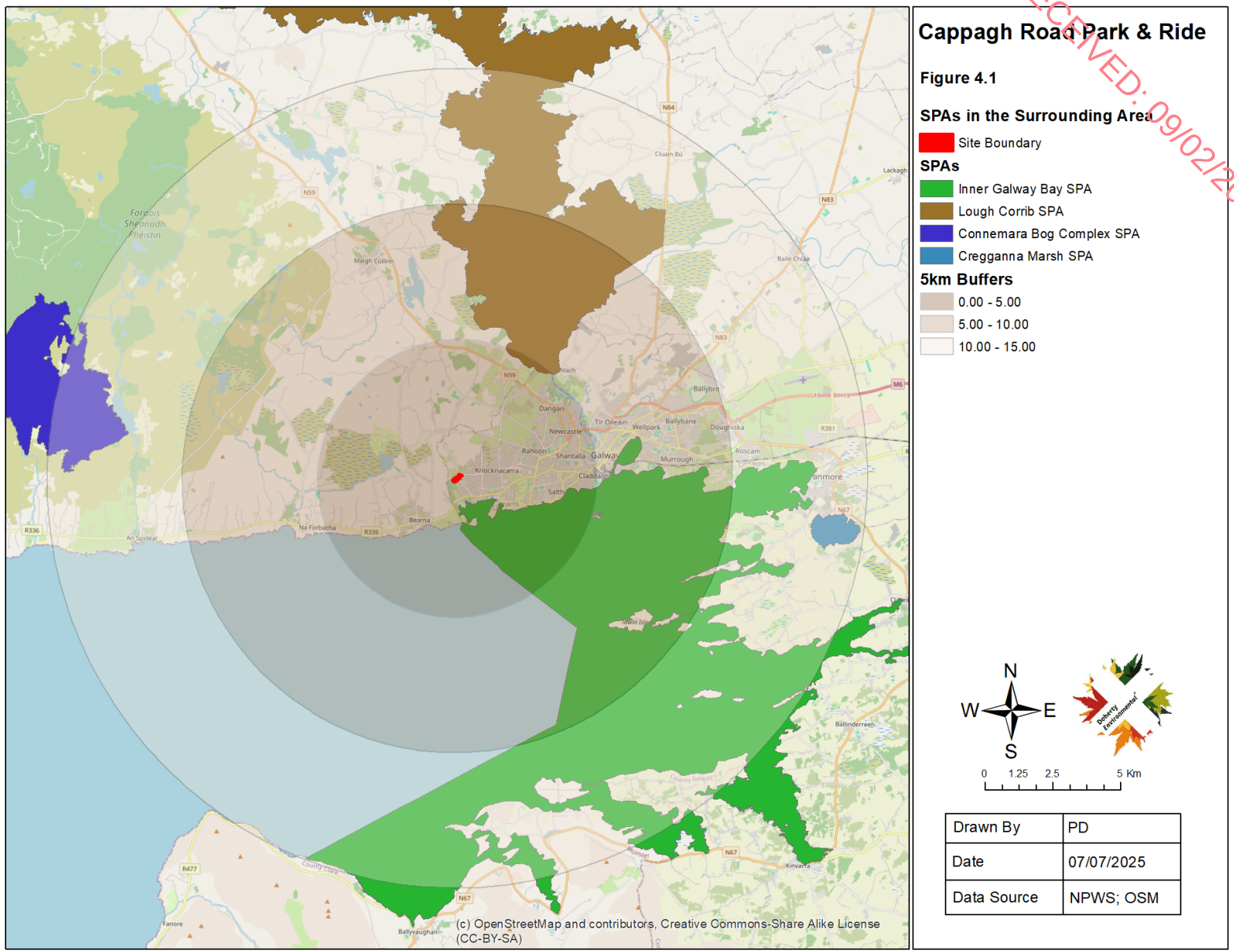
4.2.4 Hydrology

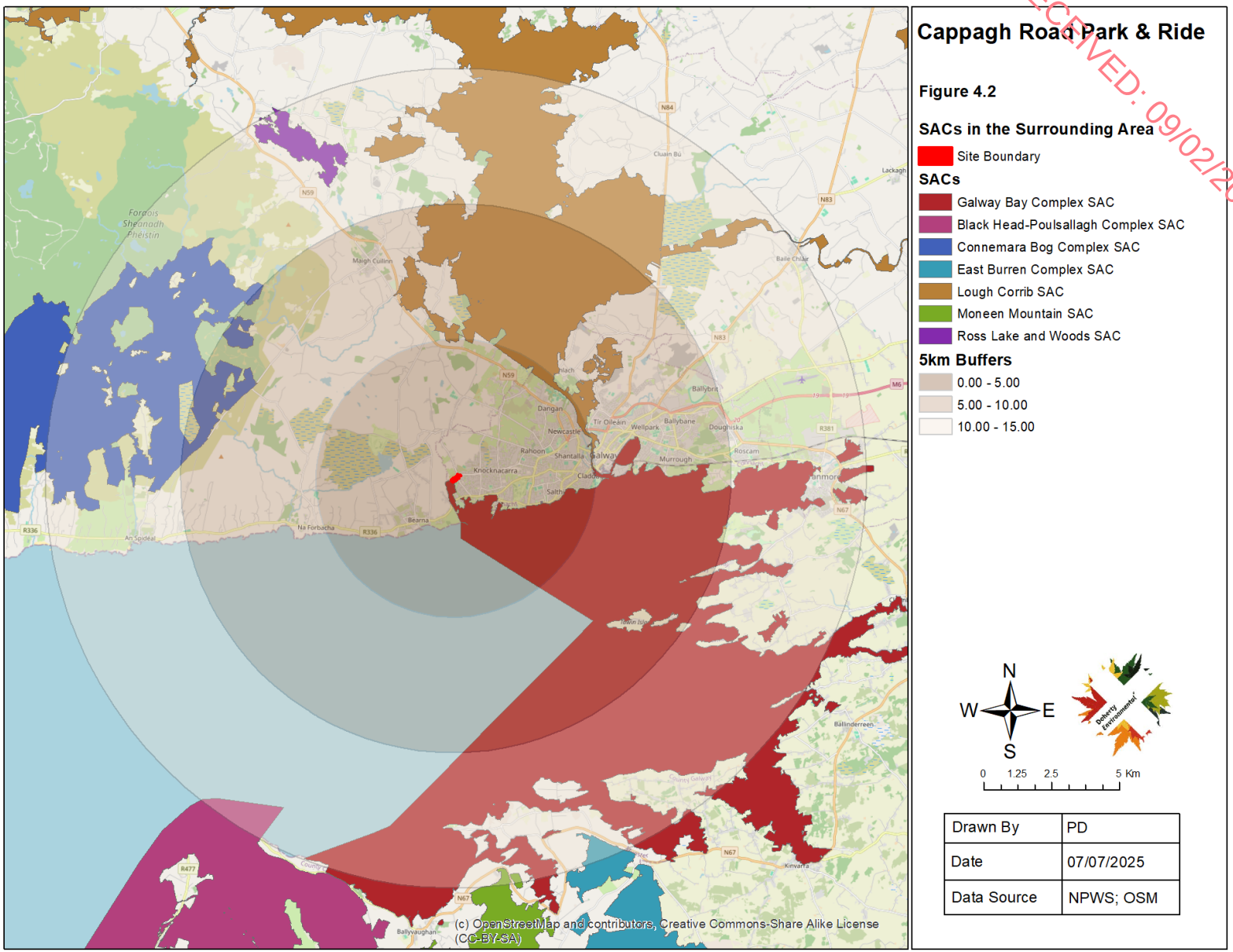
The project site is located within the Knock[Furbo]_SC_010 sub-catchment of the Owenboliska-Cashla-Screeb-Coastal surface water catchment. The Barna Stream (EPA Name: Oddacres Stream) flows from north to south through the western portion of this site option. A tributary of the Barna Stream, the Tonabrocky Stream (local name) flows through the site option from the northeast to the southwest and merges with the Barna Stream towards the south of the site.

4.2.5 Designated Conservation Areas

The project site is not located within any designated conservation area. The nearest European Site to the project site is the Galway Bay Complex SAC, located approximately 17m to the west of the western boundary of the project site. The Inner Galway Bay SPA is located approximately 1km to the south of the project site. No Natural Heritage Areas (NHAs) occur at or immediately surrounding the site option. The nearest NHA is the Moycullen Bogs NHA, located approximately 1.5km to the north of the site option. The nearest proposed Natural Heritage Area (pNHA) is the Galway Bay Complex pNHA, which overlaps the Galway Bay Complex SAC and is located approximately 170m to the west.

The Galway Bay Complex SAC and the Inner Galway Bay SPA are connected to the project site via a hydrological pathway established by the Tonabrocky Stream and the Bearna River.





4.2.6 Protected Species Records

The National Biodiversity Data Centre does records have been reviewed to identify the presence of any previously recorded rare, threatened and/or protected flora species occurring within or in the vicinity of the project site. There are no records for any rare, threatened or protected fauna species held by the NDBC for this area.

Figure 4.3: Area of Search for Rare, Threatened or Protected Species

4.2.7 Invasive Plant Species

No historical records for the presence of non-native invasive species are held by the NBDC for the area of search shown on Figure 4.3.

4.3 SURVEY RESULTS

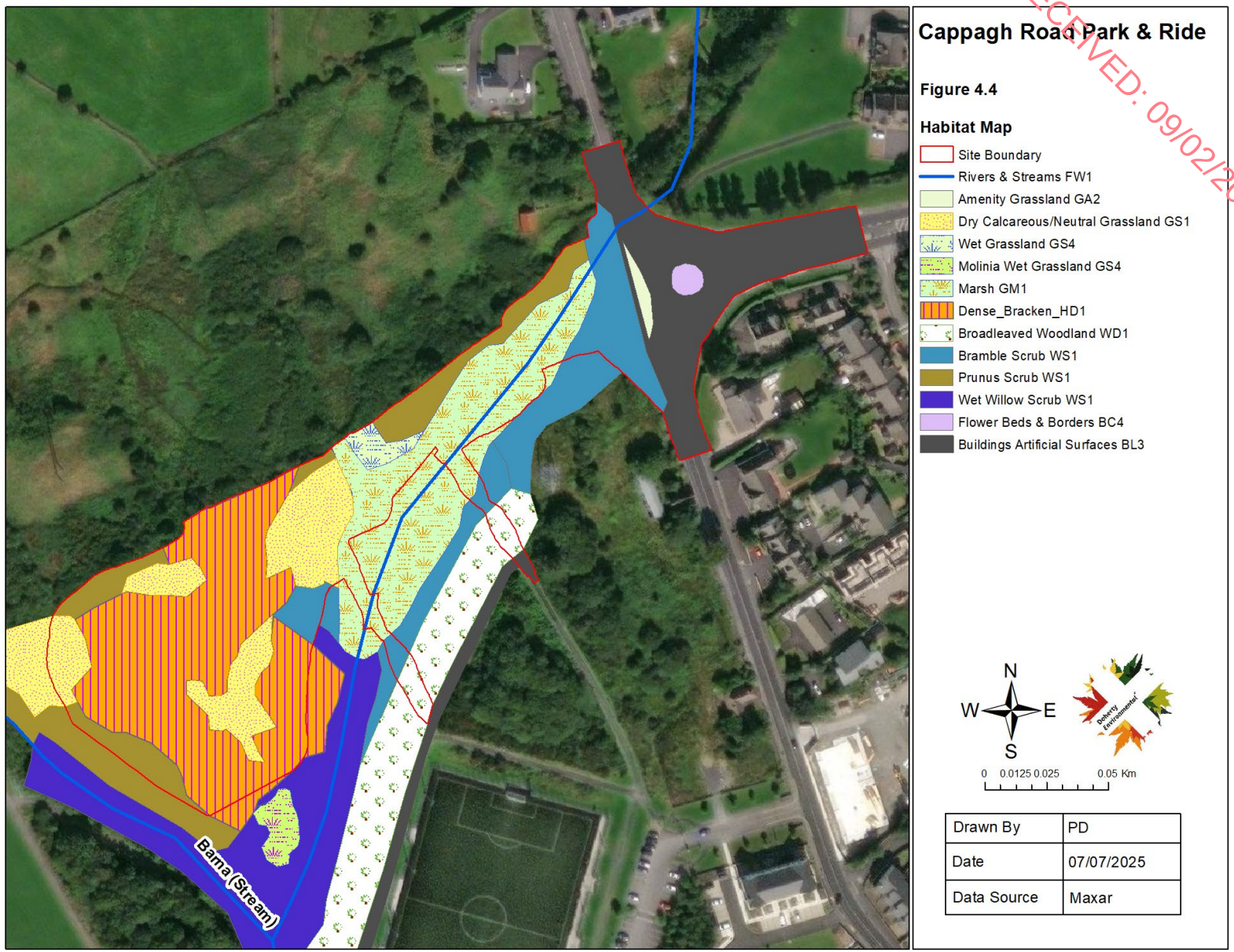
4.3.1 Habitats

The following Sub-Sections describe the habitats occurring within and immediately adjacent to the project site. Each habitat described below has been identified to Level 3 of Fossitt's *Guide to Habitats in Ireland*. The alpha-numeric code for each habitat is also provided alongside the habitat name (e.g. hedgerow WL1). The locations and extent of each habitat described below are illustrated in Figure 4.4: Habitat Map.

4.3.1.1 FW1 Eroding Watercourse

The Tonabrocky Stream rises at Tonabrocky and flows south west into Rusheen Estuary. It drains into the Bearna River, which rises at Lough Cnoc an Champa and then flows south east before forming a confluence with the Tonabrocky Stream at Ballard. The Tonabrocky Stream and the Bearna River are both fast flowing salmonid streams with clean gravels and limited macrophyte plant growth with the exception of liverworts, mosses and small stands of alternate *Myriophyllum alterniflorum,* Apium nodiflorum and Berula erecta. The low cover of marcophytes in the watercourse is indicative of low levels of enrichment. The low nutrient levels are also reflected by the macro-invertebrate communities of both the Tonabrocky and the Bearna that contained three families (Chloroperlidae, Nemouridae & Leuctridae) of clean water stonefly species (EPA Class A and B). The streams also contained clean water mayfly family Heptageniidae (EPA Class A) and cased caddis families (EPA class B) Odontoceridae and Seracostomatidae. The presence of good numbers of EPA class A and B macro-invertebrates indicated unpolluted water (Q4/5) in both the Tonabrocky Stream and the Bearna River downstream.

The fisheries habitat along the Tonabrocky Stream upstream of the project site near its source is of poor quality owing to low and ephemeral flows with the channel subject to drying out. Conditions change downstream with the section of the stream immediately upstream, through and downstream of the project site being representative of good quality salmonid habitat with nursery, spawning and holding habitat present over much of the channel length. The stream is known to support stocks of brown trout and is recognised as a salmonid river. The Galway Bay Complex SAC and the Inner Galway Bay SPA are connected to the project site via a hydrological pathway established by the Tonabrocky Stream and the Bearna River.



4.3.1.1.1 Nature Conservation Value

The Tonabrocky Stream and the Bearna River downstream are representative of un-polluted watercourse with good fisheries habitat. They are of local importance (higher value) (Rating D).

4.3.1.2 GS1 Dry calcareous and neutral grassland

Examples of dry calcareous and neutral grassland occurs as patches with areas recently encroached by spreading dense bracken. The remaining areas of this grassland are well grazed by horses with dunging and a low cropped sward occurring throughout. The grassland is considered to be semi-improved with no evidence of nutrient application, as from livestock dunging, evident. Commonly occurring species such as Holcus lanatus, Agrostis caninia, Agrostis stolonifera, Anthoxanthum odoratum, Poa trivalis, Plantago lanceolata, Cardamine flexuosa, Veronica chamaedrys, Crepis capillaris, Centaurea nigra, Prunella vulgaris, Achillea millefolium and Lathyrus pratensis occurring. Mounds of yellow meadow ant (Lasius flavus) are present within the example of this grassland occurring to the west of the project site.

4.3.1.2.1 Nature Conservation Value

The dry calcareous and neutral grassland within the project site supports are typical and commonly occurring range of plant species. It is semi-improved and well grazed. It is representative of a habitat of local importance (higher value) (Rating D).

4.3.1.3 GS4 Wet Grassland

A small area of wet grassland occurs adjacent to the northern boundary of the project site. The vegetation at this location is disturbed by livestock with poaching and dunging noted during site surveys. The dominant species here are Juncus effusus and Juncus acutiflorus. The wet grassland habitat is generally species poor and gives way to herb rich marsh habitat to the south.

4.3.1.3.1 Nature Conservation Value

The example of wet grassland within the site is of Local importance (lower value) (Rating E).

4.3.1.4 GS4 Molinia Wet Grassland

An isolated area of Molinia caerulea dominated wet grassland occurs to the south of the project site. This area of grassland habitat is situated at lower elevation near the confluence of the Tonabrocky Stream and Bearna River. It is situated in an isolated area of peat substrate. Molinia caerulea dominates the vegetation with Calluna vulgaris, Erica tetralix, Erica cinerea , Narthecium ossifragum, Circium dissectum, Potentilla erecta, Succisa pratensis and Dactylorhiza maculata occurring. The vegetation is typical of a Molinia-dominant fen/wet grassland habitat. The extent of this habitat is small and isolated in scale and is likely to be a rare remnant example of such habitat in the local area. The vegetation community occurring here is widespread and plentiful in the wider surrounding area where peatland habitats dominate the land cover.

4.3.1.4.1 Nature Conservation Value

The example of Molinia wet grassland to the south of the project site is isolated and small in extent. It however supports a suite of vegetation typical of Molinia dominated wet grassland and is of local importance (higher value) (Rating D).

4.3.1.5 HD1 Dense Bracken

Monospecific stands of dense bracken have colonised much of the land cover to the west of the project site. A review of Google Earth imagery indicates that much of the site was free from dense bracken cover in the early to mid-2000's. Since then bracken has spread throughout the western area of the site on drier substrate.

4.3.1.5.1 Nature Conservation Value

The dense bracken habitat within the site is a spreading habitat colonising much of the drier substrate to the west of the site. It is species poor and of Local importance (lower value) (Rating E).

4.3.1.6 WS1 Scrub Habitats

Scrub habitat dominates the boundary of the project site with dense stands of spreading Prunus spinosa dominated scrub occurring along the northern boundary.

Spreading Rubus fruticosus agg. scrub with abundant Ulex europeaus occurs towards the centre of the site as well as to the southeast of the site on the northwest facing slopes.

Wet willow scrub habitat dominates the cover at lower elevations along the riparian corridor of the Tonabrocky Stream to the south of the project site. Salix cinerea and Salix aurita are the dominant species, with Alnus glutinosa and Corylus avellana also occurring in places.

4.3.1.6.1 Nature Conservation Value

The example of Prunus spinosa and bramble and gorse dominated scrub are of Local importance (lower value) (Rating E), whilst the wet willow scrub is of local importance (higher value) (Rating D).

4.3.1.7 WD1 Broad-leaved Woodland

Linear broad-leaved woodland occurs along the northwestern boundary of the existing Cappagh Park. A mixed of mature trees occurs along this habitat, including Fraxinus excelsior, Quercus petraea, Ilex aquifolium and Pinus species.

4.3.1.7.1 Nature Conservation Value

The example of broad-leaved woodland bounding the project site is of local importance (higher value) (Rating D).

4.3.2 Invasive Species

No non-native invasive species, such as *Fallopia japonica, Gunnera tinctoria* or *Impatiens glandulifera* were identified on site during site field surveys. *Buddleja davidii* was recorded at the project site adjacent to the bridge parapet along the Cappagh footprint. *Buddleja davidii* is listed as a moderate impact invasive species by the NBDC.

4.3.3 Fauna

An overview of the fauna supported by the site is outlined in the following sections. The nature conservation value of the site in supporting populations of fauna is also outlined in the following sub-section.

4.3.3.1 Non-Volant Mammals

The stretch of the Tonabrocky Stream occurring within the project site and the Bearna River adjacent to the western boundary of the project site have been searched for field signs indicating the presence of otters. No field signs in the form of holts, couches, prey remains, footprints, spraints etc. for otters were identified during field surveys. On the basis of these surveys it can be concluded that the Tonabrocky is not relied upon by otters.

No definitive evidence of protected mammals such as otter or badger was noted within or immediately bounding the project site. The woodland habitats to the north and east of the project site are likely to support smaller mammals.

4.3.3.2 Volant Mammals – Bat

There are no structures occurring within the project site and as such there is no potential for bats to roost within the project site. There are no mature trees occurring within the project site. All vegetation occurring within the site is either immature or representative of thin stemmed scrub species that are devoid of any preferred tree roost features. Given the absence of structures and suitable trees within the project site there is no potential for bat roosts to occur.

The project site provides ideal foraging habitat for bat species. Common pipistrelle, Soprano pipistrelle, Leisler's bat as well as Myotis species and brown long-eared bat are all likely to rely on the project site for foraging.

4.3.3.3 Birds

A range of bird species were seen and heard on site during the site field surveys completed in May and July 2025. Species recorded include robin, blackbird, great tit, coal tit, blue tit, great tit, chaffinch, chiffcahff, linnet, pied wagtail, song thrush, dunnock, rook, starling, house sparrow, pheasant, swallow and wood pigeon.

Swallows and starlings which are species of medium conservation concern, were observed foraging throughout the site but were not identified as breeding on site. Only one structure occurs at the project site and no swallow nests were observed at this structure during field surveys. As such this species was not considered to breed at the project site.

The British Trust for Ornithology (BTO) provides guidance for establishing the breeding status of bird species. The classification of breeding status ranges from non-breeding, possible breeding, probable breeding to confirmed breeding. The presence of the songbird species listed above within suitable woodland breeding habitat to within the project site is indicative of probable earlier breeding activity during the 2025 breeding season. The majority of the species observed are of low conservation concern (green-listed species), with starling and swallow being of medium conservation concern (amber-listed listed).

5.0 IMPACT ASSESSMENT

5.1 CONSTRUCTION PHASE

5.1.1 Designated Conservation Areas

There will be no direct impacts to designated conservation areas occurring in the surrounding area. The nearest conservation area to the project site is the Galway Bay Complex SAC, located c. 17m to the west of the project site. An Natura Impact Statement, provided as part of the planning application documentation, has examined in detail the potential for the project to result in adverse effects to this SAC and all other European Sites and has concluded that, with the implementation of all mitigation measures set out in the Natura Impact Statement, the project will not have the potential, alone or in-combination with other plans or projects, to result in adverse effects to these or any other European Sites.

Furthermore, it is noted that the nearest pNHA to the project site is the Galway Bay Complex pNHA, the boundary of which and the features of interest of which, are the same as those for the Galway Bay Complex SAC. As such the examination set out in the Natura Impact Statement for this project for the Galway Bay European Sites is also applicable to this pNHA and relates to the potential for the project to result in perturbations to water quality at the Rusheen Estuary section of the Galway Bay. Mitigation measures are set out in this Chapter as well as the Natura Impact Statement that will eliminate the potential for the project to result in significant perturbations to water quality at the Rusheen Estuary and within the pNHA.

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5.1.2 Habitat Loss & Disturbance

The footprint of the proposed development will result in the loss of the following habitats of local importance (higher value) (Rating D)

GM1 Marsh: The majority of the marsh habitat occurring within the project site will be lost to the footprint of the project. The extent of marsh habitat will be representative of a significant magnitude impact to this habitat. This will result in a significant impact at the site scale. Examples of marsh habitat occur in areas of unimproved land cover to the north and west of the project site. Given the occurs of this habitat in the surrounding local area, the loss of a small area of this habitat (in the context of the wider surrounding area) is considered to be representative of moderate negative and permanent significance at the local scale.

GS1 Dry calcareous and neutral grassland: the loss of the small areas of dry calcareous and neutral grassland that consists of a well grazed commonly occurring vegetation community will be representative of an impact of minor negative and permanent significance.

WD1 Broad-leaved woodland: the loss of small areas of broad-leaved woodland to the footprint of the project will represent an impact of minor negative and permanent significance.

The footprint of the proposed development will result in the loss of the following habitats of local importance (higher value) (Rating E):

WS1 Bramble scrub; WS1 Prunus scrub; GS4 wet grassland; and HD1 dense bracken.

The loss of these habitats of Local importance (lower value) to the footprint of the project will represent an impact of minor negative and permanent significance.

The project will result in the temporary disturbance to the Tonabrocky Stream as a result of the proposed realignment of the stream corridor. It is noted, as per Section 4.2.1 above that the stream corridor has been subject to historic realignment. Nonetheless the proposed realignment, in the absence of a sensitive approach to the realignment design and works, will have the potential to result in an impact of moderate negative and temporary significance to this habitat of local importance (higher value).

In addition to the potential impacts associated with the realignment of the Tonabrocky Stream as set out above, earthworks associated with the construction phase of the project will denude surfaces and have the potential to generate silt-laden surface water runoff from the project site to the Tonabrocky Stream. During periods of dry weather dust will be generated at the project site and could also be deposited to the Tonabrocky Stream and conveyed downstream. In the event that water generated in the construction footprint is of a poor water quality standard or becomes contaminated from construction works, its discharge will have the potential to perturb water quality along the Tonabrocky Stream and downstream along the Bearna River and the Rusheen Estuary. In addition, potentially contaminating materials such as oils, fuels, lubricants, other construction-related solutions and cement-based products will be used on site during the construction phase and the accidental emission of such material via surface water runoff to the Tonabrocky Stream and downstream along the Bearna River and Rusheen estuary will have the potential to undermine water quality.

The project will not result in the loss of any area of Molina wet grassland or wet willow woodland habitat.

5.1.3 Disturbance to/Loss of Habitat for Terrestrial Mammals

No breeding sites or resting places of protected terrestrial non-volant mammals such as badgers were noted within or immediately adjacent to the project site and the construction phase of the project will not have the potential to result in significant disturbance to non-volant terrestrial mammals.

Any inappropriate siting of lighting during construction, may have the potential to indirectly impact on bat species that utilise the project site for foraging and/or commuting. Given the built-up nature of the wider surrounding environment (and the presence of artificial lighting to the south, east and west, the local bat population would be expected to be habituated to artificial light spill, especially as the most common species recorded within the subject lands i.e. Leisler's bat, soprano pipistrelle and common pipistrelle bat, are some of the least sensitive species to artificial light spill.

5.1.4 Impacts to Birds

The clearance of the site and any recolonising vegetation within the project site during the breeding bird season will have the potential to result in the destruction of nest and nest or fatality to chicks.

Given the disturbed nature of the site, the local bird population supported by the project site is likely to be well habituated to human activity and the construction works associated with the project are not predicted to have the potential to result in significant disturbance to birds.

5.1.5 Spread of Non-Native Invasive Species

During site surveys the only non-native species recorded on site was *Buddleja davidii*. The construction phase of the project has the potential to result in the spread of these species in the wider vicinity of the project site. In addition, the potential exists for site operatives and machinery to result in the inadvertent spread of non-native plant species on site, should clothing, plant and machinery be contaminated with these species prior to entry on site.

5.2 OPERATION PHASE

5.2.1 Designated Conservation Areas

There will be no direct impacts to designated conservation areas occurring in the surrounding area. The nearest conservation area to the project site is the Galway Bay Complex SAC and associated Galway Bay Complex pNHA, located approximately 17m to the west of the project site. The Natura Impact Statement, provided as part of the planning application documentation, has examined in detail the potential for the project to result in adverse effects to these European Sites & pNHA and all other European Sites and has concluded that, in the absence of appropriate design safeguards the project will have the potential to combine with other projects to result in perturbations to water quality at the Rusheen Estuary section of the Galway Bay European Sites with potential implications for the qualifying features of interest of the SAC, SPA as well as the pNHA.

5.2.2 Habitat Loss

The operation phase of the development will not result in any further habitat loss within the project site.

5.2.3 Impacts Terrestrial Fauna

The operation phase of the project is not predicted to have the potential to result disturbance to protected terrestrial non-volant mammals or bird species. This is due to the absence of any evidence of protected terrestrial non-volant mammals within the project site during field surveys and the low value habitats within the project site for bird species.

Public lighting will be provided as part of the operation phase of the project and in the event that inappropriate lighting is provided and results in excessive lighting along the edge of and over woodland habitat to be provided as biodiversity landscaping surrounding the project site, there will be potential for disturbance to suitable bat foraging habitat.

Mitigation measures are set out in Section 6 below that aim to avoid illumination of woodland edges to the east and north of the project site.

6.0 MITIGATION MEASURES

The mitigation measures outlined in the following sections aim to ensure that a best practice approach to minimising ecological disturbance during the construction phase is implemented and that the design of the project's operational phase avoids significant effects the surrounding ecology.

6.1 ECOLOGICAL CLERK OF WORKS

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 where necessary and advising on the implementation of woodland enhancement measures.

6.2 MEASURES TO MINIMISE IMPACTS TO HABITATS

Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed scheme.

Construction machinery will be restricted to site roads and the footprint of the proposed scheme.

Enhancement tree planting will be undertaken as part of the proposed landscaping within the project site.

The following measures will be implemented to protect water quality:

- Storage – all equipment, materials, chemicals, fuel and oil stores will be sited on impervious bases and within a secured bund of 110% of the storage capacity, within the lay down area.

- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.

- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.

- As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in the dedicated site compound. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated.

- All fuel oil fill areas will have an appropriate spill apron and spill kits will be provided on site.

- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any surface waterbody.

- Maintenance – maintenance to construction plant will not be permitted on site, unless vehicles have broken down necessitating maintenance at the point of breakdown. All necessary pollution prevention measures will be put in place prior to commencement of maintenance in this instance;

- No wash down or washout of concrete trucks will be undertaken on site. The wash down or washout of trucks will take place off site in an appropriate facility.

- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.

- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.

- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.

- All surface water infrastructure is to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements.

- Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning.

- All new sewers are to be inspected by CCTV survey post construction, to identify any possible physical defects for rectification prior to operational phase.

- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall

- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site attenuation pond where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

- Weather conditions and seasonal weather variations will also be taken account of when planning excavations, with an objective of minimizing soil erosion.

- Concrete batching will take place off site or in a designed area with an impermeable surface.

- Discharge from any vehicle wheel wash areas is to be directed to onsite settlement ponds.

- Hazardous construction materials shall be stored appropriately to prevent contamination of watercourses or groundwater.

- Concrete - Wet concrete operations will be carried out in dry conditions.

- Mess, sanitation and welfare facilities will be required during construction and will be located at the construction compound. Foul effluent will make use of chemical facilities with routine removal for offsite disposal.

- Where possible all spoil generated during the construction phase will be removed from site as excavated. Where spoil is required to be stored on site, the spoil stockpiles will

be covered with a waterproof membrane during periods of precipitation to prevent any material from washing out. In addition, a protective berm shall be installed around any area required for spoil storage on site.

- Excavated soil material to be re-used for landscaping purposes will be stored on level ground.

- Standard dust suppression measures will be implemented during periods of dry weather. This will avoid any impacts arising from the spread of dust particles during the construction phase.

6.2.1 Biodiversity Landscape Enhancement

The landscape design of the proposed Park and Ride facility at Cappagh will aim to enhance site biodiversity by creating and enhancing a variety of habitats that support biodiversity. This will be achieved through strategic planting of native species, including trees, shrubs, and groundcover, which provide essential food sources, shelter, and nesting sites for pollinators, birds, and small mammals.

The key objectives for the proposed landscape design approach are to:

- To protect, manage and enhance retained landscape features, prioritising the retention and enhancement of existing hedgerows and mature trees, which act as important ecological corridors

- To enhance site biodiversity utilising native tree, hawthorn hedges and groundcover planting and integrating SuDS biofiltration planters which will incorporate pollinator-friendly planting in accordance with the All-Ireland Pollinator Plan. The incorporation of SuDS features will also diversify micro-habitats, further enriching biodiversity.

- To create a sustainable, low maintenance and resilient landscape, ongoing management practices focused on minimal intervention, avoiding pesticide use, and targeted maintenance will ensure these habitats thrive, fostering a resilient and flourishing ecosystem within the project's boundaries

- To visually enhance the proposed parking facilities through landscape interventions,
- To create a robust and safe environment for easy everyday access for people of all age groups.

6.3 TONABROCKY STREAM REALIGNMENT

The proposed Tonabroky Stream realignment entails diverting a short section of the stream, approximately 130 metres in length, to minimise the impact on its habitats by reducing the required length of the culvert/bridge beneath the proposed new access road at the Cappagh Road Roundabout.

The following measures will be implemented to protect habitats:

- Habitat features in the new channel will be designed and constructed to replicate the habitat conditions present along the current route of the stream through the site, which are considered to provide suitable habitat for spawning salmonids.
- Stone used for the new channel should match the local geology of the area (granite).
- Prior to excavation of the new channel, clearance of vegetation within the footprint of the works area will be undertaken. Due to the un-managed nature of the project site and the presence of suitable bird nesting habitat, wherever possible vegetation clearance will be completed outside of the bird nesting season (March 1st to August 31st. Whilst a track machine and mulcher is suitable for a significant amount of work, vegetation within 5m of the stream should be cleared sensitively by hand. Vegetation should not be allowed to enter the stream. This works should be done after consultation with Inland Fisheries Ireland (IFI).
- When excavating the new channel, the bed level and stream width of the new channel will replicate that of the original channel. Figures from site survey required. By duplicating the dimensions of the original stream, ecological function and conditions will be maintained.

- All habitat creation works should be carried out under the full-time supervision of a suitably qualified fisheries ecologist and engineer. Sourcing of stone will also be in liaison with the fisheries ecologist.

- Timing of works to excavate the new channel and temporary bypass channel will be agreed with Inland Fisheries Ireland (IFI). Ideally this will be done well in advance of stream diversion works in order to allow banks and river margins to stabilise and recolonise with vegetation.

- Prior to the original stream being diverted into the new channel and temporary bypass channel, electro fishing will be required in the original channel to remove fish species present. This can only be done by a qualified fisheries ecologist under license or IFI.

- Timing of works to divert all flows into the new channel will be during the instream works window of July 1st to September 30th, or on an alternative date agreed with IFI. It is desirable that this is done when the stream is at a moderate to high water level, especially as the Barna Stream is a small 1st order stream. Water needs to be diverted in a controlled manner and consideration needs to be given to the stretch of stream downstream of the diversion to ensure it does not dry out prior to water reaching it from the new channel. When the new channel is being excavated, ground 2-3m in width will be left untouched at either end of the new channel to act as a plug. These will be removed in order to allow water to divert into the stream. The downstream plug will be removed first.

6.4 MEASURES TO MANAGE SUSPENDED SOLIDS GENERATED DURING THE CONSTRUCTION PHASE

In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase.

- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

- Fill material will be required to be imported to the site. All fill material transported to the site will be contained in covered plant to eliminate the potential for release of dust and particles during transportation.

- During the construction phase surface water runoff will be to ground as per the existing surface water runoff regime at the project site.

- During periods of high rainfall when precipitation exceeds infiltration surface water runoff will flow to the nearest surface waterbody following the natural fall in topography.

- Any groundwater ingress to excavations will be pumped to a construction phase treatment train and buffered outfalls will be installed to the west of the project site.

- If surface water discharge to the existing surface water network is required during construction, temporary on-site settlement ponds/tanks/silt busters will be installed to ensure adequate silt removal prior to discharge.

- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks (or equivalent and settlement tanks/ponds).

- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,

- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.

- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 15 m.

- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. Silt runoff control measures, such as the provision of an earthen berm will be implemented around stockpiles to prevent the release of silt-laden surface water runoff.

- Construction materials, including aggregates etc. will be stored a minimum of 15 m buffer distance from any surface water bodies.

- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.

- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.

- Excavations will remain open for as little time as possible. This will help to minimise the potential for water ingress into excavations.

- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

In addition to the measure above, all excavated materials will be visually by suitably qualified persons assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

For the avoidance of doubt, there shall not be discharge of untreated, silty, or contaminated water from the works to any watercourse. Should any discharge of contaminated construction water be required during the construction phase, discharge will be tankered off site. The discharge of clean construction water from rainfall to ground (as currently occurs) will occur during construction.

6.5 MEASURES TO MANAGE CEMENT & CEMENT WORKS DURING THE CONSTRUCTION PHASE

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 15 meters of an existing surface waterbody. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6 MEASURES TO MANAGE HYDROCARBONS AND OTHER CONSTRUCTION CHEMICALS DURING THE CONSTRUCTION PHASE

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;

Where mobile fuel bowsers are used, the following measures will be taken:

- Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
- The pump or valve will be fitted with a lock and will be secured when not in use;
- All bowsers to carry a spill kit and operatives must have spill response training;

- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;

- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;

- All drums to be quality approved and manufactured to a recognised standard;

- If drums are to be moved around the Site, they will be secured and on spill pallets; and

- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses or drains (minimum 10 m buffer zone). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.7 MEASURES TO MANAGE WASTEWATER GENERATED DURING THE CONSTRUCTION PHASE

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works. Wastewater management during the construction phase will consist of a sealed facilities with all waste removed from site and disposed of at a licenced facility.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will collected and discharge off site by a licenced contractor.

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.8 SURFACE WATER MANAGEMENT DURING THE OPERATION PHASE

Surface water generated during the operation phase will be managed in accordance with the design measures described in Section 2.3.2.9 above. The implementation of this design will ensure that treated and clean surface water is discharged from the site.

6.9 EMERGENCY RESPONSE PLANNING

In the event of an environmental emergency, a procedure for Environmental Emergency Preparedness and Response will be developed prior to commencement of construction. The procedures will be implemented by the Contractor in order to minimise the potential for environmental emergency incident to occur. An environmental emergency at the site may include;

- Discovery of a fire within the site boundary

- Uncontained spillage / leakage / loss of containment action
- Discharge concentration of potential pollutants in excess of environmental trigger levels

The general required emergency response actions will be posted at strategic locations, such as the site office.

As an example of emergency response actions required, in the event of a spillage, the following procedure shall be followed:

1. **IF SAFE (USE PPE),** stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
2. **IF SAFE (USE PPE),** contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
3. Cover or bund off any vulnerable areas where appropriate.
4. If possible, clean up as much as possible using the absorbent spills materials.
5. Do not hose the spillage down or use any detergents.
6. Contain any used absorbent material so that further contamination is limited.
7. Notify the Site Manager so that used absorbent material can be disposed of using a licensed waste contractor.

An accident investigation will be performed in accordance with procedures and an incident report will be logged.

7.0 RESIDUAL IMPACTS

The project site will result in the residual loss of GM1 marsh habitat. The loss of the marsh habitat at the project site will result in the loss of a wetland habitat. The residual implications

of the loss of this habitat at the site scale will be significant whilst at the wider local scale the residual implication is considered to be representative of a moderate negative and residual effect owing to the presence of other examples of this habitat type in the wider surrounding area.

It is noted that biodiversity landscaping will provide additional woodland habitat surrounding the project site. However this will not compensate for the loss of the exist marsh wetland habitat at the project site.

The application of mitigation measures will ensure that the project will result in negligible to minor significant residual effects to the Tonabrocky Stream fauna supported by the project site.

REFERENCES

Fossitt J. A. (2000). A Guide to Habitats in Ireland. Heritage Council.

Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. Heritage Council (2002). Draft Habitat Survey Guidelines. Hertiage Council.

IEEM (2006). Guidelines for Ecological Impacts Assessment. IEEM.

JNCC (1993). Handbook for Phase I habitat survey. JNCC.

Neal E. & Cheeseman C. (1996). Badgers. Poyser Natural History. London.

NRA (2006a). Guidelines for assessment of ecological impacts of National Road Schemes. National Road Authority.

APPENDIX C. APPROPRIATE ASSESSMENT SCREENING REPORT

Cappagh Road Park & Ride

Screening Report for Appropriate Assessment

Doherty Environmental Consultants Ltd.

September 2025

Cappagh Road Park and Ride

Screening Report for Appropriate Assessment

Document Stage	Document Version	Prepared by
Draft	1	Pat Doherty MSc, MCIEEM

This report has been prepared by Doherty Environmental Consultants Ltd. with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for the National Transport Authority and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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1.0 INTRODUCTION

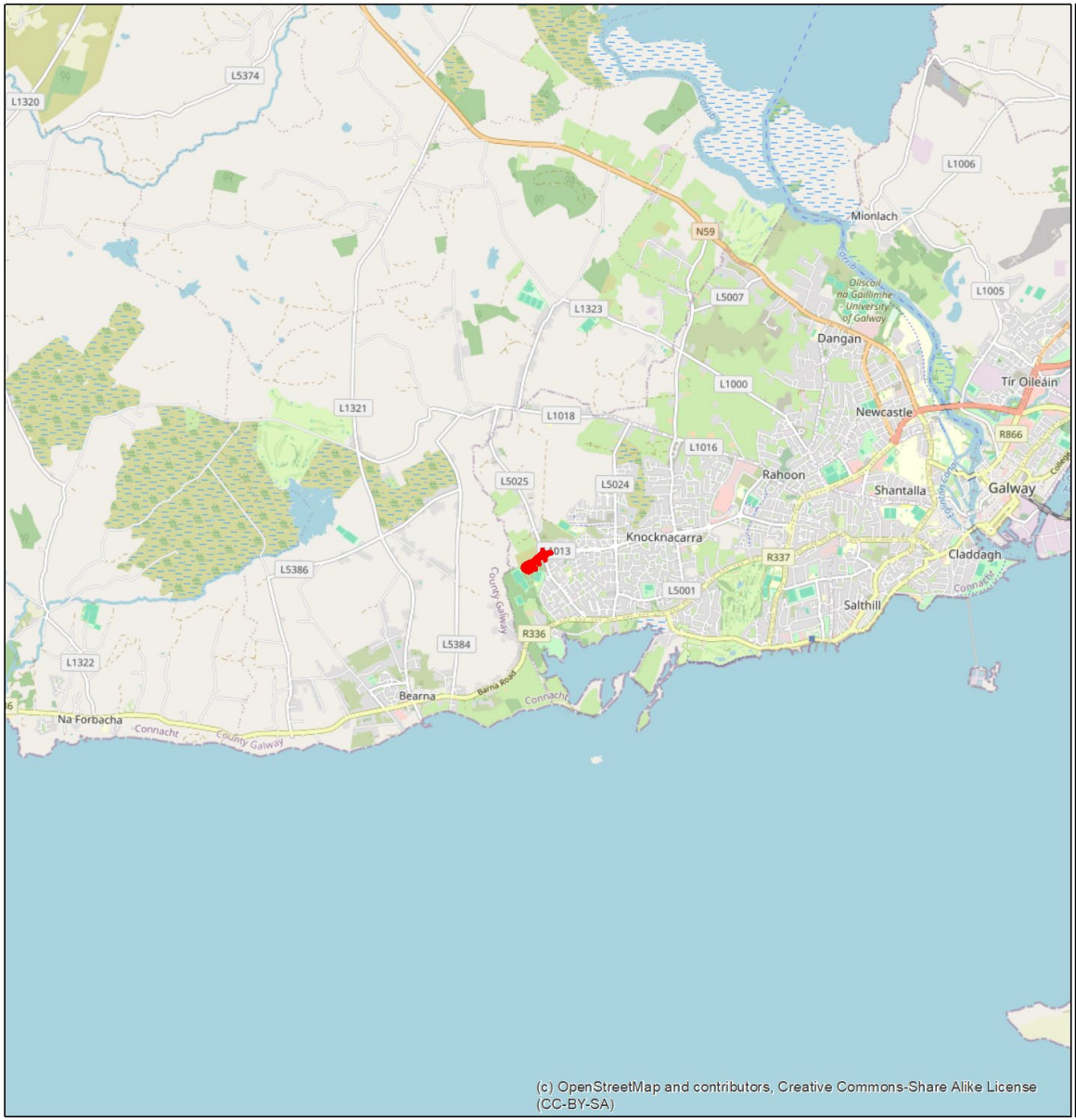
Doherty Environmental Consultants (DEC) Ltd. has been commissioned by the National Transport Authority to undertake a Screening Report in support of an Appropriate Assessment (AA), under Article 6 of the EU Habitats Directive, for the proposed Cappagh Road Park and Ride (i.e. the project). The location of the project is shown on Figure 1.1 while an aerial view of the works area is shown on Figure 1.2. The Proposed Layout of the Park & Ride facility is detailed in Planning Drawing: 20_008D - CSE - GEN - XX - DR - C – 2200, provided under separate cover with the planning application documentation.

This Screening Report for Appropriate Assessment forms Stage 1 of the Habitats Directive Assessment process and is being undertaken in order to comply with the requirements of the Habitats Directive Article 6(3). The function of this Screening Report is to identify the potential for the project to result in likely significant effects to European Sites and to provide information so that the competent authority can determine whether a Stage 2 Appropriate Assessment is required for the project.

1.1 STATEMENT OF AUTHORITY

This Appropriate Assessment Screening Report has been prepared by Mr. Pat Doherty BSc., MSc, MCIEEM, of DEC Ltd. Mr. Doherty is a consultant ecologist with over 20 years' experience in completing ecological impact assessments and environmental impact assessments. Pat has been involved in the completion of assessment reports for proposed developments and land use activities under the EIA Directive and Article 6 of the Habitats Directive since 2003 and 2006 respectively. He has extensive experience completing such reporting for projects located in a variety of environments and has a thorough understanding of the biodiversity issues that may arise from proposed land use activities. Pat was responsible for completing one of the first Appropriate Assessment reports for large scale infrastructure developments in Ireland when he prepared the Appropriate Assessment for the N25 New Ross Bypass in 2006/07. Since then, Pat has completed multiple examinations of both plans and projects in Ireland. He has completed Natura Impact Statements for national scale plans such as Ireland's CAP Strategic Plan and National Seafood Development Plan and regional and county scale plans including County Development Plans, Local Area Plans, Tourism Strategies and Climate Action Plans. Pat has completed multiple Natura Impact Statements for a range of development types that include large scale infrastructure developments in sectors such as

transport and energy as well as industrial, commercial and residential developments. Pat has completed focused certified professional development training in Appropriate Assessment as well as in a range of ecological survey techniques and assessment processes. Training has been completed for National Vegetation Classification (NVC) and Irish Vegetation Classification (IVC) surveying, bryophyte survey for habitat assessment and identification, professional bat survey and assessment training, mammal surveying and specific training for bird and bat survey techniques. Ongoing training has been completed by approved training providers such as CIEEM, British Trust for Ornithology, the Botanic Gardens and the Field Studies Council.



Cappagh Road Park & Ride

Figure 1.1

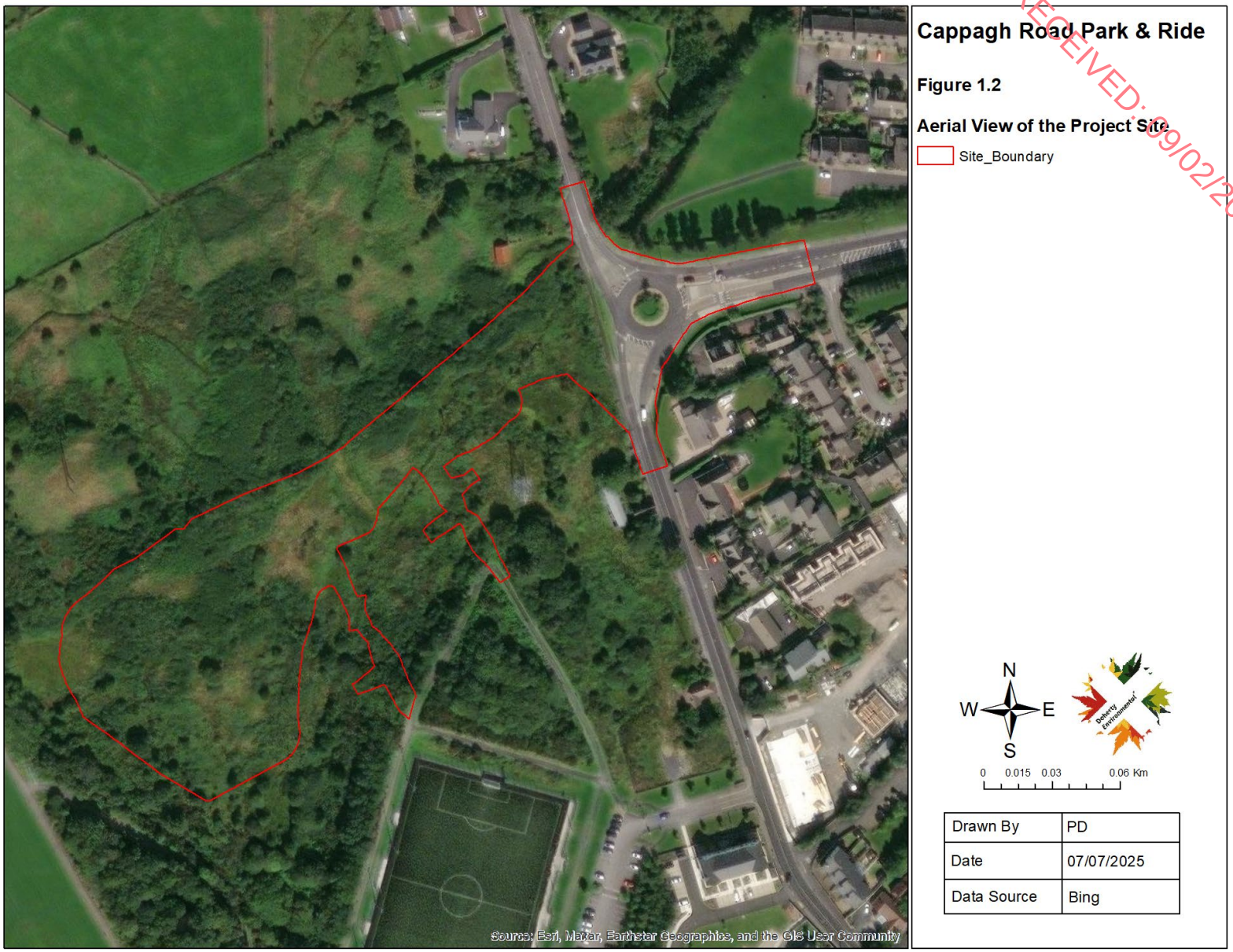
Site Boundary

Site Boundary

N
W E
S

0 0.5 1 2 Km

Drawn By	PD
Date	07/07/2025
Data Source	Bing



Cappagh Road Park & Ride

Figure 1.2

Aerial View of the Project Site

Site_Boundary

N
W E
S

0 0.015 0.03 0.06 Km

Drawn By	PD
Date	07/07/2025
Data Source	Bing

1.2 LEGISLATIVE CONTEXT

Legislative protection for habitats and species is provided within the European Union by the Habitats Directive. The Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network. The N2K network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive 2009/147/EC (as amended). SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more than 20,000 waterfowl.

This Screening Report for Appropriate Assessment is being prepared in order to enable the competent authority to comply with Article 6(3) of Council Directive 92/43/EEC (The Habitats Directive). It is prepared to assess whether or not the project alone or in combination with other plans and projects is likely to have a significant effect on any European Site in view of best scientific knowledge and in view of the conservation objectives of the European Sites and specifically on the habitats and species for which the sites have been designated. Measures ***intended*** to avoid or reduce the harmful effects of the proposed project on European sites (i.e. "mitigation measures") have not been taken into account in this screening stage appraisal of the project. It is noted that, as per the EC (2021) Guidelines, design and generic measures can be taken into account at the screening stage. Furthermore it is noted that European legal precedent[1] has established that account may be taken of features of a project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the project on a European Site, where those features have been incorporated into that project as standard features, inherent in such a project, irrespective of any effect on the site.

[1] **ECJ Judgement C-721/21 of the 15th June 2023**

1.2.1 Requirement for an Assessment under Article 6 of the Habitats Directive

According to section 177U(1) of the Planning and Development Act 2000 (as amended) the competent authority has a duty to:

- Determine whether the proposed Project is directly connected to or necessary for the management of one of more European Sites; and, if not,

- Determine if the Project, either individually or in combination with other plans or projects, would be likely to have a significant effect on the European Site(s) in view of best scientific knowledge and the Conservation Objectives of the site(s).

This report contains information to support a Screening for Appropriate Assessment and is intended to provide information that assists the competent authority when assessing and addressing all issues regarding the construction, operation and decommissioning of the Project and to allow the competent authority to comply with the Habitats Directive. Article 6(3) of the Habitats Directive defines the requirements for assessment of projects and plans for which likely significant effects on European Sites may arise. The Birds Directive and the Habitats Directive together list habitats and species that are of international importance for conservation and require protection. The Habitats Directive requires competent authorities, to carry out a Screening for Appropriate Assessment of plans and projects that are not directly connected to or necessary for the management of a European Site, to assess whether the plan or project alone or in combination with other plans or projects, would be likely to have significant effects on European Sites in view of best scientific knowledge and the Site's conservation objectives. This requirement is transposed into Irish Law by, inter alia, Part XAB of the Planning and Development Act, 2000 (as amended). Section 177U(4) of Part XAB of the Planning and Development Act states:

"The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is required if it cannot be excluded, on the basis of objective information, that the draft Land use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. "

1.3 SCREENING METHODOLOGY

This Screening Report has been prepared in order to comply with the legislative requirements outlined in Section 1.1 above and aims to establish whether or not the proposed project, alone or in combination with other plans or projects, would be likely to have significant effects on European Sites in view of best scientific knowledge and the Site's conservation objectives. In this context "likely" means a risk or possibility of effects occurring that **cannot** be ruled out based on objective information and "significant" means an effect that would undermine the conservation objectives of the European sites, either alone or in-combination with other plans and projects (Office of the Planning Regulator (OPR), 2021).

The nature of the likely interactions between the proposed upgrade works and the Conservation Objectives of European Sites will depend upon the:

- the ecological characteristics of the species or habitat, including their structure, function, conservation status and sensitivity to change; *and/or*
- the character, magnitude, duration, consequences and probability of the impacts arising from land use activities associated with the plan, in combination with other plans and projects.

This Screening Report for Appropriate Assessment has been undertaken in accordance with respective National and European guidance documents: Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (DEHLG 2010); *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC;* and *Office of the Planning Regulator – OPR Practice Note PN01: Appropriate Assessment Screening for Development Management* (2021), and recent European and National case law. The guidance document *Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (2018)* was also of relevance during the preparation of this Screening Report.

The EC (2021) guidelines outline the stages involved in undertaking a Screening Report for Appropriate Assessment for projects. The methodology adopted during the preparation of this Screening Report is informed by these guidelines and was undertaken in the following stages:

1. Describe the project and determine whether it is necessary for the conservation management of European Sites;

2. Identify European Sites that could be influenced by the project;

3. Where European Sites are identified as occurring within the zone of influence of the project identify potential effects arising from the project and screen the potential for such effects to negatively affect European Sites identified under Point 2 above; and

4. Identify other plans or projects that, in combination with the project, have the potential to affect European Sites.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

There is a significant number of people living in regional towns, rural hinterlands, and to a lesser extent; in the metropolitan area who do not have ease of access to high-quality public transport by walking or cycling. This can be due to their physical distance to high-quality public transport networks, limited pedestrian, and cyclist facilities (particularly in rural areas), or due to reduced mobility (e.g., elderly or mobility impaired).

Appropriately located and designed Park & Ride facilities can enable these people to access public transport and enhance their transport options to a wide range of destinations in a sustainable manner.

Park & Ride can intercept car trips where people are reliant on a private car at an early viable point in their journey thereby reducing the distances travelled by private cars with a corresponding reduction in carbon emissions and congestion.

The provision of high-quality Park & Ride facilities will enhance the accessibility of public transport to a wider catchment of people. This will increase the usage of public transport in the future and protect the investment in existing and new public transport schemes.

The Bearna Road (R336) extends south from Killary Harbour at Leenaun, passing through Maum, where it intersects with the R345, and Maam Cross, where it crosses the N59. The route

continues through Screebe, meeting the R340, and Costelloe, where it connects with the R343 and R372. The R336 then turns east, following the coastline of Galway Bay, passing through Inverin, Spiddal, Furbogh, Bearna, and Salthill, before reaching Galway City, where it links with the N6 and N83 roads.

The majority of journeys along the Bearna Road (R336) corridor during peak hours mostly consists of single-occupancy private vehicles. These motorists occupy a substantial amount of road space per person, in stark contrast to the comparatively smaller space used per person when utilising public transport.

The Cappagh Road diverges from the Bearna Road (R336) corridor near Rusheen Bay, extending northwards through Knocknacarra. It intersects with the Western Distributor Road at the roundabout before continuing north to connect with Rahoon Road at Boleybeg East.

This location was identified in the Galway Park & Ride Strategy as an intervention point on the Bearna Road (R336) corridor for transferring a portion of these single-occupancy car trips to public transport.

2.2 PURPOSE OF THE SCHEME

The number of commuters travelling by car to various key destination zones in Galway City using the Bearna Road (R336) corridor from areas that are currently lacking easy access to high-quality Public Transport services demonstrates the need to develop a Park & Ride facility in the vicinity of this corridor with good Public Transport services to the Galway City. The overall objectives of the Park & Rides are-

- To maximise the opportunities provided by on-going investment in public transport infrastructure and services, particularly in relation to the commencement of service of new public transport projects.

- To provide the appropriate type and scale of Park and Ride at the right location, with connectivity to the road and public transport networks and design that supports integration with the surrounding walking and cycling network.

- Reduce reliance on the private car, reduce distances travelled by car and ensure Park and Ride facilitates greater use of sustainable modes.

- Deliver an enhanced customer experience through safe, secure, and user-friendly facilities that consider opportunities for interchange and to address barriers to public transport use.

It is anticipated that there will be a significant rise in public transport demand, driven by forecasted population growth along this corridor and a shift in transport mode share to cater for the expected increase.

Strategically placed Park & Ride will enable this wider catchment to access high-quality public transport options and, in facilitating this, will help reduce road congestion along the corridor.

Travel Demand Analysis and a review of the current Public Transport services on the Bearna Road (R336) corridor conducted by the Park & Ride Development Office concluded that intervention through a Park & Ride facility would be most effective in the vicinity of the roundabout on Cappagh Road.

This facility aims to intercept private car traffic that originates in catchment areas further west of this location (Example: Wider Connamara Region, Inverin, Spiddal, Furbogh etc.) and transfer them to a bus suitable for their destination at the facility.

The overall objective of this scheme is to provide the appropriate type and scale of Park & Ride at Cappagh Road Roundabout, with connectivity to the road and the future Bus Connect Galway services with a design that supports integration with the surrounding walking and cycling network.

Another key objective of this scheme is to provide appropriate infrastructure, including lay-bys, for Bus Connects Galway Network Redesign service 7 and 9A to facilitate the termination of these services at the proposed Park & Ride facility.

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2.3 SCHEME DESIGN

2.3.1 Existing Conditions

2.3.1.1 Scheme Location

The selected site for the Park & Ride facility is located on Cappagh Road, approximately 900 metres north of its junction with the Bearna Road (R336). The site is located immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road. It is a greenfield site comprising uneven topography with scrub, wet grassland and dry calcareous and neutral grassland. The field is owned by Galway City Council and extends to approximately 2.9 hectares.

The proposed site location is shown in Figure 1.1 and Figure 1.2 above.

2.3.1.2 Access Arrangement

The subject field is accessible via a field access gate located near the existing roundabout on Cappagh Road; however, no blacktop or hardstanding surfaces are present to facilitate vehicular access into the field.

2.3.1.3 Facilities for Vulnerable Road Users

Footpaths, varying in width from 1.2 metres to 2.0 metres, are currently provided on both sides of Cappagh Road, extending from its junction with the R336 to the south, up to approximately 150 metres north of the existing roundabout. Additionally, 2.0-metre-wide footpaths are present on both sides of the Western Distributor Road to the east of the roundabout.

No dedicated cycle facilities are currently provided on either Cappagh Road or the Western Distributor Road within the immediate vicinity of the roundabout.

2.3.2 Proposed Design

2.3.2.1 Scheme Description

The proposed development is located on Cappagh Road, approximately 900 metres north of Bearna Road (R336), immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road.

The proposed Park & Ride facility will provide 176 car parking spaces, including 9 spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large) and 18 spaces designated for electric vehicles, along with 4 bus bays and passenger shelters. Provisions for active travel will include a hardstanding area for a bike shelter. The scheme will also incorporate both hard and soft landscaping, planting, lighting, boundary treatments, surface and foul water drainage, public lighting, CCTV, an ESB substation, and all other associated and ancillary works.

The Proposed Layout of the Park & Ride facility is detailed in Planning Drawing: 20_008D - CSE - GEN - XX - DR - C – 2200, 2201 and 2203, provided under separate cover with the planning application documentation.

2.3.2.2 Access Arrangement

Access to and from the Park & Ride facility will be provided via a proposed new arm off the existing roundabout on Cappagh Road.

As outlined earlier in the report, the position of the existing roundabout introduces a degree of deflection to traffic travelling on Cappagh Road. Our analysis has shown that the current geometric configuration of the roundabout does not permit the addition of a new western arm. Consequently, it is proposed to relocate the roundabout 11 metres to the west.

The new roundabout layout has been designed in accordance with the Cycle Design Manual as a Protected Roundabout with Cycle Priority. It will feature an inscribed circle diameter of 33 metres and an 6-metre-wide circulatory carriageway, consistent with the existing roundabout. The design also includes dedicated 2-metre-wide footpath and 2-metre-wide one-way cycle lane around the roundabout, both physically segregated from the circulating traffic. Controlled crossing facilities will be provided on each arm of the roundabout, with priority given to pedestrians and cyclists at these crossing points.

The northern and southern arms of the new roundabout will feature a 7.3-metre-wide carriageway with 2.0-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway which will tie into the existing carriageway of Cappagh Road within approximately 50-60 metres of the roundabout.

The western arm of the roundabout will feature a 7.0-metre-wide carriageway with a 2.0-metre-wide cycle lane and footpath on either side providing access for buses and car park users to designated areas within the car park.

The eastern arm of the roundabout will feature a 6.3-metre-wide carriageway with a cycle lane and footpath on either side. This will tie into the "*Galway Western Distributor Road (WDR) Cycle Scheme*" within approximately 80 metres of the roundabout.

An alternative tie-in proposal for the eastern arm of the roundabout has also been developed, for the existing road cross-section of the Western Distributor Road. This option is intended to accommodate the scenario in which the proposed Park and Ride facility is delivered in advance of the "*Galway Western Distributor Road (WDR) Cycle Scheme*".

2.3.2.3 Traffic Signals

Controlled crossing facilities (Belisha Beacon) will be provided on each arm of the roundabout.

2.3.2.4 Facilities for Vulnerable Road Users

Provisions for active travel infrastructure have been incorporated both within the car park and around the roundabout.

Dedicated footpaths and cycle lanes are also proposed along the Park & Ride access road and the Western Distributor Road, providing a seamless active travel connection into the facility, enhancing accessibility for pedestrians and cyclists within the wider area. The main car park area will also include footpaths spine to facilitate movement of pedestrians within the carpark.

In addition to the above, two new pedestrian links have also been proposed to connect the existing footpaths located to the north of Cappagh Park with the proposed development. These links are intended to ensure compliance with the relevant land use zoning requirements. As

previously noted in this report, the surrounding area is densely vegetated and supports a variety of flora, fauna, and habitats. Hence introduction of any infrastructure wider than a pedestrian footpath (such as a motorable road connection) would likely result in further ecological disturbance and adverse impacts on the local environment.

2.3.2.5 Tonabrocky Stream Diversion

The Tonabrocky Stream flows through the site from the northeast to the southwest before merging with the Barna Stream towards the southern part of the site. It is proposed to realign a short section of the stream, approximately 130 metres in length, in order to mitigate potential impacts on its associated habitats. This diversion aims to reduce the required length of culvert or bridge beneath the proposed new access road at the Cappagh Road Roundabout. Further details on this proposal are available on Appendix-A (Watercourse Realignment Plan).

2.3.2.6 Cross Drainage Structures

As part of the proposed development, 4 new cross-drainage structures are being introduced, along with the lengthening of 1 existing structure.

3 new bottomless portal frame culverts are proposed to span the Tonabrocky Stream. One of these will be located beneath the new Park and Ride access road, while the remaining two are to be situated beneath the proposed pedestrian links connecting Cappagh Park with the Park and Ride facility.

One pipe culvert is proposed to cross the existing drainage ditch that flows from the northern field into the Tonabrocky Stream.

In addition, the existing twin-pipe culvert conveying the Tonabrocky Stream beneath the northern arm of the Cappagh Roundabout is proposed to be lengthened by approximately 10.0 metres to accommodate the revised roundabout layout.

2.3.2.7 Retaining Wall

As previously noted in this report, the site features uneven topography, particularly in the south-western corner, where the ground slopes steeply towards the Barna Stream and generally in a southerly direction. This topographical condition necessitates earthwork embankment

proposals along this section, with the base/toe of the embankment footprint extending in close proximity to the stream.

However, The development has been designed to maintain a 15-metre-wide riparian buffer along the Barna Stream, situated along the western boundary of the proposed site. This buffer will be provided with the help of a green-faced retaining wall, which will also extend around the southern boundary of the car park. The retaining wall will be approximately 90 metres in length, with its height ranging from 0.0 metres to 3.2 metres.

2.3.2.8 Cross Sectional Elements

2.3.2.8.1 Road and Active Travel Infrastructure

The Cappagh Road section approaching the northern and southern arms of the roundabout will feature a 7.3-metre-wide carriageway, 2-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway.

The Western Distributor Road section approaching the eastern arm of the roundabout will feature a 6.3-metre-wide carriageway, with a 2-metre-wide footpath and a 2-metre-wide cycle track on both sides of the carriageway.

The Park & Ride access road approaching the western arm of the roundabout will comprise a 7.0-metre-wide carriageway, with a 2-metre-wide footpath and 2-metre-wide cycle track on both sides of the carriageway.

All internal roads within the car park will have a 6.0-metre-wide carriageway.

The footpath connections between Cappagh Park and the proposed Park and Ride Facility will be 3.0-metre-wide.

2.3.2.8.2 Parking Bays

Standard parking spaces will measure 5.0m x 2.5m.

Parking spaces designated for electric vehicles will measure 6.0m x 2.5m.

Parking spaces for mobility-impaired users will measure 6.0m x 2.4m, with a 1.2-metre buffer on both sides to facilitate ease of access.

2.3.2.9 Proposed Surface Water Drainage

This drainage strategy consists of two separate sections: the eastern section, where a section of the existing road and roundabout layout are being upgraded, and the western section, where a new road and the car park is being constructed.

Eastern Section- Existing Road and Roundabout

As part of the road and roundabout upgrade, the existing gullies and manholes will be relocated to accommodate the revised road layout while maintaining connectivity to the existing surface water line.

To introduce SuDS elements, bioretention areas have been proposed at key locations:

- Around the roundabout
- Along the northern and southern cycle tracks

The bioretention areas will help improve water quality, provide attenuation, and contribute to biodiversity enhancement.

Western Section- New Road Construction

The western section features two separate surface water drainage systems designed to manage runoff effectively:

(i) Traditional Drainage System (Road Drainage)

This system is designed for the Park & Ride access road and follows a conventional approach:

- Road gullies collect surface water runoff from the carriageway.

- Pipes network to transfer runoff to the downstream system.
- An oil interceptor is installed to remove hydrocarbons and pollutants before discharge.
- Flow control structure (Hydrobrake) to regulate outflow from the storage system. The design discharge has been set at 4.57 L/s, corresponding to the calculated greenfield runoff rate.
- Outfall to the receiving watercourse, with the outlet level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure resilience under extreme events.

(ii) *Sustainable Drainage System for the Parking Area*

Runoff from the parking area is managed using SuDS principles to enhance the quality of surface water runoff and reduce peak runoff. This system includes:

Permeable asphalt with an underlying storage layer, allowing infiltration and temporary retention. The proposed permeable asphalt system will manage surface water runoff by allowing water to infiltrate through a porous surface layer. The water will then percolate through several underlying layers designed to filter and store runoff before it reaches the drainage network. The system consists of:

- A porous surface course, which facilitates water infiltration while providing structural integrity.
- Binder course ensures structural integrity and permits vertical water movement.
- Choker course provides an even surface for the placement of the sub-base and assists in water conveyance.
- Sub-base storage layer (600 mm) – composed of coarse aggregate, designed to temporarily store infiltrated runoff and provide load-bearing capacity.
- Perforated underdrain pipe wrapped in geotextile, installed at the base of the sub-base to collect excess water and convey it into the wider surface water drainage system.

- Geotextile membrane – placed at the base and sides of the construction to prevent the migration of fines, protect permeability, and maintain long-term system performance.

The perforated pipe beneath the permeable paving is connected to the main surface water drainage line, which originates at the roundabout and runs southwards across the site. This main pipe collects surface water from:

- Road gullies along the Park & Ride access road
- Perforated pipes from the permeable asphalt in the car park

All surface water from both the traditional and SuDS systems converges into drainage lines, which then flows toward the southern part of the site.

Before discharging into the receiving waterbody, the combined runoff passes through the following key treatment and control components:

- An oil interceptor, which removes hydrocarbons and other pollutants
- A hydrobrake flow control device, located within a downstream manhole, which limits the discharge to a design flow of 4.57 L/s, corresponding to the calculated greenfield runoff rate.

The final discharge is directed into the existing stream, at a level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure that the outfall remains operational during extreme flood events.

2.3.2.10 Pavement

The proposed pavement along Cappagh Road, Western Distributor Road, and the new Park & Ride access road includes both overlay and full-depth construction zones.

The main car parking area will feature permeable asphalt, as outlined in the previous section.

2.3.2.11 Traffic Signs and Road Markings

Park & Ride Site

Appropriate road markings and traffic signs will be proposed within the main car park and the link roads in accordance with TSM Chapters 5, 6, and 7.

2.3.2.12 Public Lighting and Closed-Circuit Television

The proposed facility will be illuminated by a new public lighting system to enhance the safety of the users.

A new CCTV system will also be installed at the bus stop area and throughout the car parking area in order to enhance the personal safety of the users and provide security for parked vehicles and Bicycles.

2.3.2.13 Electric Vehicle Charging

The proposed facility will have 17 no. parking and charging points for Electric Vehicles which represents ~10% of the total parking capacity of the facility.

In addition, 17 no. standard parking spaces (~10%) will be futureproofed with ducting etc. to facilitate easy conversion to EV parking in the future.

2.3.2.14 Provision of Parking for Mobility Impaired

The proposed scheme shall provide 9 no. parking spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large), which represents ~5% of the total parking capacity of the facility. One (1 no.) of these spaces will be equipped with electric vehicle charging capability.

2.3.2.15 Utility Connection (including Relocation)

Several overhead and underground ESB cables, along with an electricity pylon and pole, are currently located within the planning application boundary, as shown on the map below. While the electricity pylon will remain unaffected by the proposed development, a 10kV overhead electricity pole may require relocation or adjustment.

Multiple underground pipelines serving drinking water, foul sewer, and stormwater networks are present within the surrounding road network, as illustrated on the maps below. Additionally, a Virgin Media underground telecommunications duct runs beneath both Cappagh Road and the Western Distributor Road.

Although the existing pipes and ducts are not anticipated to be directly impacted by the development, several associated chambers, manholes, and similar infrastructure elements may require minor relocation or adjustment to accommodate the proposed new roundabout layout and active travel scheme along Cappagh Road and the Western Distributor Road.

A new substation will be required to power the various electrical equipment within site.

2.4 CONSTRUCTION PHASE

The construction of the proposed development will be carried out in the following phases:

The follow represents the likely sequence of construction activities required for the construction of the park and ride facility:

- Site clearance and removal of footing bases and underground services
- Excavation of site to formation level. Excavations to be completed on site will comprise:
    - Top soil stripping to 300mm amounting to c. 6,220m^3.
    - Earthwork stripping of existing ground to formation level amounting to c. 4,680m^3
- Deposition of fill volume for level build up amounting to c. 16,470 m^3 of which 12,010m^3 will be imported to site.
- Construction of the foundations
- External works, roads & footpaths

2.4.1 Construction Phase Surface Water Management

During the construction phase surface water runoff will be to ground as per the existing surface water runoff regime at the project site.

During periods of high rainfall when precipitation exceeds infiltration surface water runoff will flow to the south and west following the natural fall in topography to the east.

Any groundwater ingress to excavations will be pumped to a construction phase treatment train that will comprise a mobile attenuation tank and buffered outfalls over vegetated ground to the east of the project site.

If surface water discharge to the existing stormwater drain is required during construction temporary on-site settlement ponds/tanks/silt busters will be installed to ensure adequate silt removal prior to discharge the detail of this system will be presented in the CEMP.

A silt fence will be provided along the western and southern boundary of the construction phase to retain any fines entrained within the surface water runoff. The outfall of the buffered outfalls will be situated to the west of the silt fence.

2.4.2 Construction & Environmental Management Plan

A Construction & Environmental Management Plan (CEMP) will be prepared for the proposed development and provided to the planning authority prior to the commencement of construction.

2.4.2.1 Construction Waste Management Plan

The Resource Waste Management Plan (RWMP) provides a Waste Management Plan for the proposed development. It is anticipated that that all of the excavated material, c. 10,900 m^3, will need to be removed offsite for appropriate reuse, recovery and/or disposal. Soils for disposal from the site are classified as waste and must comply with waste management legislation. The relevant legislation is the EU council decision (2003/33/EC) which has been implemented in all member states and sets out the criteria for the acceptance of waste at Landfills.

Final certification for all materials removed off site will require to be provided by the main contractor on completion of the excavation works.

2.4.3 Construction Plant, Equipment & Materials

The following construction materials will be required for the works:

- Concrete: This will be delivered by bottle truck and placed directly in prepared forms.
- Hardcore: This will be stored in the Construction compounds and delivered to site location by dump truck.
- The materials and equipment to be stored in the construction compound will be provided in the CEMP to be submitted prior to the commencement of construction

3.0 OVERVIEW OF THE PROJECT AREA

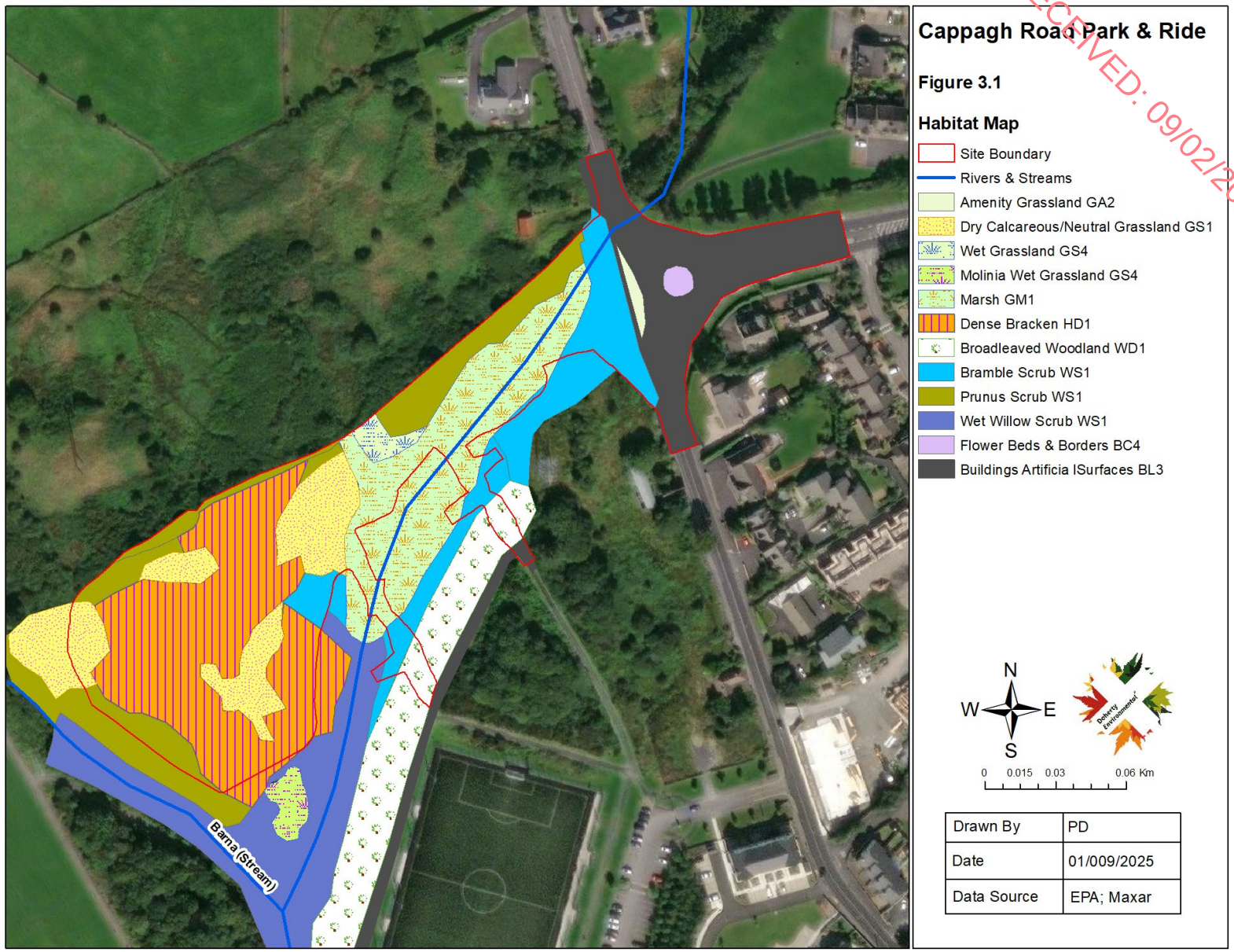
The proposed site for the Park & Ride facility is located at the western limit of Galway City to the west of Cappagh Road.

A review of the historic 6-inch and 25-inch mapping from 1839 and 1902 indicates the presence of the Barna Stream flowing through the site, the presence of the Cappagh Road along the western boundary of the site and the enclosed nature of the site with its sub-division into a number of fields.

Aerial mapping from the 1995 to 2000 depicts the site option and the lands to the west and south as unimproved. Construction of the playing pitch that occur to the south of the site is depicted on this aerial image. The 2001 to 2005 aerial imagery shows the presence of the playing pitches and associated pedestrian paths to the south and west of the site option. No further changes in the surrounding land cover immediately adjacent to the site option is apparent on later aerial imagery. The imagery from 1995 to current indicates little change at the site option, suggesting that the site has remained unimproved.

3.1 HABITATS

The habitats occurring at the project site consist of scrub, marsh, eroding watercourse in the form of the Tonabrocky Stream, spreading dense bracken and patches of wet grassland, and dry calcareous and neutral grassland. Figure 3.1 below provides a view of the habitats occurring at and surrounding the project site.



3.2 FAUNA

Otter, Yellowhammer, Hedgehog and the Wall butterfly are the only rare, threatened or protected species for which records are held for the area of search, as shown on Figure 3.2. The records for otters and wall are dated, having been recorded in 1980 and 1983 respectively.

Notwithstanding the absence of recent records for otters, it is noted that the Tonabrocky Stream provides potential habitat for otters. However the stretch of the Tonabrocky Stream occurring along the western boundary of the project site and for a distance of c. 500m upstream and downstream of the project site has been searched for field signs indicating the presence of otters. No field signs in the form of holts, couches, prey remains, footprints, spraints etc. for otters were identified during field surveys.

The historical records held for Yellowhammer is from 2018, while the hedgehog record is from 2015. Both species are known to occur in the wider area in which the project site is located. Yellowhammer breeds in the wider area surrounding the project site and was recorded to the west of the project site during 2024 breeding season field surveys.

Wetland bird species and particularly special conservation interest bird species of the Galway Bay SPA have not been recorded at the project site during non-breeding season field surveys of the site during the late 2023/2024 non-breeding season in March 2024 and during October, January, February and March surveys of the 2024/2025 non-breeding season. On the basis of the results of the non-breeding season bird surveys the project site does not support and is not relied upon by wetland bird species and special conservation interest bird species of the Galway Bay SPA.

Table 3.2: Area of Search for Rare, Threatened or Protected Species

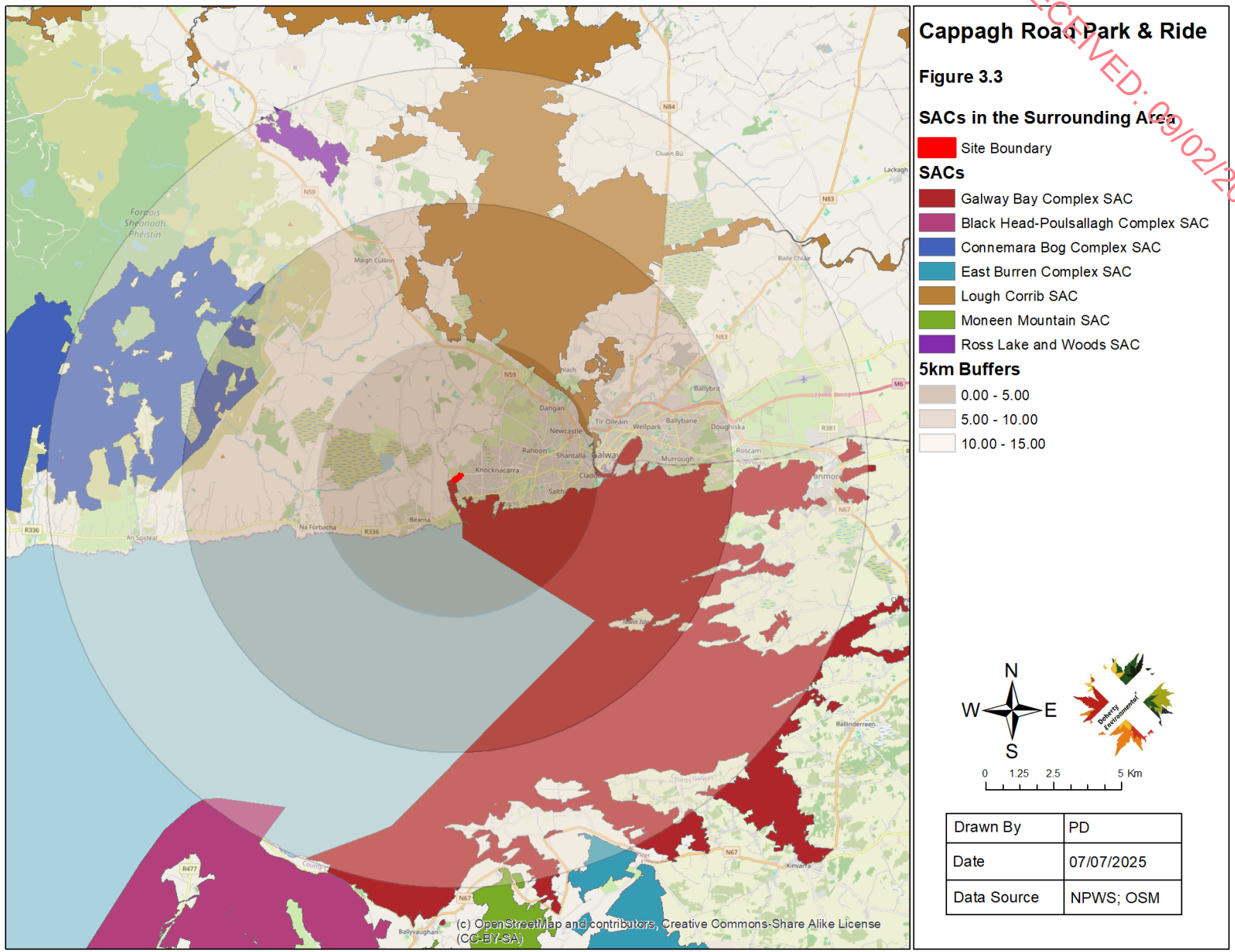
3.3 DESIGNATED CONSERVATION AREAS

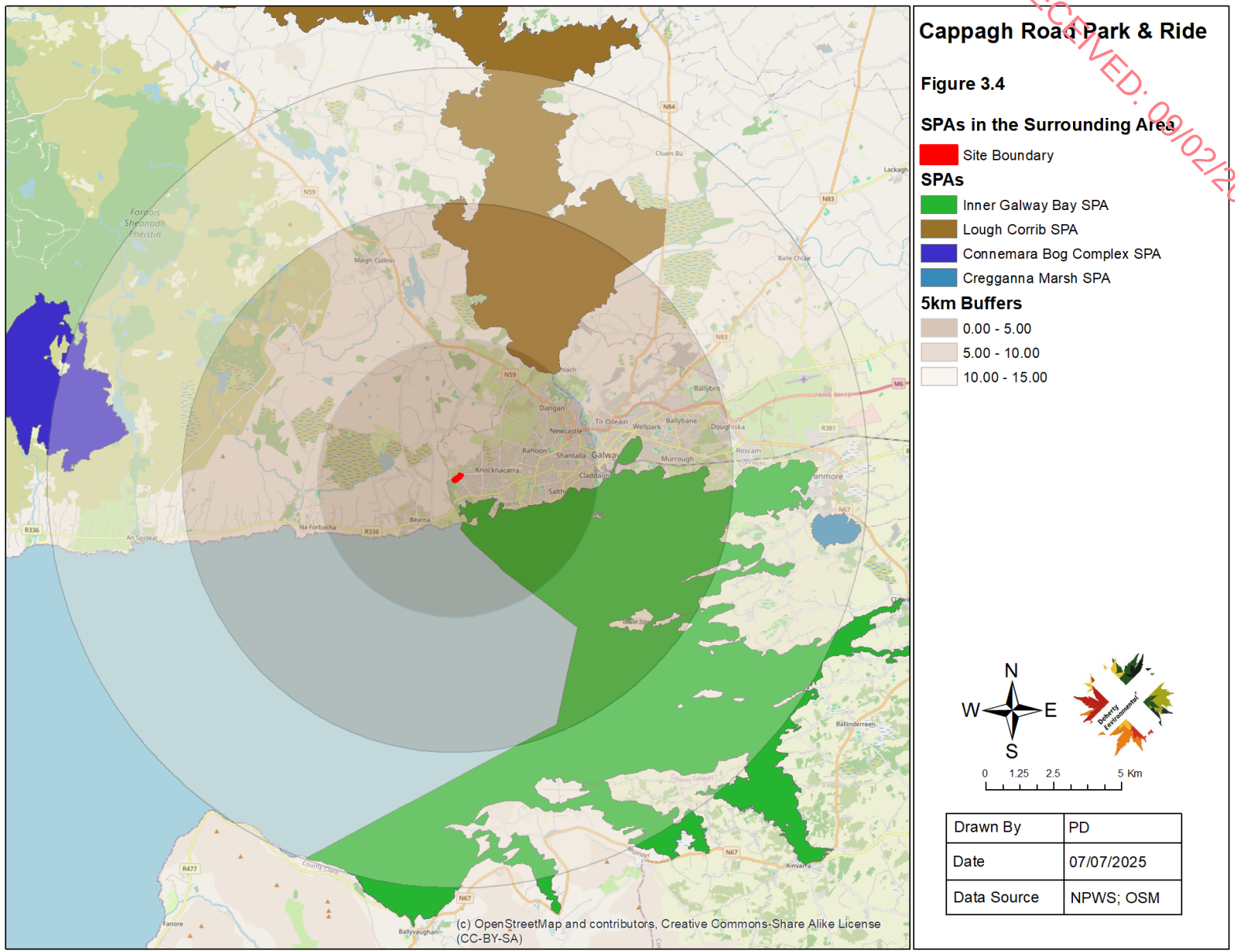
The location of European Sites with respect to the project site are shown on Figure 3.3 and Figure 3.4.

The project site is not located within any designated conservation area. The nearest European Site to the project site is the Galway Bay Complex SAC, located approximately 17m to the west of the western boundary of the project site. The Inner Galway Bay SPA is located approximately 1km to the south of the project site. No Natural Heritage Areas (NHAs) occur at or immediately surrounding the site option. The nearest NHA is the Moycullen Bogs NHA, located approximately 1.5km to the north of the site option. The nearest proposed Natural Heritage Area (pNHA) is the Galway Bay Complex pNHA, which overlaps the Galway Bay Complex SAC and is located approximately 170m to the west.

No NHAs occur in the wider area surrounding the project site.

The project site is located within the Knock[Furbo]_SC_010 sub-catchment of the Owenboliska-Cashla-Screeb-Coastal surface water catchment. The Bearna Stream (EPA Name: Oddacres Stream) flows from north to south to the west of the western boundary of the project site. A tributary of the Bearna Stream, the Tonabrocky Stream (local name) flows through the project site from the northeast to the southwest and merges with the Bearna Stream to the south of the project site. The Bearna Stream to the west and south of the project site flows along the boundary of the Galway Bay Complex SAC and drains to the coast adjacent to Rusheen Point.





4.0 IS THE PROJECT NECESSARY FOR THE CONSERVATION MANAGEMENT OF EUROPEAN SITES

The project has been described in Section 2 of the Screening Report and it is clear from the description provided that the project is not directly connected with or necessary for the future conservation management of any European Sites.

5.0 EUROPEAN SITES WITHIN THE ZONE OF INFLUENCE OF THE PROJECT

5.1 WITHIN/ADJOINING EUROPEAN SITES

Current guidance (OPR, 2021) informing the approach to screening for Appropriate Assessment defines the zone of influence of a project as the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. It is recommended that this is established on a case-by-case basis. In order to identify European Sites that could potentially be located within the zone of influence of the project, the current digital mapping (shapefile) of European Sites in Ireland, as published by the NPWS[2], was reviewed to identify the European Sites that could conceivably be connected to the project site via pathways. The OPR guidelines recommend that for projects that are located within or immediately adjacent to European Sites, the relevant European Site should be automatically selected for consideration in the screening exercise. No European Sites occur within or bound the project with the nearest European Site, the Galway Bay SAC, located approximately 0.8km to the south of the project. As such no European Sites are automatically triggered for inclusion within the zone of influence of the project.

5.2 SOURCE-PATHWAY-RECEPTOR MODEL

Current guidance (OPR, 2021) informing the approach to screening for Appropriate Assessment defines the zone of influence of a project as the geographical area over which it

[2] **Current SAC shapefile layer dated December 2024; current SPA shapefile layer dated January 2024**

could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European Site. It is recommended that this is established on a case-by-case basis using the Source-Pathway-Receptor (SPR) framework. In order to identify the European Sites that could be located within the zone of influence, the current digital mapping (shapefile) of European Sites in Ireland[3], as published by the NPWS, was reviewed to identify the European Sites that could conceivably be connected to the project site via pathways.

As a first step in identifying the European Sites that could be connected to the project via SPR pathways all European Sites occurring in the wider surrounding area were identified. Figure 3.3 and 3.4 shows the European Sites occurring in the wider area surrounding the project site. As can be seen in Figures 3.3 and Figure 3.4 no European Sites occur within or bounding the project site, with the nearest site being the Galway Bay Complex SAC, located approximately 17m to the west of the project site. The Tonabrocky Stream flowing through the project site drains into the Bearna Stream, which in turn discharges to the coast at White Strand/Rusheen Estuary approximately 1km downstream of the project site. Qualifying habitats of the Galway Bay Complex SAC and wetland habitats of the Inner Galway Bay SPA occur at this coastal location.

All other European Sites are located at a remote distance from the project site and are not connected to it via any SPR pathways. As such the remainder of this screening exercise focuses on the Galway Bay Complex SAC and the Inner Galway Bay SPA, jointly referred to as the Galway Bay European Sites.

Using the SPR framework the project, as described in Section 2 of this Screening Report, represents the source of potential impacts to European Sites. Pathways are represented by vectors that could potentially convey impacts from the project site to European Sites and features of interest. The receptors are European Sites and their features of interest. The type of pathways that could represent vectors for the conveyance of impacts are considered in Section 5.2.1 below.

5.2.1 SPR Model Pathways

Pathways that can arise as a result of development projects and lead to offsite/downstream impacts are listed below and an appraisal of the potential for these pathways to connect the project to European Sites and their qualifying features of interest are also listed below and each are examined for their potential to function as pathways connecting the project to European Sites.

5.2.1.1 Emissions to Surface water

The Tonabrocky Stream flowing through the project site flows to the southwest, merges with the Bearna River and drains into the Galway Bay European Sites. This stream establishes a hydrological pathway that connects the project to the Galway Bay European Sites. In the absence of a suitable design and control measures the project will have the potential to result in emissions to surface waters. As such the Galway Bay European Sites are identified as occurring in the zone of influence of the project by virtue of the presence of a hydrological pathway between the project and these two European Sites.

5.2.1.2 Emissions to Groundwater

Given the results of site investigations which found a significant depth of overburden on site and a depth to underlying groundwaters well in excess of any excavations required for the project a layer of subsoil and bedrock will separate project works from the underlying groundwater body. The presence of this separation will eliminate the potential for a groundwater pathway to connect the project to the Galway Bay European Sites or any other European Sites in the wider surrounding area.

5.2.1.3 Noise & Vibration Emissions

Noise and vibration emissions are considered to have the potential to result in negative impacts to biodiversity up to a 300m distance from the emission source. This distance is based on the maximum noise disturbance zone of 300m for wetland bird species, as specified by Cutts et al.

(2013)[4]. Noise and vibration effects for other qualifying species as well as qualifying habitats of European Sites are less than 300m. For mammal species listed as qualifying features of interest for SACs in the surrounding area this distance is set at 150m, as per the NRA (2009). For qualifying aquatic species, a potential noise and vibration impact pathway will only arise where works such as piling or blasting are proposed at instream or bankside locations within adjoining SACs. No such proposals form part of the project. As the Galway Bay Complex SAC occurs within 150m of the project site and as this SAC is designated for otters, a potential noise pathway with respect to otters is identified.

5.2.1.4 Emissions to Air

Air emissions identified as having the potential to arise from the project relate to the generation of dust emissions during the construction phase. Dust emissions can have the potential to result in negative impacts to biodiversity up to 50m from the source of the emission. This is supported by the guidance outlined by the IAQM (2014), which provides a risk assessment for ecological impacts arising from dust deposition. European Sites are ranked as high sensitive sites and the risk to high sensitive sites ranges from high (at less than 20m from source) and medium (at less than 50m from source), while low risks, representative of insignificant and de-minimis effects, arise at distances greater than 50m from source. As the Galway Bay Complex SAC is located within 20m of the project site, the potential for works associated with the project to result in an air emission pathway to this SAC cannot be ruled out at this stage and is screened in.

5.2.1.5 Light Emissions

The project will include for the provision of nighttime lighting along access road to the proposed park and ride and within the park and ride site itself. Special conservation interest/qualifying species of European Sites that are considered to be potentially sensitive to

[4] It is noted Nature Scotland (2022) published disturbances zones for bird species at a greater distance than 300m. However, unlike Cutt et al. (2013) who specifically examined disturbance effects generated by noise stimuli, the potential disturbance stimuli set out in the Nature Scotland publication are not concerned specifically with noise stimuli. As such the Cutts et al. (2013) publication and maximum noise disturbance distance is relied upon.

night time lighting are bird species and lesser horseshoe bats. Given that no special conservation interest bird populations of the Galway Bay European Sites rely on the project site and surrounding area and that no lesser horseshoe bat SACs occur in the wider regional area, there will be no potential for light emissions from the project to influence such populations. As such, this pathway is not considered further in this screening exercise.

5.2.1.6 Visual Emissions

Certain qualifying species of European Sites can be sensitive to visual changes in the landscape and visual disturbance as a result of new structures. Species that are sensitive to such disturbance are wildfowl in the form of geese and swans. Given that such species have not been recorded using or relying on the project site and surrounding lands as ex-situ foraging or roosting site, there will be no potential for the project to result in visual disturbance to such species and this pathway is not considered further in this screening exercise.

5.2.1.7 Mobile Species Pathways

Development projects that are located outside of European Sites can also result in impacts to mobile qualifying species of European Sites in the event that such species rely on habitats occurring within the proposed development site. For the purposes of including such a scenario in the consideration of potential pathways, this screening report refers to the reliance of mobile qualifying species of European Sites on the project site as a "mobile species pathway". When considering the mobile species pathway, the following publications were used to identify the presence of European Sites within the zone of influence of the project:

For special conservation interest bird species: the maximum disturbance distance for special conservation interest bird species of SPAs in the surrounding area is considered to be 300m, in line with the Cutts et al. (2013) toolkit. Given that no SPAs occur within 300m of the project site and furthermore given that the project site is not relied upon by special conservation interest bird species of SPAs as an ex-situ foraging or roost site, no mobile species pathway is established by special conservation interest bird species between the project site and SPAs.

For otters and other Annex 2 fish species a mobile species pathway can be established where a hydrological pathway connects the project and any European Sites designated for their role in supporting populations of otters and such fish species. The only SACs that is connected to the

project via a hydrological pathway is the Galway Bay SAC. This SAC is designated for a role in supporting population of otters and the Tonabrocky Stream within the project site provides suitable foraging habitat for otters. As a mobile species pathway with respect to otters cannot be excluded at this stage and is screened in.

5.2.1.8 Summary of Pathway

Following the above consideration of pathways that could conceivably connect the project site to European Sites in the wider surrounding area it has been found that the only pathways with such potential are:

Hydrological pathway with potential to connect the project to the Galway Bay European Sites.

Noise pathway with potential to connect the project to the otter population of the Galway Bay Complex SAC.

Aerial pathway with the potential to connect the project to the Galway Bay Complex SAC

Mobile species pathway with the potential to connect the project to the otter population of the Galway Bay Complex SAC.

6.0 IDENTIFICATION OF LIKELY SIGNIFICANT EFFECTS

The potential environmental effects generated by the project will relate to potential emissions to waters from the project site during the construction phase and/or operation phase. During construction the project will have the potential to result in impacts to water quality of the Galway Bay European Sites. The aerial emission pathway will also have the potential to function as a vector for the deposition of fines to the Tonabrocky Stream and Bearna River as a result of dust deposition.

Surface water generated during the construction phase will ultimately be discharged, via surface water runoff to the Tonabrocky Stream that drains the project site along its western boundary. Potentially contaminating materials, such as hydrocarbons, cement-base materials, other construction-related solutions and silt will occur on site during the construction phase and will have the potential to become entrained in and pollute surface drainage waters generated on site.

During periods of rainfall such water will have the potential to be discharged via surface water runoff to the Tonabrocky Stream.

During the operation phase surface water will be generated from areas of hard standing that will accommodate the hardstanding area of the proposed park and ride. In the event of fuel leaks or accidental spill the potential will exist for the generation of contaminated surface waters on site and for these surface drainage waters to be discharged to the Tonabrocky Stream and on downstream to the Galway Bay SAC. The operation phase will also result in the discharge of foul water emissions from the project site to the Tonabrocky Stream and on downstream to the Galway Bay. In the event of the release of inappropriately treated foul water from the project site, the potential will exist for the release of polluting foul waters from the project site to the Galway Bay SPA

While it is acknowledged that the volume of surface drainage waters discharging from the project site to the receiving Galway Bay will be miniscule in the context of the overall waters draining from the surrounding catchment to the estuary, in the absence of appropriate safeguards the potential will exist for the discharge of pollutants that could perturb water quality with the Galway Bay European Sites with consequent effects for the qualifying features of interest of the SAC and SPA.

In the event that otters are found to rely on the Tonabrocky Stream for breeding, resting or foraging the construction phase and the operation phase will have the potential to result in disturbance to otters as a result of noise generated at the project site. Disturbance to otters could also arise as a result of the presence of construction crew, plant and machinery during the construction phase and as a result of vehicle movements and the presence of people during the operation phase.

6.1 IN-COMBINATION EFFECTS

The potential exists for the project to overlap with other land use plans applicable to the lands occurring at and in the vicinity of the project site as well as other projects within the vicinity of the project site.

The potential for cumulative impacts could arise where, for example, the construction phase of the project overlaps with the construction phase of other project sites within the vicinity of the

project site The potential for cumulative impacts to the water quality of these waterbodies and conveyance downstream to the Galway Bay European Sites will exist. Construction projects within the local Bearna River catchment will have the potential to generate contaminated surface water runoff and any discharge of such runoff from the footprint of the project's construction site and other such sites within the Bearna River sub-catchments could result in negative impacts to water quality downstream at the White Strand/Rusheen Estuary section of Galway Bay.

7.0 SCREENING CONCLUSION

The proposed project has been screened for its potential to result in likely significant effects to surrounding European Sites. As this project site is located approximately 800m from the nearest European Site, a Source-Pathway-Receiver model was used to identify potential impact pathways linking the project site to European Sites. The potential impact pathways identified were restricted to hydrological and noise pathways.

Two European Sites, the Galway Bay SAC and the Galway Bay SPA were identified as occurring within the zone of influence of the project. The reason for identifying this European Site within the zone of influence of the project was due to the presence of a hydrological pathway linking the project site to them.

In the absence of further detailed examinations and appropriate safeguards, the project has been identified as having the potential to result in the discharge of contaminated surface drainage waters to receiving surface water. It has been found during this Screening, which has been completed with a high degree of conservatism and precaution, that the potential for the release of contaminated surface drainage waters during either the construction phase and/or operation phase to result in significant negative effects to the conservation objectives of the Galway Bay European Sites cannot be ruled out at the screening stage.

For the reasons outlined above it is the considered view of the authors of this Screening Report for Appropriate Assessment that the potential for likely significant effects to European Sites cannot be ruled out at the Screening stage and that an Appropriate Assessment of the project is required. Based on this conclusion a NIS has been prepared to inform the competent authority during its Appropriate Assessment of the project and its potential to result in adverse effects to

the integrity of the Galway Bay European Sites, alone or in-combination with other plans or projects.

.

REFERENCES

European Commission (2019). *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Luxembourg.

European Communities (2021). *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Luxembourg.

European Commission (1992). EU Habitats Directive.

Institute of Air Quality Management (IAQM) (2024). Guidance on the Assessment of Dust from Demolition and Construction

OPR (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.

APPENDIX D. NATURA IMPACT STATEMENT

Natura Impact Statement

Cappagh Road Park & Ride

Doherty Environmental Consultants Ltd.

September 2025

Cappagh Road Park and Ride

Natura Impact Statement

Document Stage	Document Version	Prepared by
Final	1	Pat Doherty MSc, MCIEEM

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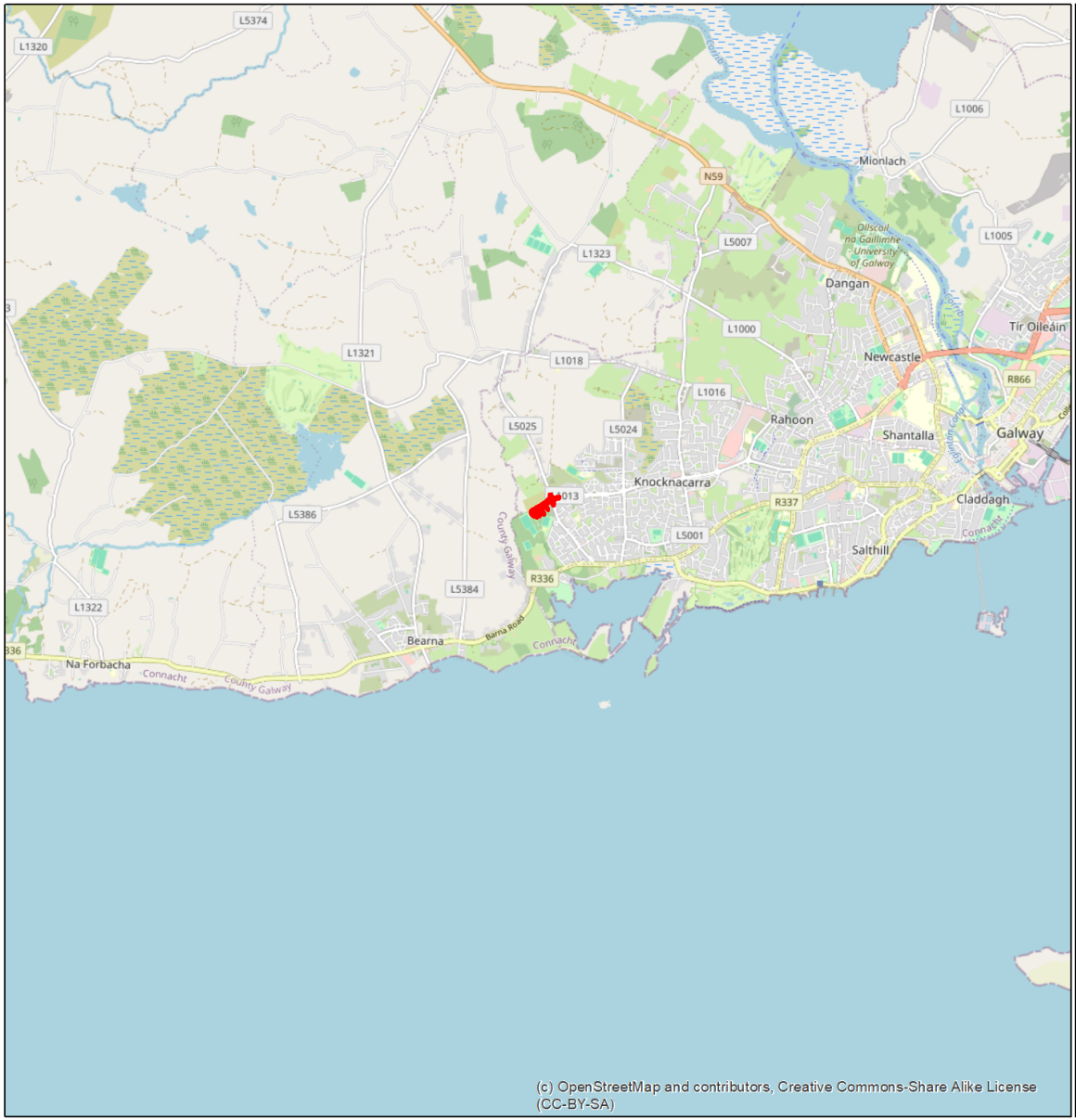
1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. has been commissioned by the National Transport Authority (NTA) to undertake a Natura Impact Statement for the proposed Cappagh Road Park and Ride (i.e. the project). The location of the project is shown on Figure 1.1 while an aerial view of the works area is shown on Figure 1.2. The Proposed Layout of the Park & Ride facility is detailed in Planning Drawing: 20_008D - CSE - GEN - XX - DR - C – 2200 and 2201, provided under separate cover with the planning application documentation.

In accordance with Article 6(3) of the Habitats Directive, as transposed into Irish law by Regulation 42(1) and Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021 (i.e. the "Habitats Regulations") and Part XAB of the Planning and Development Act, 2000 (as amended) (i.e. the "Planning and Development Act"), a Screening Report for Appropriate Assessment (AA) was prepared to assess whether it could or could not be ruled out, on the basis of objective information, that the project, either individually or in combination with other plans or projects, was likely to have a significant effect on any European Sites. The Screening Report for Appropriate Assessment was prepared by DEC Ltd. on behalf of the NTA and is provided under separate cover with the planning application documentation. The Screening Report for Appropriate Assessment concluded, in view of best scientific knowledge and the conservation objectives of the European Sites occurring within the zone of influence of the project that, it could not be ruled out at the screening stage that the project would not result in significant adverse effects to two European Sites, namely the Galway Bay Complex SAC and the Inner Galway Bay SPA (hereafter jointly referred to as the Galway Bay European Sites). The conclusion of the Screening Report was informed by a highly precautionary approach and adopted a worst-case scenario. Such an approach was adopted to ensure consistency with the extremely low threshold for triggering likely significant effects, as determined in both European and Irish case law and Section 177U of the Planning and Development Act. On the basis of that conclusion, it has been determined that AA is required in order to examine in detail the implications of the project for the above listed European Sites. In accordance with Section 177T of the Planning and Development Act an NIS of the project has been prepared in order to assist the competent authority, in this case Galway City Council, in carrying out its Appropriate Assessment. This NIS provides an examination, analysis and evaluation of the likely impacts from the Project, both individually and in combination with



Cappagh Road Park & Ride

Figure 1.1

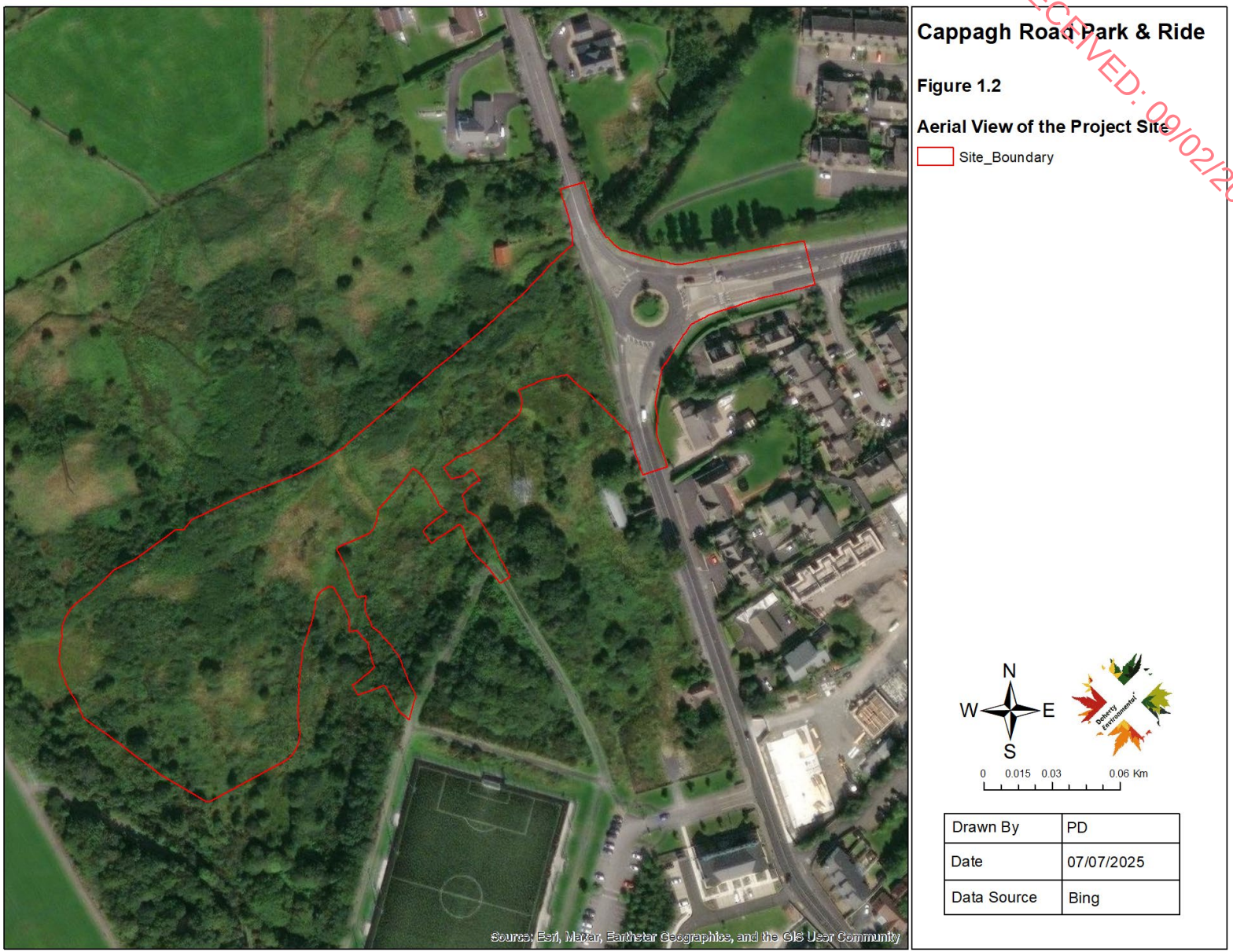
Site Location

Site Boundary

N
W E
S

0 0.5 1 2 Km

Drawn By	PD
Date	07/07/2025
Data Source	OSM



Cappagh Road Park & Ride

Figure 1.2

Aerial View of the Project Site

Site_Boundary

N
W E
S

0 0.015 0.03 0.06 Km

Drawn By	PD
Date	07/07/2025
Data Source	Bing

other plans and projects, in view of best scientific knowledge and the conservation objectives of the above two listed European Sites.

It also provides complete, precise and definitive findings, which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the European sites concerned.

1.1 STATEMENT OF AUTHORITY

This Natura Impact Statement has been prepared by Mr. Pat Doherty BSc., MSc, MCIEEM, of DEC Ltd. Mr. Doherty is a consultant ecologist with over 20 years' experience in completing ecological impact assessments and environmental impact assessments. Pat has been involved in the completion of assessment reports for proposed developments and land use activities under the EIA Directive and Article 6 of the Habitats Directive since 2003 and 2006 respectively. He has extensive experience completing such reporting for projects located in a variety of environments and has a thorough understanding to the biodiversity issues that may arise from proposed land use activities. Pat was responsible for completing one of the first Appropriate Assessment reports for large scale infrastructure developments in Ireland when he prepared the Appropriate Assessment for the N25 New Ross Bypass in 2006/07. Since then Pat has completed multiple examinations of both plans and projects in Ireland. He has completed Natura Impact Statements for national scale plans such as Ireland's CAP Strategic Plan and National Seafood Development Plan and regional and county scale plans including County Development Plans, Local Area Plans, Tourism Strategies and Climate Action Plans. Pat has completed multiple Natura Impact Statements for a range of development types that include large scale infrastructure developments in sectors such as transport and energy as well as industrial, commercial and residential developments.

Pat has completed focused certified professional development training in Appropriate Assessment as well as in a range of ecological survey techniques and assessment processes. Training has been completed for National Vegetation Classification (NVC) and Irish Vegetation Classification (IVC) surveying, bryophyte survey for habitat assessment and identification, professional bat survey and assessment training, mammal surveying and specific training for bird and bat survey techniques. Ongoing training has been completed by approved training providers such as CIEEM, British Trust for Ornithology, the Botanic Gardens and the Field Studies Council.

1.2 SUMMARY OF SCREENING REPORT FOR APPROPRIATE ASSESSMENT

The Screening Report identified the European Sites occurring within the zone of influence of the project. This was undertaken by using the SPR model. All potential pathways that could connect the project to European Sites in the wider surrounding area were identified and examined for their potential to function as pathways. The potential pathways examined included hydrological; groundwater; noise and vibration; air; light; visual and mobile species; pathways. Of these pathways, the hydrological, aerial emission, noise emission and mobile species pathways were identified as the pathways that could not be ruled out at the screening stage as a potential impact pathway.

The hydrological pathway is established by the:

Bearna Stream (EPA Name: Oddacres Stream) which flows from north to south to the west of the western boundary of the project site; and

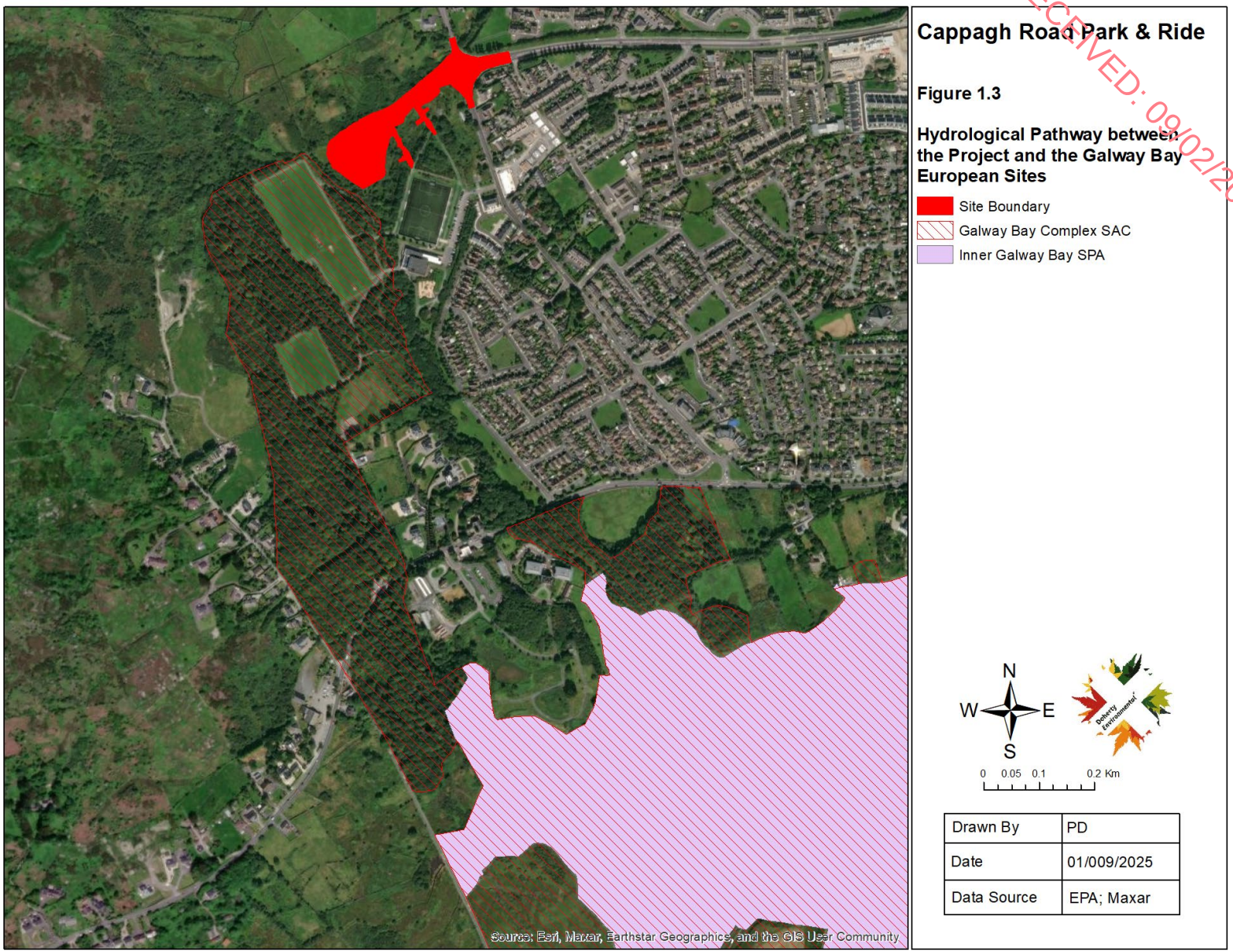
Tonabrocky Stream, which is a tributary of the Bearna River, and flows through the project site from the northeast to the southwest and merges with the Bearna Stream to the south of the project site. The Bearna Stream to the west and south of the project site flows along the boundary of the Galway Bay Complex SAC and drains to the coast adjacent to Rusheen Point. Qualifying habitats of the Galway Bay Complex SAC and wetland habitats of the Inner Galway Bay SPA occur at the mouth of Bearna River downstream of the project site.

The aerial emission pathway was identified as a potential impact pathway owing to the potential for the construction phase of the project to generate dust and for dust deposition to the Bearna River and Tonabrocky Stream and its conveyance as fines downstream to the coastal section of the SAC.

The noise emission pathway was identified as a potential impact pathway owing to the potential for disturbance to otters, which are listed as qualifying feature of interest of the Galway Bay Complex SAC.

The mobile species pathway was identified owing to the presence of watercourses within and adjacent to the project site and for these watercourses to be used by otters of the Galway Bay Complex SAC.

During the screening it was found that, in the event the project results in the generation of polluted surface water runoff on site, such runoff could be discharged to the Tonabrocky Stream and the Bearna River and will have the potential to contribute towards perturbations to water quality with associated negative affects to qualifying habitats of the Galway Bay Complex SAC and wetland foraging habitat relied upon by special conservation interest bird species of the Inner Galway Bay SPA. The potential for disturbance to otters has also been identified as a potential impact arising from the project.



Cappagh Road Park & Ride

Figure 1.3

Hydrological Pathway between the Project and the Galway Bay European Sites

- Site Boundary
- Galway Bay Complex SAC
- Inner Galway Bay SPA

N
W E
S

0 0.05 0.1 0.2 Km

Drawn By	PD
Date	01/009/2025
Data Source	EPA; Maxar

The Screening Report concluded that the potential for this pathway to occur and function as an impact pathway was best examined as part of an Natura Impact Statement and if adverse effects are identified then appropriate mitigation measures are set out to ensure such adverse effects are avoided.

1.3 GUIDANCE

This NIS has been undertaken in accordance with National and European guidance documents: Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (DEHLG 2010) and *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC.* The following guidance documents were also of relevance during this the preparation of this NIS:

- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/42/EEC. European Commission (2021).
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats directive 92/43/EEC. European commission (2018).

The information provided in this NIS is also guided by European and Irish case law guiding the approach to Stage 2 Appropriate Assessment. In particular it is noted that the consideration of impacts provided in Section 4 this NIS has been undertaken in the absence of any regard to best practice measures and environment safeguards that aim to safeguard the receiving environment and European Sites from potential adverse impacts.

1.3.1 Background to Habitats Directive Article 6 Assessments

The EC (2021) guidelines outline the stages involved in undertaking an assessment of a project under Article 6(3) and 6(4) of the Habitats Directive. The assessment process comprises the four stages outlined below. Stage 1 to 3 form part of the Article 6(3) process, while Stage 4 forms part of the Article 6(4) process. This NIS presents the findings of an examination, analysis and evaluation of the project to inform a Stage 2 Appropriate Assessment of the project.

- Stage 1 – Screening: This stage defines the proposed plan, establishes whether the proposed plan is necessary for the conservation management of the European Site and assesses the likelihood of the plan to have a significant effect, alone or in combination with other plans or projects, upon a European Site.

- Stage 2 – Appropriate Assessment: If a plan or project is likely to have a significant affect an Appropriate Assessment must be undertaken. In this stage the impact of the plan or project to the Conservation Objectives of the European Site is assessed. The outcome of this assessment will establish whether the plan will have an adverse effect upon the integrity of the European Site.

- Stage 3 – Procedures under Article 6(4): Plans or projects for which the appropriate assessment could not conclude that they will not affect the integrity of the sites concerned may only be approved by the competent authorities if a derogation is sought in accordance with the provisions of Article 6(4). These provisions entail three key requirements that must be met and documented:

    - Alternative have been considered

    - There are imperative reasons of overriding public interest, including those of social or economic nature; and

    - All compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected are taken

1.3.1.1 Stage 2: Appropriate Assessment

The EC Guidance Assessment Criteria for a Stage Two Appropriate Assessment seeks the following information:

1. the collection of information on the project and on the European Sites concerned;

2. An assessment of the implications of the project in view of the site's conservation objectives, individually or in combination with other plans or projects;

3. An evaluation as to whether the project can have adverse effects on the integrity of European Sites;

4. The consideration of mitigation measures (including their monitoring).

This NIS addresses each of these items, through the following sections provided below.

1.4 SCIENTIFIC INVESTIGATIONS

A range of scientific site investigations have been completed for the project and these are relied upon in this Natura Impact Statement. The investigations include ecological field surveys, hydrological field surveys and geotechnical field surveys.

Desk-based investigations were completed to identify pathways connecting the proposed project to European Sites. Datasets used to assist with the desk-based investigations include:

- NPWS European Sites and site-specific conservation objectives datasets;
- EPA Rivers and Lakes dataset;
- EPA surface water catchment and sub-catchment datasets;
- NPWS Article 17 Habitats and Species Reports datasets;
- OSI Geohive and OSI Historic townlands online mapping portal;
- National Biodiversity Data Centre (NBDC) online mapping portal; and
- NPWS Protected Species Dataset for the proposed development site and surrounding area.

The ecological field surveys that have been completed and that have informed this Natura Impact Statement include:

- Habitats and vegetation surveys and mapping as well as the recording of the presence of fauna at the proposed development site completed during October and November 2024 and during May and July 2025.

- Detailed otter surveys were completed on the 15th October, 22nd November, 1st May and 3rd July 2025. The stretch of the Tonabrocky Stream for approximately 150m upstream of Cappagh Road and downstream to its confluence with the Bearna River was searched for field signs indicating the presence of otters. The stretch of the Bearna River downstream as far as the R336 Barna Road was also searched for field signs. Such field signs include spraints, footprints, prey remains, jelly, holts and couches.

- Detailed riparian corridor surveys were completed along the Tonabrocky Stream by Rivus Ltd. on the 11th April 2025

- Ornithological surveys during the non-breeding season to determine the presence of wetland birds and whether such bird species rely on the project site and adjacent lands for foraging and/or roosting. Surveys were completed during the 2024/2025 non-breeding season on the 15th October and 22 November 2024.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

There is a significant number of people living in regional towns, rural hinterlands, and to a lesser extent; in the metropolitan area who do not have ease of access to high-quality public transport by walking or cycling. This can be due to their physical distance to high-quality public transport networks, limited pedestrian, and cyclist facilities (particularly in rural areas), or due to reduced mobility (e.g., elderly or mobility impaired).

Appropriately located and designed Park & Ride facilities can enable these people to access public transport and enhance their transport options to a wide range of destinations in a sustainable manner.

Park & Ride can intercept car trips where people are reliant on a private car at an early viable point in their journey thereby reducing the distances travelled by private cars with a corresponding reduction in carbon emissions and congestion.

The provision of high-quality Park & Ride facilities will enhance the accessibility of public transport to a wider catchment of people. This will increase the usage of public transport in the future and protect the investment in existing and new public transport schemes.

The Bearna Road (R336) extends south from Killary Harbour at Leenaun, passing through Maum, where it intersects with the R345, and Maam Cross, where it crosses the N59. The route continues through Screebe, meeting the R340, and Costelloe, where it connects with the R343 and R372. The R336 then turns east, following the coastline of Galway Bay, passing through Inverin, Spiddal, Furbogh, Bearna, and Salthill, before reaching Galway City, where it links with the N6 and N83 roads.

The majority of journeys along the Bearna Road (R336) corridor during peak hours mostly consists of single-occupancy private vehicles. These motorists occupy a substantial amount of road space per person, in stark contrast to the comparatively smaller space used per person when utilising public transport.

The Cappagh Road diverges from the Bearna Road (R336) corridor near Rusheen Bay, extending northwards through Knocknacarra. It intersects with the Western Distributor Road at the roundabout before continuing north to connect with Rahoon Road at Boleybeg East.

This location was identified in the Galway Park & Ride Strategy as an intervention point on the Bearna Road (R336) corridor for transferring a portion of these single-occupancy car trips to public transport.

2.2 PURPOSE OF THE SCHEME

The number of commuters travelling by car to various key destination zones in Galway City using the Bearna Road (R336) corridor from areas that are currently lacking easy access to high-quality Public Transport services demonstrates the need to develop a Park & Ride facility in the vicinity of this corridor with good Public Transport services to the Galway City. The overall objectives of the Park & Rides are-

- To maximise the opportunities provided by on-going investment in public transport infrastructure and services, particularly in relation to the commencement of service of new public transport projects.

- To provide the appropriate type and scale of Park and Ride at the right location, with connectivity to the road and public transport networks and design that supports integration with the surrounding walking and cycling network.

- Reduce reliance on the private car, reduce distances travelled by car and ensure Park and Ride facilitates greater use of sustainable modes.

- Deliver an enhanced customer experience through safe, secure, and user-friendly facilities that consider opportunities for interchange and to address barriers to public transport use.

It is anticipated that there will be a significant rise in public transport demand, driven by forecasted population growth along this corridor and a shift in transport mode share to cater for the expected increase.

Strategically placed Park & Ride will enable this wider catchment to access high-quality public transport options and, in facilitating this, will help reduce road congestion along the corridor.

Travel Demand Analysis and a review of the current Public Transport services on the Bearna Road (R336) corridor conducted by the Park & Ride Development Office concluded that intervention through a Park & Ride facility would be most effective in the vicinity of the roundabout on Cappagh Road.

This facility aims to intercept private car traffic that originates in catchment areas further west of this location (Example: Wider Connamara Region, Inverin, Spiddal, Furbogh etc.) and transfer them to a bus suitable for their destination at the facility.

The overall objective of this scheme is to provide the appropriate type and scale of Park & Ride at Cappagh Road Roundabout, with connectivity to the road and the future Bus Connect Galway services with a design that supports integration with the surrounding walking and cycling network.

Another key objective of this scheme is to provide appropriate infrastructure, including lay-bys, for Bus Connects Galway Network Redesign service 7 and 9A to facilitate the termination of these services at the proposed Park & Ride facility..

2.3 SCHEME DESIGN

2.3.1 Existing Conditions

2.3.1.1 Scheme Location

The selected site for the Park & Ride facility is located on Cappagh Road, approximately 900 metres north of its junction with the Bearna Road (R336). The site is located immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road. It is a greenfield site comprising uneven topography with scrub, wet grassland and dry calcareous and neutral grassland. The field is owned by Galway City Council and extends to approximately 2.9 hectares.

The proposed site location is shown in Figure 1.1 and Figure 1.2 above.

2.3.1.2 Access Arrangement

The subject field is accessible via a field access gate located near the existing roundabout on Cappagh Road; however, no blacktop or hardstanding surfaces are present to facilitate vehicular access into the field.

2.3.1.3 Facilities for Vulnerable Road Users

Footpaths, varying in width from 1.2 metres to 2.0 metres, are currently provided on both sides of Cappagh Road, extending from its junction with the R336 to the south, up to approximately 150 metres north of the existing roundabout. Additionally, 2.0-metre-wide footpaths are present on both sides of the Western Distributor Road to the east of the roundabout.

No dedicated cycle facilities are currently provided on either Cappagh Road or the Western Distributor Road within the immediate vicinity of the roundabout.

2.3.2 Proposed Design

2.3.2.1 Scheme Description

The proposed development is located on Cappagh Road, approximately 900 metres north of Bearna Road (R336), immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road.

The proposed Park & Ride facility will provide 179 car parking spaces, including 9 spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large), and 18 spaces designated for electric vehicles, along with 4 bus bays and passenger shelters. Provisions for active travel will include a hardstanding area for a bike shelter. The scheme will also incorporate both hard and soft landscaping, planting, lighting, boundary treatments, surface and foul water drainage, public lighting, CCTV, an ESB substation, and all other associated and ancillary works.

The Proposed Layout of the Park & Ride facility is detailed in Planning Drawing: 20_008D - CSE - GEN - XX - DR - C – 2200 and 2201, provided under separate cover with the planning application documentation.

2.3.2.2 Access Arrangement

Access to and from the Park & Ride facility will be provided via a proposed new arm off the existing roundabout on Cappagh Road.

As outlined earlier in the report, the position of the existing roundabout introduces a degree of deflection to traffic travelling on Cappagh Road. Our analysis has shown that the current geometric configuration of the roundabout does not permit the addition of a new western arm. Consequently, it is proposed to relocate the roundabout 11 metres to the west.

The new roundabout layout has been designed in accordance with the Cycle Design Manual as a Protected Roundabout with Cycle Priority. It will feature an inscribed circle diameter of 33 metres and an 6-metre-wide circulatory carriageway, consistent with the existing roundabout. The design also includes dedicated 2-metre-wide footpath and 2-metre-wide one-way cycle lane around the roundabout, both physically segregated from the circulating traffic. Controlled crossing facilities will be provided on each arm of the roundabout, with priority given to pedestrians and cyclists at these crossing points.

The northern and southern arms of the new roundabout will feature a 7.3-metre-wide carriageway with 2.0-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway which will tie into the existing carriageway of Cappagh Road within approximately 50-60 metres of the roundabout.

The western arm of the roundabout will feature a 7.0-metre-wide carriageway with a 2.0-metre-wide cycle lane and footpath on either side providing access for buses and car park users to designated areas within the car park.

The eastern arm of the roundabout will feature a 6.3-metre-wide carriageway with a cycle lane and footpath on either side. This will tie into the "*Galway Western Distributor Road (WDR) Cycle Scheme*" within approximately 80 metres of the roundabout.

An alternative tie-in proposal for the eastern arm of the roundabout has also been developed, for the existing road cross-section of the Western Distributor Road. This option is intended to accommodate the scenario in which the proposed Park and Ride facility is delivered in advance of the "*Galway Western Distributor Road (WDR) Cycle Scheme*".

2.3.2.3 *Traffic Signals*

Controlled crossing facilities (Belisha Beacon) will be provided on each arm of the roundabout.

2.3.2.4 *Facilities for Vulnerable Road Users*

Provisions for active travel infrastructure have been incorporated both within the car park and around the roundabout.

Dedicated footpaths and cycle lanes are also proposed along the Park & Ride access road and the Western Distributor Road, providing a seamless active travel connection into the facility, enhancing accessibility for pedestrians and cyclists within the wider area. The main car park area will also include footpaths spine to facilitate movement of pedestrians within the carpark.

In addition to the above, two new pedestrian links have also been proposed to connect the existing footpaths located to the north of Cappagh Park with the proposed development. These links are intended to ensure compliance with the relevant land use zoning requirements. *As previously noted in this report, the surrounding area is densely vegetated and supports a variety of flora, fauna, and habitats. Hence introduction of any infrastructure wider than a pedestrian footpath (such as a motorable road connection) would likely result in further ecological disturbance and adverse impacts on the local environment*.

2.3.2.5 *Tonabrocky Stream Diversion*

The Tonabrocky Stream flows through the site from the northeast to the southwest before merging with the Barna Stream towards the southern part of the site. It is proposed to realign a short section of the stream, approximately 130 metres in length, in order to mitigate potential impacts on its associated habitats. This diversion aims to reduce the required length of culvert or bridge beneath the proposed new access road at the Cappagh Road Roundabout. Further details on this proposal are available on Appendix-A (Watercourse Realignment Plan).

2.3.2.6 *Cross Drainage Structures*

As part of the proposed development, 4 new cross-drainage structures are being introduced, along with the lengthening of 1 existing structure.

3 new bottomless portal frame culverts are proposed to span the Tonabrocky Stream. One of these will be located beneath the new Park and Ride access road, while the remaining two are to be situated beneath the proposed pedestrian links connecting Cappagh Park with the Park and Ride facility.

One pipe culvert is proposed to cross the existing drainage ditch that flows from the northern field into the Tonabrocky Stream.

In addition, the existing twin-pipe culvert conveying the Tonabrocky Stream beneath the northern arm of the Cappagh Roundabout is proposed to be lengthened by approximately 10.0 metres to accommodate the revised roundabout layout.

2.3.2.7 Retaining Wall

As previously noted in this report, the site features uneven topography, particularly in the south-western corner, where the ground slopes steeply towards the Barna Stream and generally in a southerly direction. This topographical condition necessitates earthwork embankment proposals along this section, with the base/toe of the embankment footprint extending in close proximity to the stream.

However, The development has been designed to maintain a 15-metre-wide riparian buffer along the Barna Stream, situated along the western boundary of the proposed site. This buffer will be provided with the help of a green-faced retaining wall, which will also extend around the southern boundary of the car park. The retaining wall will be approximately 90 metres in length, with its height ranging from 0.0 metres to 3.2 metres.

2.3.2.8 Cross Sectional Elements

2.3.2.8.1 Road and Active Travel Infrastructure

The Cappagh Road section approaching the northern and southern arms of the roundabout will feature a 7.3-metre-wide carriageway, 2-metre-wide footpath and 2.0-metre-wide cycle track connections (merge/diverge) on both sides of the carriageway.

The Western Distributor Road section approaching the eastern arm of the roundabout will feature a 6.3-metre-wide carriageway, with a 2-metre-wide footpath and a 2-metre-wide cycle track on both sides of the carriageway.

The Park & Ride access road approaching the western arm of the roundabout will comprise a 7.0-metre-wide carriageway, with a 2-metre-wide footpath and 2-metre-wide cycle track on both sides of the carriageway.

All internal roads within the car park will have a 6.0-metre-wide carriageway.

2.3.2.8.2 Parking Bays

Standard parking spaces will measure 5.0m x 2.5m.

Parking spaces designated for electric vehicles will measure 6.0m x 2.5m.

Parking spaces for mobility-impaired users will measure 6.0m x 2.4m, with a 1.2-metre buffer on both sides to facilitate ease of access.

2.3.2.9 Proposed Surface Water Drainage

This drainage strategy consists of two separate sections: the eastern section, where a section of the existing road and roundabout layout are being upgraded, and the western section, where a new road and the car park is being constructed.

<u>Eastern Section- Existing Road and Roundabout</u>

As part of the road and roundabout upgrade, the existing gullies and manholes will be relocated to accommodate the revised road layout while maintaining connectivity to the existing surface water line.

To introduce SuDS elements, bioretention areas have been proposed at key locations:

- Around the roundabout
- Along the northern and southern cycle tracks

The bioretention areas will help improve water quality, provide attenuation, and contribute to biodiversity enhancement.

Western Section- New Road Construction

The western section features two separate surface water drainage systems designed to manage runoff effectively:

(i) Traditional Drainage System (Road Drainage)

This system is designed for the Park & Ride access road and follows a conventional approach:

- Road gullies collect surface water runoff from the carriageway.
- Pipes network to transfer runoff to the downstream system.
- An oil interceptor is installed to remove hydrocarbons and pollutants before discharge.
- Flow control structure (Hydrobrake) to regulate outflow from the storage system. The design discharge has been set at 4.57 L/s, corresponding to the calculated greenfield runoff rate.
- Outfall to the receiving watercourse, with the outlet level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure resilience under extreme events.

(ii) Sustainable Drainage System for the Parking Area

Runoff from the parking area is managed using SuDS principles to enhance the quality of surface water runoff and reduce peak runoff. This system includes:

Permeable asphalt with an underlying storage layer, allowing infiltration and temporary retention. The proposed permeable asphalt system will manage surface water runoff by allowing water to infiltrate through a porous surface layer. The water will then percolate through several underlying layers designed to filter and store runoff before it reaches the drainage network. The system consists of:

- A porous surface course, which facilitates water infiltration while providing structural integrity.
- Binder course ensures structural integrity and permits vertical water movement.
- Choker course provides an even surface for the placement of the sub-base and assists in water conveyance.
- Sub-base storage layer (600 mm) – composed of coarse aggregate, designed to temporarily store infiltrated runoff and provide load-bearing capacity.
- Perforated underdrain pipe wrapped in geotextile, installed at the base of the sub-base to collect excess water and convey it into the wider surface water drainage system.
- Geotextile membrane – placed at the base and sides of the construction to prevent the migration of fines, protect permeability, and maintain long-term system performance.

The perforated pipe beneath the permeable paving is connected to the main surface water drainage line, which originates at the roundabout and runs southwards across the site. This main pipe collects surface water from:

- Road gullies along the Park & Ride access road
- Perforated pipes from the permeable asphalt in the car park

All surface water from both the traditional and SuDS systems converges into drainage lines, which then flows toward the southern part of the site.

Before discharging into the receiving waterbody, the combined runoff passes through the following key treatment and control components:

- An oil interceptor, which removes hydrocarbons and other pollutants

- A hydrobrake flow control device, located within a downstream manhole, which limits the discharge to a design flow of 4.57 L/s, corresponding to the calculated greenfield runoff rate.

The final discharge is directed into the existing stream, at a level set above the 1% Annual Exceedance Probability (AEP) flood level to ensure that the outfall remains operational during extreme flood events.

2.3.2.10 Pavement

The proposed pavement along Cappagh Road, Western Distributor Road, and the new Park & Ride access road includes both overlay and full-depth construction zones.

The main car parking area will feature permeable asphalt, as outlined in the previous section.

2.3.2.11 Traffic Signs and Road Markings

Park & Ride Site

Appropriate road markings and traffic signs will be proposed within the main car park and the link roads in accordance with TSM Chapters 5, 6, and 7.

2.3.2.12 Public Lighting and Closed-Circuit Television

The proposed facility will be illuminated by a new public lighting system to enhance the safety of the users.

A new CCTV system will also be installed at the bus stop area and throughout the car parking area in order to enhance the personal safety of the users and provide security for parked vehicles and Bicycles.

2.3.2.13 Electric Vehicle Charging

The proposed facility will have 17 no. parking and charging points for Electric Vehicles which represents ~10% of the total parking capacity of the facility.

In addition, 17 no. standard parking spaces (~10%) will be futureproofed with ducting etc. to facilitate easy conversion to EV parking in the future.

2.3.2.14 Provision of Parking for Mobility Impaired

The proposed scheme shall provide 9 no. parking spaces for mobility-impaired users (6 standard, 1 for electric vehicles, 1 futureproofed for electric vehicles and 1 large), which represents ~5% of the total parking capacity of the facility. One (1 no.) of these spaces will be equipped with electric vehicle charging capability.

2.3.2.15 Utility Connection (including Relocation)

Several overhead and underground ESB cables, along with an electricity pylon and pole, are currently located within the planning application boundary, as shown on the map below. While the electricity pylon will remain unaffected by the proposed development, a 10kV overhead electricity pole may require relocation or adjustment.

Multiple underground pipelines serving drinking water, foul sewer, and stormwater networks are present within the surrounding road network, as illustrated on the maps below. Additionally, a Virgin Media underground telecommunications duct runs beneath both Cappagh Road and the Western Distributor Road.

Although the existing pipes and ducts are not anticipated to be directly impacted by the development, several associated chambers, manholes, and similar infrastructure elements may require minor relocation or adjustment to accommodate the proposed new roundabout layout and active travel scheme along Cappagh Road and the Western Distributor Road.

A new substation will be required to power the various electrical equipment within site.

2.4 CONSTRUCTION PHASE

The construction of the proposed development will be carried out in the following phases:

The follow represents the likely sequence of construction activities required for the construction of the park and ride facility:

- Site clearance and removal of footing bases and underground services

- Excavation of site to formation level. Excavations to be completed on site will comprise:
    - Top soil stripping to 300mm amounting to c. 6,220m^3.
    - Earthwork stripping of existing ground to formation level amounting to c. 4,680m^3
- Deposition of fill volume for level build up amounting to c. 16,470 m^3 of which 12,010m^3 will be imported to site.
- Construction of the foundations
- External works, roads & footpaths

2.4.1 Construction Phase Surface Water Management

During the construction phase surface water runoff will be to ground as per the existing surface water runoff regime at the project site.

During periods of high rainfall when precipitation exceeds infiltration surface water runoff will flow to the west and south following the natural fall in topography to the east.

Any groundwater ingress to excavations will be pumped to a construction phase treatment train that will comprise a mobile attenuation tank and buffered outfalls over vegetated ground to the east of the project site.

If surface water discharge to the existing stormwater drain is required during construction temporary on-site settlement ponds/tanks/silt busters will be installed to ensure adequate silt removal prior to discharge the detail of this system will be presented in the CEMP.

A silt fence will be provided along the western and southern boundary of the construction phase to retain any fines entrained within the surface water runoff. The outfall of the buffered outfalls will be situated to the west of the silt fence.

2.4.2 Construction & Environmental Management Plan

A Construction & Environmental Management Plan (CEMP) will be prepared for the proposed development and provided to the planning authority prior to the commencement of construction.

2.4.2.1 Construction Waste Management Plan

The Resource Waste Management Plan (RWMP) provides a Waste Management Plan for the proposed development. It is anticipated that all excavated topsoil (6,220m^3) and 7988 m^3 of subsoil will be reused on site. It is anticipated that 7,988 m^3 of subsoil material will need to be removed offsite for appropriate reuse, recovery and/or disposal. Soils for disposal from the site are classified as waste and must comply with waste management legislation. The relevant legislation is the EU council decision (2003/33/EC) which has been implemented in all member states and sets out the criteria for the acceptance of waste at Landfills.

Final certification for all materials removed off site will require to be provided by the main contractor on completion of the excavation works.

2.4.3 Construction Plant, Equipment & Materials

The following construction materials will be required for the works:

- Concrete: This will be delivered by bottle truck and placed directly in prepared forms.
- Hardcore: This will be stored in the Construction compounds and delivered to site location by dump truck.
- The materials and equipment to be stored in the construction compound will be provided in the CEMP to be submitted prior to the commencement of construction

3.0 BASELINE DESCRIPTIONS

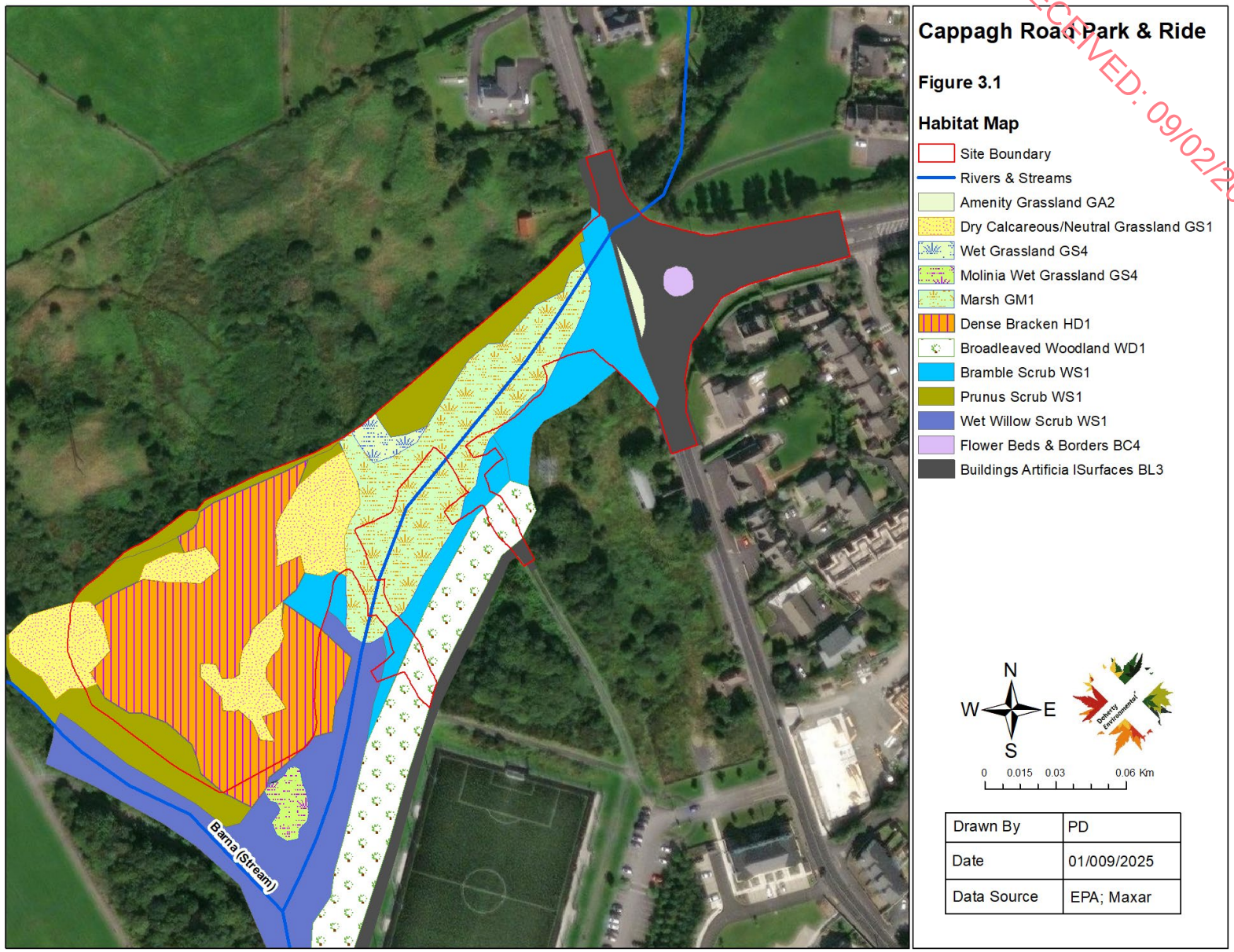
The proposed site for the Park & Ride facility is located at the western limit of Galway City to the west of Cappagh Road.

A review of the historic 6-inch and 25-inch mapping from 1839 and 1902 indicates the presence of the Barna Stream flowing through the site, the presence of the Cappagh Road along the western boundary of the site and the enclosed nature of the site with its sub-division into a number of fields.

Aerial mapping from the 1995 to 2000 depicts the site option and the lands to the west and south as unimproved. Construction of the playing pitch that occur to the south of the site is depicted on this aerial image. The 2001 to 2005 aerial imagery shows the presence of the playing pitches and associated pedestrian paths to the south and west of the site option. No further changes in the surrounding land cover immediately adjacent to the site option is apparent on later aerial imagery. The imagery from 1995 to current indicates little change at the site option, suggesting that the site has remained unimproved.

3.1 HABITATS

The habitats occurring at the project site consist of scrub, marsh, eroding watercourse in the form of the Tonabrocky Stream, spreading dense bracken and patches of wet grassland, and dry calcareous and neutral grassland. Figure 3.1 below provides a view of the habitats occurring at and surrounding the project site.



3.2 RELEVANT FAUNA

Records for otter are held for the area of search, as shown on Figure 3.2. The records for otters are dated, having been recorded in 1980 and 1983 respectively.

The stretch of the Tonabrocky Stream occurring within the project site and the Bearna River adjacent to the western boundary of the project site have been searched for field signs indicating the presence of otters. No field signs in the form of holts, couches, prey remains, footprints, spraints etc. for otters were identified during field surveys. On the basis of these surveys it can be concluded that the Tonabrocky is not relied upon by otters.

Wetland bird species and particularly special conservation interest bird species of the Galway Bay SPA have not been recorded at the project site during non-breeding season field surveys of the site during the 2024/2025 non-breeding season. It is further noted that the habitats occurring at the project site are not suitable for supporting populations of special conservation interest bird species of the SPA. On the basis of the results of the non-breeding season bird surveys the project site does not support and is not relied upon by wetland bird species and special conservation interest bird species of the Galway Bay SPA.

Figure 3.2: Area of Search for Rare, Threatened or Protected Species

3.3 DESCRIPTION OF THE GALWAY BAY COMPLEX SAC

Galway Bay Complex SAC comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The qualifying features of interest of the SAC are listed in Table 3.1 below. Each of the qualifying features of interest of the SAC listed in Table 3.1 are identified as to whether or not they occur within the zone of influence of the project.

Table 3.1: Qualifying features of interest of the Galway Bay Complex SAC

Qualifying features of interest	IN/Out Zone of influence
1140] Tidal Mudflats and Sandflats	Yes. Examples of this habitat are located at White Strand/Rusheen Estuary section of the SAC at the mouth of the Bearna River.
1150] Coastal Lagoons*	No. No pathways connect the project to examples of this habitat.
1160] Large Shallow Inlets and Bays	Yes. Examples of this habitat are located at White Strand/Rusheen Estuary section of the SAC at the mouth of the Bearna River.
1170] Reefs	Yes. Examples of this habitat are located at White Strand/Rusheen Estuary section of the SAC at the mouth of the Bearna River.
1220] Perennial Vegetation of Stony Banks	No. No pathways connect the project to examples of this habitat.

Qualifying features of interest	IN/Out Zone of influence
1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	No. No pathways connect the project to examples of this habitat.
1310] Salicornia Mud	No. The nearest example of this habitat to the mouth of the Bearna River is approximately 700m to the south across Rusheen Estuary. Given this distances over an any of estuarine coastal water no pathway is considered to be connect the project to examples of this habitat.
1330] Atlantic Salt Meadows	No. The nearest example of this habitat to the mouth of the Bearna River is approximately 220m to the south, southwest. This habitat is located in the supratidal zone along a gravel/cobble bank. Given the distance between the mouth of the Bearna and this habitat and its position in the supratidal zone no pathway is considered to be connect the project to examples of this habitat.
1410] Mediterranean Salt Meadows	No. The nearest example of this habitat to the mouth of the Bearna River is approximately 220m to the south, southwest. This habitat is located in the supratidal zone along a gravel/cobble bank. Given the distance between the mouth of the Bearna and this habitat and its position in the supratidal zone

Qualifying features of interest	IN/Out Zone of influence
	no pathway is considered to be connect the project to examples of this habitat.
3180] Turloughs*	No. No pathways connect the project to examples of this habitat.
5130] Juniper Scrub	No. No pathways connect the project to examples of this habitat.
6210] Orchid-rich Calcareous Grassland*	No. No pathways connect the project to examples of this habitat.
7210] Cladium Fens*	No. No pathways connect the project to examples of this habitat.
7230] Alkaline Fens	No. No pathways connect the project to examples of this habitat.
8240] Limestone Pavement*	No. No pathways connect the project to examples of this habitat.
1355] Otter (Lutra lutra)	Yes. Whilst the Bearna River is not included in the areas identified for commuting otters and suitable otter habitat, as set out in the site-specific conservation objectives for the Galway Bay Complex SAC, the Bearna River and the Tonabrocky Stream provide

Qualifying features of interest	IN/Out Zone of influence
	suitable habitat for otters. As such this species is included within the zone of influence of the project.
1365] Common (Harbour) Seal (Phoca vitulina)	Yes. Harbour seal habitat is located downstream of the project site at the mouth of the Bearna River.

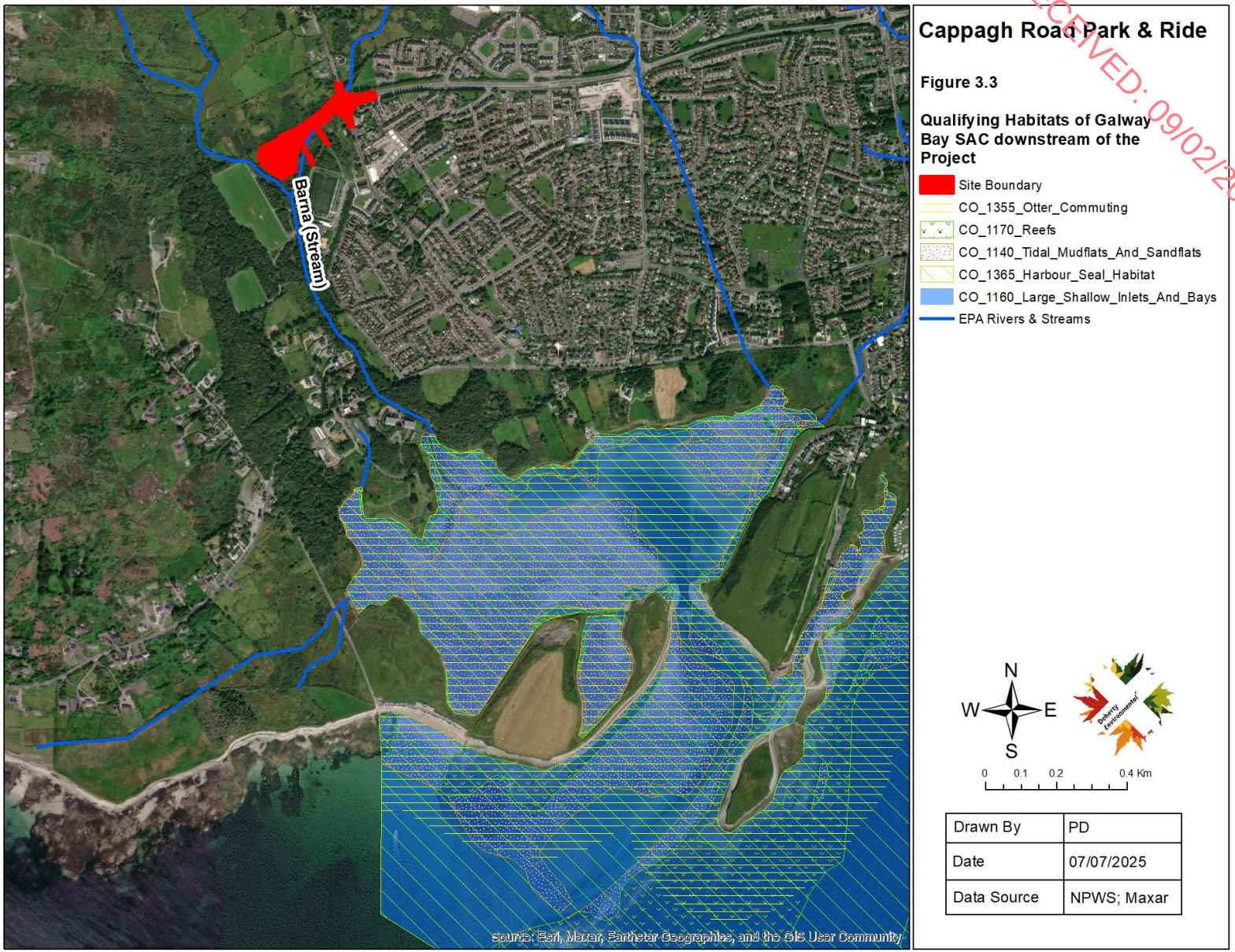
Following on from Table 3.1 the qualifying features of the Galway Bay Complex SAC occurring within the zone of influence of the project are identified as:

Tidal mudflats and sandflats; large shallow bays and inlets; reefs; otters; and harbour seal. The distribution of the mapped extent of tidal mudflats and sandflats, large shallow bays and inlets and reefs occurring downstream of the project site at Rusheen Estuary are shown on Figure 3.3 below.

3.3.1 Conservation Objectives

Site-specific Conservation Objectives for the Galway Bay SAC have been published by the NPWS (NPWS, 2013a).

The site-specific Conservation Objectives for the Galway Bay SAC aim to define the favourable conservation status its qualifying features of interest. The site-specific Conservation Objectives for these qualifying features of interest occurring within the zone of influence of the project are set out in Section 5 below.



3.4 DESCRIPTION OF INNER GALWAY BAY SPA

Inner Galway Bay SPA is a very large, marine-dominated site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poulnaclough, Aughinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Black-throated Diver, Great Northern Diver, Cormorant, Grey Heron, Light-bellied Brent Goose, Wigeon, Teal, Redbreasted Merganser, Ringed Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Inner Galway Bay SPA is separated into a series of sub-sites for the purposes of recording bird species distribution throughout the SPA. The subsite occurring downstream of the project site at Rusheen Estuary is '0G403 – Lough Rusheen'. Lough Rusheen is an important high tide roost site for the SPA with the greatest number of species supported at this location during high tide, as reported by the NPWS (2013c). Species recorded using Rusheen Estuary in good numbers, during baseline bird monitoring completed by the NPWS for the SPA, include Black-headed Gull; Redshank; Curlew; Dunlin; Lapwing; Wigeon; Bar-tailed Godwit; Ringed Plover; and Cormorant.

3.4.1 Inner Galway Bay SPA Conservation Objectives

Site-specific Conservation Objectives for the Inner Galway Bay SPA have been published by the NPWS (NPWS, 2013b).

The site-specific Conservation Objectives for the Inner Galway Bay SPA aim to define the favourable conservation status its qualifying features of interest. The site-specific Conservation Objectives for the SPA are set out in Section 5 below.

4.0 EXAMINATION OF IMPACTS

The potential impacts that could arise as a result of the project relate to emissions to surface waters and downstream to the Galway Bay European Sites. An examination of the project's potential to result in impacts to the Galway Bay European Sites by way of the emission of polluted surface water runoff is provided below.

4.1 HYDROLOGICAL & AERIAL EMISSIONS

Hydrological and aerial emissions generated by the project will have the potential to result in the discharge/deposition of potential polluting material to the Tonabrocky Stream and the Bearna River and the conveyance of such material downstream to the Galway Bay European Sites. The potential impacts that may arise as a result of the project relate to the discharge of contaminated surface water from the project site during the construction phase and operation phase to the Tonabrocky Stream downstream to the Galway Bay European Sites. The discharge of any contaminated surface water from the project site to the Rusheen Estuary section of these European Sites will have the potential to represent a source of pollution to the Galway Bay European Sites.

Earthworks associated with the construction phase of the project will denude surfaces and have the potential to generate silt-laden surface water runoff from the project site. During periods of dry weather dust will be generated at the project site and could be deposited to the Tonabrocky Stream and conveyed downstream. In the event that water generated in the construction footprint is of a poor water quality standard or becomes contaminated from construction works, its discharge will have the potential to perturb water quality in the estuary. In addition, potentially contaminating materials such as oils, fuels, lubricants, other construction-related solutions and cement-based products will be used on site during the construction phase and the accidental emission of such material via surface water runoff to the estuary will have the potential to undermine water quality.

During the operation phase surface water generated at the project site and will be conveyed downstream via the Tonabrocky Stream and Bearna River to the Galway Bay European Sites. The potential will exist for surface water runoff from car parking and other hardstanding areas to be contaminated in the event of fuel leaks or accidental spills. Any untreated discharge of contaminated surface water runoff from the project site to the Galway Bay European Sites will represent a potential source of pollution to the Rusheen Estuary section of these European Sites.

The significance of the impact of the uncontrolled release of contaminants from the project site to the Rusheen Estuary section of the Galway Bay European Sites and their relevant intertidal habitats and associated otter and harbour seal populations will depend upon the frequency of the release and the concentration of contaminating materials in surface water discharging from the site. In a worst-case scenario the ongoing discharge of waters with high concentrations of contaminating substances could over time lead to the deposition of such contaminants in wetland intertidal habitats. Revitt et al. (2014) demonstrated the potential of car parking areas to result in a build-up of diffuse pollution loads on their surfaces with subsequent mobilization and direct discharge to receiving waters. In the absence of appropriate design safeguards (such as the inclusion of hydrocarbon interceptors) the discharge of such contaminated surface water from car parking area during the operation phase could represent a source of ongoing contamination to surface drainage waters being discharged to the Rusheen Estuary section of Galway Bay. Accidental spillages of contaminating materials during the construction phase and/or operation phase could also represent sources of acute pollution to the Rusheen Estuary section of Galway Bay.

The exposure of estuarine fauna, including birds, to such contaminants can result in disturbance and stress effects. Upon detection of such contaminants wetland birds may simply move away from the affected area, with the potential to result in a decline in the distribution of bird species within the SPA. For sessile benthic fauna, upon which many of the wetland bird species of the SPA rely and which are representative of the tidal mudflats and sandflats fauna communities, there will be no potential for escape and their exposure to contaminants may result in biological changes designed to aid survival. In some cases these benthic species may acclimatise to contaminated conditions, while in others the contaminants may lead to mortality and changes in the population and community structure of intertidal wetland habitats. Such an effect would have the potential to undermine the conservation status of wetland intertidal mudflat habitat occurring downstream of the project site within the SAC and SPA.

4.2 DISTURBANCE TO OTTERS

The potential for disturbance to otters as a result of noise generated during the construction phase and as a result of a mobile species pathway with consequent disturbance to this species arising from the presence of people during both the construction phase and operation phase have been identified during the Screening Report for Appropriate Assessment.

However primary field surveys completed at the project site have not identified the presence of any breeding sites or resting sites for otters along the Tonabrocky Stream within the project site or along sections of this stream upstream or downstream of the project site. No such sites were observed along the stretch of the Bearna River to the west and downstream of the project site. It is further noted that no field signs indicating the presence of foraging otters such as spraints, prey remains, footprints etc were observed along the Tonabrocky Stream or the Bearna River during baseline surveys.

In view of the findings of these surveys it can be concluded that noise generated by the project site will not have the potential to result in adverse disturbance effects to otters. It is further noted that given the absence of any evidence of reliance by otters on these watercourses for foraging, the presence of people at the project site during the operation phase will not pose a potential for adverse disturbance effects to otters. Given this finding, no further consideration of disturbance effects to otters, in the form of noise and human presence, is required as part of this Natura Impact Statement.

4.3 IN-COMBINATION EFFECTS

A review of Galway County Council's online planning portal was completed in July 2025 to identify other granted or recently approved (i.e. within five years) planning applications within the vicinity of the project site and the hydrological pathway connecting the project site to the Galway Bay European Sites. No recent planning application, within the last five years have been identified in the area surrounding the project site or upstream or downstream along the Tonabrocky Stream.

5.0 THE IMPLICATION OF POTENTIAL IMPACTS FOR CONSERVATION OBJECTIVES

An NIS is required to assess the potential for impacts to the integrity of a European Site, with respect to the site's structure and function and its Conservation Objectives. The structural and functional elements of a European Site to maintain the favourable conservation status of qualifying features of interest are embedded into the list of detailed SSCOs for each of the site's interest features. As such a European Sites' SSCOs represent the parameters against which a project's potential to adversely affect the integrity of a European Sites should be considered.

Table 5.1 lists the Conservation Objectives attributes and targets for each of special conservation interests of the Galway Bay SPA and the qualifying features of interest of the Galway Bay SAC and assesses the potential for the project to result in adverse effects to these attributes and targets.

It is noted that the appraisal outlined in Table 5.1 has been completed without any regard to the mitigation measures that will be implemented as part of the project. These mitigation measures are considered later in Section 6 below.

Table 5.1: Consideration of Potential Impact to the Site-Specific Conservation Objectives for Features of Interest occurring within the Zone of Influence of the Project

Attribute No.	Attribute	Target	Consideration of likely significant effects
Inner Galway Bay SPA			
Special conservation interest bird species			
1	Population trend	Long term population trend stable or increasing	The discharge of inadequately treated storm water to the Tonabrocky Stream/Inner Galway Bay will have the potential to undermine water quality at these locations. Adverse effects to water quality in the estuary, will in turn have the potential to undermine the habitats and the associated prey resource upon which the wetland bird species of the SPA rely. Such adverse effects could, over time, result in a decline in the long-term population trend supported by the sections of the SPA surrounding the project site and discharge locations.
2	Distribution	No significant decrease in the range, timing and intensity of use of areas by light-bellied brent geese, Oystercatcher, Black-tailed Godwit, Dunlin and Redshank other than that occurring from natural patterns of variation	For reasons outlined for Attribute No. 1 and in Section 4.1 above the discharge of inadequately treated and contaminated storm water will have the potential to undermine the targets for this attribute.

Attribute No.	Attribute	Target	Consideration of likely significant effects
Galway Bay Complex SAC			
Tidal mudflats and sandflats			
3	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	The discharge of inadequately treated and contaminated storm water to this habitat will not have the potential to undermine its extent within the SAC.
4	Community distribution	Conserve the following community type in a natural condition: Sand to sandy mud with *Tubificoides benedii* and *Peringia ulvae* community complex.	The discharge of inadequately treated and contaminated storm water to this habitat could contribute to water quality pressures within the Tonabrocky Stream/Inner Galway Bay and result in changes to the community of infauna supported by this habitat.
Large shallow bays and inlets			
5	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes. See map 5 of the NPWS (2013a)	As the project is located outside the SAC and will not result in any changes to the natural processes that underpin the extent of this habitat it will not have the potential to result in a change to its extent within Rusheen Estuary section of the Galway Bay Complex SAC.
6	Community extent	Maintain the extent of the Zostera-dominated	The release of contaminated surface waters from the project site to the benthic communities of this habitat within the SAC at Rusheen Estuary could result in a reduction in the extent of Zootera species and associated shoot density.

Attribute No.	Attribute	Target	Consideration of likely significant effects
		community, subject to natural processes	
7	Community Structure: Zoostera density	Conserve the high quality of the Zostera-dominated community, subject to natural processes	The release of contaminated surface waters from the project site to the benthic communities of this habitat within the SAC at Rusheen Estuary could result in a reduction in the density of typical Zootera species and associated shoot density.
8	Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; Intertidal sand community complex; Fine to medium sand with bivalves community complex; Sandy mud to mixed sediment community complex; Mixed sediment dominated by Mytilidae community complex; Shingle; Fucoid-	The release of contaminated surface waters from the project site to the benthic communities of this habitat within the Rusheen Estuary section of the Galway Bay Complex SAC could combine with other existing threats and pressures, as documented by the NPWS, perturb the communities that underpin the status of this habitat.

Attribute No.	Attribute	Target	Consideration of likely significant effects
		dominated community complex; Laminaria-dominated community complex; and Shallow sponge-dominated community complex. See map 7 of NPWS (2013a)	
Reefs			
9	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes. See map 4 NPWS (2014)	As the project is located outside the SAC and will not result in any changes to the natural processes that underpin the extent of this habitat it will not have the potential to result in a change to its extent within Tragumna Bay.
10	Habitat distribution	The distribution of reefs remains stable, subject to natural processes. See map 4 for mapped distribution of NPWS (2014)	The release of contaminated surface waters from the project site to the benthic communities of this habitat within the SAC at Rusheen Estuary could combine with other existing threats and pressures, as documented by the NPWS, to perturb the communities that underpin the status of this habitat.

Attribute No.	Attribute	Target	Consideration of likely significant effects
11	Community Structure	Conserve the following community types in a natural condition: Intertidal reef community complex, Subtidal reef community complex; Laminaria-dominated community complex. See map 5 of NPWS (2104)	The release of contaminated surface waters from the project site to the benthic communities of this habitat within the SAC at Rusheen Estuary could combine with other existing threats and pressures, as documented by the NPWS, to undermine the structure of typical Laminaria-dominated communities.
Harbour Seal			
12	Access to suitable habitat	Species range within the sac should not be restricted by artificial barriers to site use	The project will not have the potential to result in any barriers to the movement of otters.
13	Breeding behaviour	Conserve the breeding sites in a natural condition	The project will not have the potential to undermine the targets of this attribute.
14	Moulting behaviour	Conserve the moult haulout sites in a natural condition	The project will not have the potential to undermine the targets of this attribute.

Attribute No.	Attribute	Target	Consideration of likely significant effects
15	Disturbance	Human activities should occur at levels that do not adversely affect the harbour seal population at the SAC	The project will not result in any changes to land use patterns at Rusheen Estuary or in the coastal fringe surrounding Rusheen Estuary
Inner Galway Bay SPA			
Special conservation interest bird species			
16	Population trend	Long term population trend stable or increasing	The discharge of contaminated surface water to the Tonabrocky Stream and downstream ot the Rusheen Estuary could water quality at this section of the SPA. Adverse effects to water quality at Rusheen Estuary, will in turn have the potential to undermine the habitats and the associated prey resource upon which the wetland bird species of the SPA rely. Such adverse effects could, over time, result in a decline in the long-term population trend supported by the sections of the SPA surrounding the project site and discharge locations.
17	Distribution	No significant decrease in the range, timing or intensity of use of areas by golden plover, other than that occurring from natural patterns of variation	For reasons outlined for Attribute No. 16 above the discharge of contaminated water from the project site will have the potential to undermine the targets for this attribute. .

6.0 A DESCRIPTION AND EVALUATION OF MITIGATION MEASURES

Targeted mitigation measures are provided to safeguard against the potential effects of the project to the water quality of the Tonabrocky Stream and Galway Bay European Sites during the construction phase and operation phase of the project. The measures to be implemented to protect the water quality downstream at the SAC are outlined in the following sub-sections. .

All operation phase mitigation measures shall be required to be implemented by site management during the operation phase of the proposed development.

6.1 MEASURES TO CONTROL POLLUTION & PROTECT SURFACE WATER QUALITY

6.1.1 Site Operations

The construction phase of the project will adhere to best practice guidance, particularly the CIRIA guidance document C532 Control of water pollution from construction sites.

During site operations key requirements for control of pollution risk will include measures that will be put in place for the safe storage of potentially polluting materials and the collection, filtration and treatment of surface water runoff prior to discharge from the site. These measures will include features outlined in the following bullet points:

- Silts & Fines – a silt fence will be installed along the Tonabrocky Stream and the realigned Tonabrocky Stream corridor, once complete, to ensure that a barrier to the loss of fines from surface water runoff to this watercourse is in place throughout the construction phase. The silt fence will be returned west along the northern boundary of the site and will be returned west along the south side of the proposed entrance route to the site. Silt fencing will also be provided on the east side of the un-named stream. The silt fence will be installed as per the silt fence specifications detailed in Section 18.6.12 of the CIRIA guidance document “Control of Water Pollution from Linear Construction Projects, Technical Guidance (C648)”. The geotextile/fabric membrane will be buried in a trench (measuring 100mm X 100mm) to ensure that water does not flow under the silt fence barrier. The purpose of this membrane will be to prevent any sediment discharge from draining north towards the drainage ditch.

- Silt & Fines: Maintenance – maintenance of the silt fence will be undertaken throughout the duration of the construction works.

- Temporary construction compound –In order to eliminate the potential for activities within the temporary construction compound to result in a pollution risk to the Tonabrocky Stream flowing through the site, the minimum distance required to be implemented between the temporary construction compound and this stream will be 75m.

- Storage – potentially polluting construction materials, such as fuels, oils, cementitous materials and chemicals will be stored on impervious bases and within a secured bund of 110% of the storage capacity, within a designated lay down in this area of the site compound. The storage of such materials on an impervious base will eliminate the potential for their discharge to ground and groundwaters during the construction phase.

- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated.

- Refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any surface drain at the southern end of the site compound as detailed under the first bullet point above.

- All fuel oil fill areas will have an appropriate spill apron and spill kits will be provided on site.

- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution.

6.1.1.1 Measures to Avoid/Minimise Accidental Spills

In order to avoid/minimise the potential for accidental spills during the construction phase the following measures will be implemented:

Potentially contaminating aqueous materials will be stored in designated bunded and impervious areas within the site compound, as set out in Section 6.1.1 above.

Spill kits and oil absorbent material will be provided on site and personnel trained in their use. Booms will be provided on site and will be installed when undertaking works near surface water drains.

In the event of a spillage the following procedures will be followed:

1. Assess the situation.
2. Check for ignition sources.
3. Use a spill kit to contain the spill
4. Once the spill is contained remove all contaminated material to an impermeable plastic membrane liner.
5. Cover the contaminated material with the plastic membrane liner.
6. Store in a designated contaminated waste material area until the material can be disposed of off-site by an appropriately licenced waste contractor.

6.2 TONABROCKY STREAM REALIGNMENT

The proposed Tonabroky Stream realignment entails diverting a short section of the stream, approximately 130 metres in length, to minimise the impact on its habitats by reducing the required length of the culvert/bridge beneath the proposed new access road at the Cappagh Road Roundabout.

The following measures will be implemented to protect habitats:

- Habitat features in the new channel will be designed and constructed to replicate the habitat conditions present along the current route of the stream through the site, which are considered to provide suitable habitat for spawning salmonids.

- Stone used for the new channel should match the local geology of the area (granite).

- Prior to excavation of the new channel, clearance of vegetation within the footprint of the works area will be undertaken. Due to the un-managed nature of the project site and the presence of suitable bird nesting habitat, wherever possible vegetation clearance will be completed outside of the bird nesting season (March 1st to August 31st. Whilst a track machine and mulcher is suitable for a significant amount of work, vegetation within 5m of the stream should be cleared sensitively by hand. Vegetation should not be allowed to enter the stream. This works should be done after consultation with Inland Fisheries Ireland (IFI).

- When excavating the new channel, the bed level and stream width of the new channel will replicate that of the original channel. Figures from site survey required. By duplicating the dimensions of the original stream, ecological function and conditions will be maintained.

- All habitat creation works should be carried out under the full-time supervision of a suitably qualified fisheries ecologist and engineer. Sourcing of stone will also be in liaison with the fisheries ecologist.

- Timing of works to excavate the new channel and temporary bypass channel will be agreed with Inland Fisheries Ireland (IFI). Ideally this will be done well in advance of stream diversion works in order to allow banks and river margins to stabilise and recolonise with vegetation.

- Prior to the original stream being diverted into the new channel and temporary bypass channel, electro fishing will be required in the original channel to remove fish species present. This can only be done by a qualified fisheries ecologist under license or IFI.

- Timing of works to divert all flows into the new channel will be during the instream works window of July 1st to September 30th, or on an alternative date agreed with IFI. It is desirable that this is done when the stream is at a moderate to high water level, especially as the Barna Stream is a small 1st order stream. Water needs to be diverted in a controlled manner and consideration needs to be given to the stretch of stream

downstream of the diversion to ensure it does not dry out prior to water reaching it from the new channel. When the new channel is being excavated, ground 2-3m in width will be left untouched at either end of the new channel to act as a plug. These will be removed in order to allow water to divert into the stream. The downstream plug will be removed first.

6.3 MEASURES TO MANAGE SUSPENDED SOLIDS GENERATED DURING THE CONSTRUCTION PHASE

In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase.

- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

- Fill material will be required to be imported to the site. All fill material transported to the site will be contained in covered plant to eliminate the potential for release of dust and particles during transportation.

- During the construction phase surface water runoff will be to ground as per the existing surface water runoff regime at the project site.

- During periods of high rainfall when precipitation exceeds infiltration surface water runoff will flow to the nearest surface waterbody following the natural fall in topography.

- Any groundwater ingress to excavations will be pumped to a construction phase treatment train and buffered outfalls will be installed to the west of the project site.

- If surface water discharge to the existing surface water network is required during construction, temporary on-site settlement ponds/tanks/silt busters will be installed to ensure adequate silt removal prior to discharge.

- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks (or equivalent and settlement tanks/ponds).

- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,

- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.

- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 15 m.

- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. Silt runoff control measures, such as the provision of an earthen berm and/or silt fence will be implemented around stockpiles to prevent the release of silt-laden surface water runoff.

- Construction materials, including aggregates etc. will be stored a minimum of 15 m buffer distance from any surface water bodies.

- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.

- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.

- Excavations will remain open for as little time as possible. This will help to minimise the potential for water ingress into excavations.

- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

In addition to the measure above, all excavated materials will be visually by suitably qualified persons assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

For the avoidance of doubt, there shall not be discharge of untreated, silty, or contaminated water from the works to any watercourse. Should any discharge of contaminated construction water be required during the construction phase, discharge will be tankered off site. The discharge of clean construction water from rainfall to ground (as currently occurs) will occur during construction.

6.4 MEASURES TO MANAGE CEMENT & CEMENT WORKS DURING THE CONSTRUCTION PHASE

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 15 meters of an existing surface waterbody. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.5 MEASURES TO MANAGE HYDROCARBONS AND OTHER CONSTRUCTION CHEMICALS DURING THE CONSTRUCTION PHASE

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;

Where mobile fuel bowsers are used, the following measures will be taken:

- Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
- The pump or valve will be fitted with a lock and will be secured when not in use;
- All bowsers to carry a spill kit and operatives must have spill response training;
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and

- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses or drains (minimum 10 m buffer zone). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6 MEASURES TO MANAGE WASTEWATER GENERATED DURING THE CONSTRUCTION PHASE

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works. Wastewater management during the construction phase will consist of a sealed facilities with all waste removed from site and disposed of at a licenced facility.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will collected and discharge off site by a licenced contractor.

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.7 SURFACE WATER MANAGEMENT DURING THE OPERATION PHASE

Surface water generated during the operation phase will be managed in accordance with the design measures described in Section 2.3.2.9 above. The implementation of this design will ensure that treated and clean surface water is discharged from the site.

6.8 EMERGENCY RESPONSE PLANNING

In the event of an environmental emergency, a procedure for Environmental Emergency Preparedness and Response will be developed prior to commencement of construction. The procedures will be implemented by the Contractor in order to minimise the potential for environmental emergency incident to occur. An environmental emergency at the site may include;

- Discovery of a fire within the site boundary
- Uncontained spillage / leakage / loss of containment action
- Discharge concentration of potential pollutants in excess of environmental trigger levels

The general required emergency response actions will be posted at strategic locations, such as the site office.

As an example of emergency response actions required, in the event of a spillage, the following procedure shall be followed:

1. **IF SAFE (USE PPE),** stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
2. **IF SAFE (USE PPE),** contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
3. Cover or bund off any vulnerable areas where appropriate.

4. If possible, clean up as much as possible using the absorbent spills materials.

5. Do not hose the spillage down or use any detergents.

6. Contain any used absorbent material so that further contamination is limited.

7. Notify the Site Manager so that used absorbent material can be disposed of using a licensed waste contractor.

An accident investigation will be performed in accordance with procedures and an incident report will be logged.

6.9 EVALUATION OF MITIGATION MEASURES

The mitigation measures and environmental safeguards outlined above for the construction phase of the project are taken from established best practice guidelines that have been successfully implemented for a wide range of sites that have operated as permitted waste facilities. 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.

The best practice guidance that has informed the mitigation measures and environmental safeguards proposed in this NIS and that will be adhered to throughout the construction and operation of the proposed development include:

- The Good Practice Guidance notes proposed by EA/SEPA/EHS:
- PPG 1: Understanding your environmental responsibilities - good environmental practices
- GPP 2: Above ground oil storage tanks
- PPG 3: Use and design of oil separators in surface water drainage systems
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer
- GPP 5: Works and maintenance in or near water
- PPG 6: Working at construction and demolition sites
- PPG 7: Safe storage - The safe operation of refuelling facilities
- GPP 8: Safe storage and disposal of used oils

- GPP 8: Safe storage and disposal of used oils
- GPP 8: Safe storage and disposal of used oils
- GPP 19: Vehicles: Service and Repair
- GPP 21: Pollution incident response planning
- GPP 22: Dealing with spills
- GPP 26 Safe storage - drums and intermediate bulk containers
- PPG 27: Installation, decommissioning and removal of underground storage tanks
- CIRIA Environmental Good Practice on Site.
- CIRIA Control of Water Pollution from Construction Sites. Technical Guidance C648.
- CIRIA SuDS Manual Technical Guidance C697.
- Development on Unstable Land. Department of Environment (DOE), UK.

7.0 CONCLUSION

This NIS presents an analysis of the potential for the project to result in adverse impacts to the Inner Galway Bay SPA and Galway Bay Complex SAC. An evaluation of the potential impact of discharges of surface drainage waters and noise generated during the construction phase has been completed.

During the evaluation of potential impacts associated with the discharge of surface drainage waters it was found that, in the absence of mitigation measures, the potential will exist for contaminants to be released from the project site to the Tonabrocky Stream and on downstream to the Bearna River and the Galway Bay European Sites. A range of mitigation measures have been prescribed in this NIS that aim to avoid the discharge of contaminated surface drainage waters from the project site during the construction and operation phase. These mitigation measures have been evaluated and reference has been made to their successful implementation for other similar development projects. It has been concluded that, provide all mitigation measures that aim to avoid the discharge of contaminated surface drainage waters are implemented, the potential for this impact to occur will be eliminated and associated adverse impacts to the Galway Bay European Sites will not arise.

Based upon the information provided in this NIS, it is the considered view of the authors of this NIS that it can be concluded by Galway City Council that the project, alone or in-combination with other plans or projects, will not result in significant adverse effects to the integrity and

conservation status of European Sites in view of their Conservation Objectives and on the basis of best scientific evidence and there is no reasonable scientific doubt as to that conclusion.

REFERENCES

Department of the Environment Heritage and Local Government (DEHLG) (2010). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Second Edition, February, 2010.

European Commission (2021). *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Luxembourg.

European Commission (2006). *Explanatory Notes and Guidelines for the Assessment, Monitoring and Reporting under Article 17 of the Habitats Directive*. Luxembourg.

Ferrando, A et al. (2015). Oil spill effects on macrofaunal communities and bioturbation of pristine marine sediments: experimental evidence of low resistance capacities of benthic systems without history of pollution. Environmental Science and Pollution Research. Vol: 22: p15294.

Fossitt J. A. (2000). *A Guide to Habitats in Ireland.* Heritage Council.

Heritage Council (2002). *Draft Habitat Survey Guidelines.* Heritage Council.

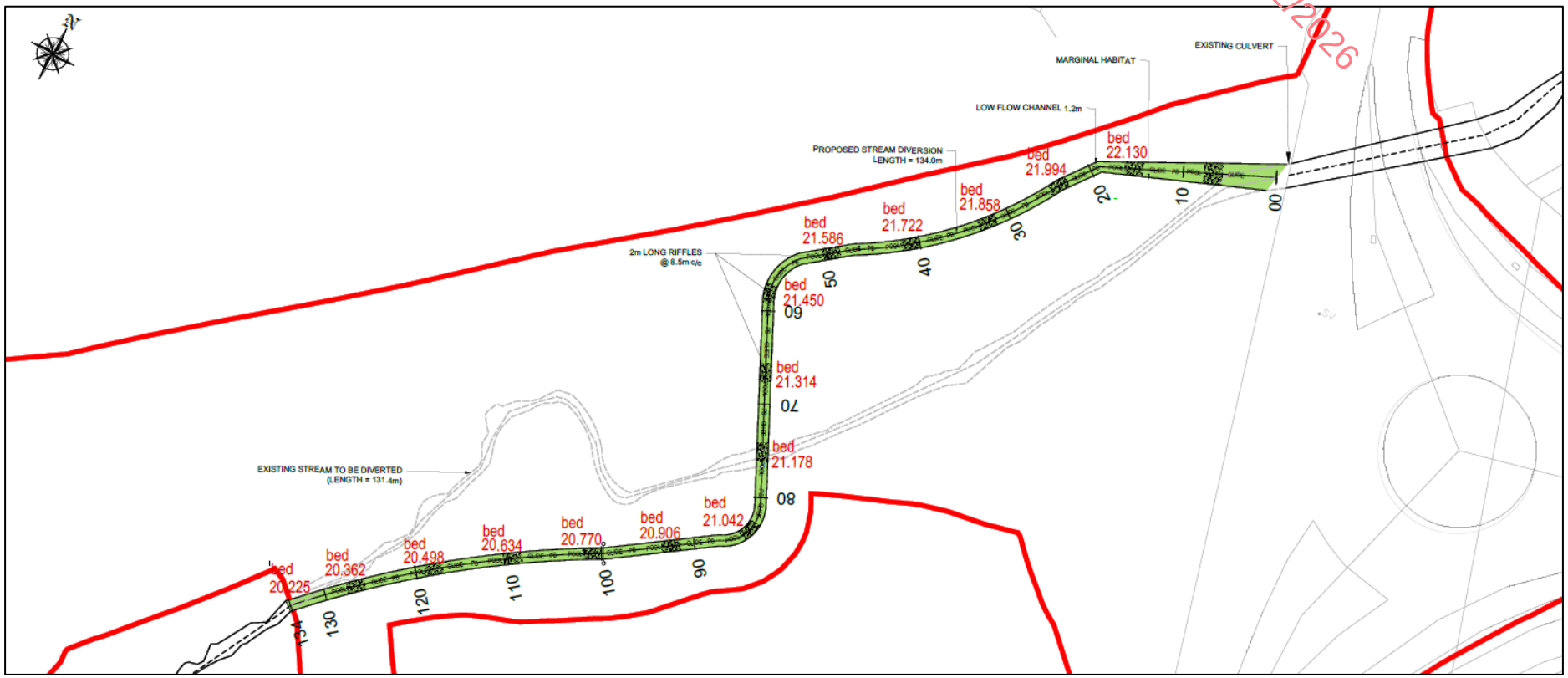
Martin, J.R., Perrin, P.M., Delaney, M., O'Neill, F.H., McNutt, K.E. (2008). Irish Semi-Natural Grassland Survey. Annual Report No. 1: Counties Cork and Waterford.

NPWS (2013a) Conservation Objectives: Galway Bay SPA 004025. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013b) Conservation Objectives: Galway Bay SAC 000205. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Revitt, D.M., Lundy, L., Coulon, F. & Fairley, M. (2014). The sources, impact and management of car park runoff pollution: A review. Journal of Environmental Management. Vol 146: p552 – 567.

APPENDIX A: WATERCOURSE REALIGNMENT PLAN



APPENDIX E. AIR QUALITY IMPACT ASSESSMENT

Trinity Consultants

awnconsulting

Air Quality Impact Assessment Report

Cappagh Park – Park and Ride Facility

PROJECT

National Transport Authority

DOCUMENT REFERENCE

257501.0190

DATE

2 September 2025

AWN Consulting Ltd, The Tecpro Building, IDA Business & Technology Park, Clonshaugh, Dublin 17, D17 XD90

DOCUMENT CONTROL SHEET

Document Control Sheet	
Our Reference	257501.0190
Original Issue Date	27 May 2025
Client:	National Transport Authority
Client Address:	Haymarket House, Smithfield, Dublin 7, D07 CF9

Revision	Revision Date	Description

Details	Written by	Approved by
Signature		
Name	Aisling Cashell	Ciara Nolan
Title	Air Quality and Climate Consultant	Principal Air Quality Consultant
Date	2 September 2025	2 September 2025

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1. INTRODUCTION

This report considers the likely significant air quality impacts associated with the proposed development, consisting of 176 no. car space Park and Ride facility, a strategic bus-based park and ride facility development located immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road, Galway, Co. Galway.

This report will provide an overview of the existing air quality conditions at the proposed development site, identify the relevant air quality standards and guidelines, describe the sources of air pollution associated and potential impacts of the proposed development, define mitigation measures that will be implemented to minimise the potential air quality impacts, and define the residual impacts of the proposed development after the implementation of mitigation measures.

2. METHODOLOGY

2.1 Criteria for Rating of Impacts

2.1.1 Relevant Legislation and Guidance

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

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

2.1.2 Ambient Air Quality Standards

To reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or 'Air Quality Standards' are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

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

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

The ambient air quality limit values for pollutants are set out in Annex I of Directive (EU) 2024/2881. Table 1 of Annex I in Directive (EU) 2024/2881 sets out the updated air quality limit values for pollutants to be achieved by 1 January 2030, these are more closely aligned with the WHO air quality guidelines. Table 2 of Annex I in Directive (EU) 2024/2881 sets out the limit values for air pollutants which are to be achieved by 11 December 2026 and are also applicable up to 2030. The limit values in Table 2 of Annex I are the same as the limits set under Directive 2008/50/EC and the Air Quality Standards Regulations 2022..

The ambient air quality standards applicable for nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$) are outlined in Table 1. These pollutants are of relevance to the proposed development. The limit values set out in Directive (EU) 2024/2881 will need to be achieved by 2030, with the limit values set out in the Air Quality Standards Regulations 2022 (and future updated regulations) applicable until 2030.

Table 1 Ambient Air Quality Limit Values

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m^3
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
Particulate Matter (as PM_{10})	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Particulate Matter (as $PM_{2.5}$)	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m^3
	Annual limit for protection of human health	25 µg/m^3	Annual limit for protection of human health	10 µg/m^3

2.1.3 WHO Air Quality Guidelines and Clean Air Strategy

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (Table 2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m^3 (WHO, 2021). The strategy also acknowledges *that "meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2".*

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

These assessment thresholds relate to monitoring of ambient air quality by Member States, where *"exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years".*

Table 2 WHO Air Quality Guidelines

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	24-hour limit for protection of human health	-	-	25 µg/m^3
	Annual limit for protection of human health	20 µg/ m^3	-	10 µg/m^3
PM (as PM_{10})	24-hour limit for protection of human health	75 µg/ m^3	50 µg/m^3	45 µg/m^3
	Annual limit for protection of human health	30 µg/m^3	20 µg/ m^3	15 µg/m^3
PM (as $PM_{2.5}$)	24-hour limit for protection of human health	37.5 µg/m^3	25 µg/m^3	15 µg/m^3
	Annual limit for protection of human health	15 µg/m^3	10 µg/m^3	5 µg/m^3

2.1.4 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 $mg/m^2/day$ averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)* (EPA, 2006). The document recommends that the TA-Luft limit of 350 $mg/m^2/day$ be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

2.2 Construction Phase

2.2.1 Construction Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

Clifton Scannell Emerson Associates Consulting Engineers have prepared a Traffic Impact Assessment for the proposed development. It has been determined by Clifton Scannell Emerson Associates Consulting Engineers that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT. The development will not result in speed changes or changes in road alignment and, therefore the traffic does not meet the above scoping criteria. As a result, a detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts on air quality.

2.2.2 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects: PE-ENV-01106* (TII, 2022).

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

- Demolition.
- Earthworks.
- Construction.
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into large, medium or small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 3 IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
► Total building volume <12,000 m^3 ► Construction material with low potential for dust release (e.g. metal cladding or timber) ► Demolition activities <6 m above ground ► Demolition during wetter months	► Total building volume 12,000 - 75,000 m^3 ► Potentially dusty construction material ► Demolition activities 6 – 12 m above ground level	► Total building volume >75,000 m^3 ► Potentially dusty construction material (e.g. concrete) ► On-site crushing and screening ► Demolition activities >12 m above ground level
Earthworks		
► Total site area <18,000 m^2 ► Soil type with large grain size (e.g. sand) ► <5 heavy earth moving vehicles active at any one time ► Formation of bunds <3 m in height ► Earthworks during wetter months	► Total site area 18,000 m^2 - 110,000 m^2 ► Moderately dusty soil type (e.g. silt) ► 5 – 10 heavy earth moving vehicles active at any one time ► Formation of bunds 3 – 6 m in height	► Total site area >110,000 m^2 ► Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) ► >10 heavy earth moving vehicles active at any one time ► Formation of bunds >6 m in height
Construction		
► Total building volume <12,000 m^3 ► Construction material with low potential for dust release (e.g. metal cladding or timber)	► Total building volume 12,000 - 75,000 m^3 ► Potentially dusty construction material (e.g. concrete) ► On-site concrete batching	► Total building volume >75,000 m^3 ► On-site concrete batching ► Sandblasting
Trackout (Truck Movements)		

Dust Emission Magnitude		
Small	**Medium**	**Large**
► <20 HDV (>3.5 t) outward movements in any one day ► Surface material with low potential for dust release ► Unpaved road length <50 m	► 20 – 50 HDV (>3.5 t) outward movements in any one day ► Moderately dusty surface material (e.g. high clay content) ► Unpaved road length 50 – 100 m	► >50 HDV (>3.5 t) outward movements in any one day ► Potentially dusty surface material (e.g. high clay content) ► Unpaved road length >100 m

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling and human health. The level of risk associated with each activity is determined using the criteria in Table 4.

Table 4 IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

2.3 Operational Phase

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 2.2.1 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will not result in the operational phase traffic increasing by more than 1,000 AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the screening criteria (Section 2.2.1). A quantitative assessment of the impact of traffic emissions on ambient air quality is not necessary as there is no potential for significant impacts to local air quality

2.4 Difficulties in Compiling the Assessment

There were no significant difficulties encountered in compiling the specified information for this assessment.

3. RECEIVING ENVIRONMENT

3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Shannon Airport meteorological station, which is located approximately 63 km south-east of the site. Shannon Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (Figure 1). For data collated during five representative years (2020 - 2024), the predominant wind direction is westerly to south-westerly; the mean wind speed over the long-term 30-year averaging period 1991 - 2020 is 4.6 m/s (Met Éireann, 2025).

Figure 1 Shannon Airport Windrose

3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2023*" (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2024).

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000 is defined as Zone D.

In terms of air monitoring, the area of the proposed development is in Zone C (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

3.2.1 NO_2

NO_2 monitoring was carried out at three suburban background Zone C locations in Dundalk, Kilkenny Seville Lodge and Portlaoise, in recent years (EPA, 2024). The NO_2 annual average over the period 2019 – 2023 ranged from 4 – 12 µg/m^3 at the suburban sites (Table 5). Hence long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 40 µg/m^3. The maximum 1-hour limit value of 200 µg/m^3 (35 exceedances are allowed per year) was exceeded once in

2020, 2022 and 2023 at Dundalk. The average results at the suburban background Zone C locations over the last five years suggests an upper average of 8 µg/m^3 as a background concentration. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the development is 8 µg/m^3.

Table 5 Background NO_2 Concentrations In Zone C Locations (µg/m^3)

Station	Averaging Period [a]	Year				
		2019	2020	2021	2022	2023
Dundalk	Annual Mean NO_2 (µg/m^3)	12	10	11	10	9
	1-hr Mean NO_2 values >200 µg/m^3	-	1	0	1	1
Kilkenny Seville Lodge	Annual Mean NO_2 (µg/m^3)	5	4	4	5	4
	1-hr Mean NO_2 values >200 µg/m^3	-	0	0	0	0
Portlaoise	Annual Mean NO_2 (µg/m^3)	11	8	8	9	8
	1-hr Mean NO_2 values >200 µg/m^3	-	0	0	0	0

a. Annual average limit value of 40 µg/m^3 and hourly limit value of 200 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

3.2.2 PM_{10}

Long-term PM_{10} measurements were carried out at the suburban background Zone C locations in Athlone, Tralee, Dundalk, Ennis, Galway Rahoon, and Kilkenny Seville Lodge over the period 2019 – 2023. Annual mean PM_{10} concentrations ranged from 11 – 28 µg/m^3 (EPA, 2024) (Table 6). The average results at the Zone C locations over the last five years suggests an upper average of 16 µg/m^3 as a background concentration. Based on the above information an estimate of the current rural background PM_{10} concentration for the region of the development is 16 µg/m^3.

Table 6 Background PM_{10} Concentrations In Zone C Locations (µg/m^3)

Station	Averaging Period [a]	Year				
		2019	2020	2021	2022	2023
Athlone	Annual Mean PM_{10} (µg/m^3)	17	16	12	12	12
	24-hr Mean > 50 µg/m^3 (days)	-	3	2	3	-
Tralee	Annual Mean PM_{10} (µg/m^3)	28	16	17	18	15
	24-hr Mean > 50 µg/m^3 (days)	2	7	11	14	-
Dundalk	Annual Mean PM_{10} (µg/m^3)	14	13	12	12	13
	24-hr Mean > 50 µg/m^3 (days)	2	2	0	2	-
Ennis	Annual Mean PM_{10} (µg/m^3)	18	20	19	20	16
	24-hr Mean > 50 µg/m^3 (days)	12	19	17	21	-
Galway Rahoon	Annual Mean PM_{10} (µg/m^3)	13	13	11	13	13
	24-hr Mean > 50 µg/m^3 (days)	0	1	1	0	-
Kilkenny Seville Lodge	Annual Mean PM_{10} (µg/m^3)	18	18	17	18	14
	24-hr Mean > 50 µg/m^3 (days)	7	1	2	2	-

a. Annual average limit value of 40 µg/m^3 and 24-hour limit value of 50 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

3.2.3 $PM_{2.5}$

Average $PM_{2.5}$ levels in the suburban Zone C locations of Athlone, Carlow Town, Ennis, Greystones, Naas, Portlaoise and Bray over the period 2019 - 2023 ranged from 5 – 23 µg/m^3 (EPA, 2024). The overall annual

average concentration for this 5-year period is 9 µg/m^3 (Table 7). Based on this information, an estimate of the background $PM_{2.5}$ concentration in the region of the proposed development is 9 µg/m^3.

Table 7 Background $PM_{2.5}$ Concentrations In Zone C Locations (µg/m^3)

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Athlone	Annual Mean $PM_{2.5}$ (µg/m^3)	14	12	9	9	8
Carlow Town	Annual Mean $PM_{2.5}$ (µg/m^3)	8	7	7	7	6
Ennis	Annual Mean $PM_{2.5}$ (µg/m^3)	14	14	15	16	12
Greystones	Annual Mean $PM_{2.5}$ (µg/m^3)	-	-	6	7	6
Naas	Annual Mean $PM_{2.5}$ (µg/m^3)	-	-	7	8	7
Portlaoise	Annual Mean $PM_{2.5}$ (µg/m^3)	-	8	8	8	7
Tralee	Annual Mean $PM_{2.5}$ (µg/m^3)	23	12	13	13	10
Bray	Annual Mean $PM_{2.5}$ (µg/m^3)	7	5	6	6	6

a. Annual average limit value of 25 µg/m^3 as Stage 1 and annual average limit value of 20 µg/m^3 as Stage 2 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

3.2.4 Summary

Based on the above information the air quality in the area is generally good, with concentrations of the key pollutants generally well below the relevant limit values set out in Directive 2008/50/EC. The current pollutant concentrations at the majority of monitoring sites are also in compliance with the 2030 limit values set out in Directive (EU) 2024/2881 and the clean air strategy, however, concentrations are exceeding or approaching the limit values at some sites. Further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

3.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Table 8 outlines the criteria for determining the sensitivity of the area to dust soiling, dust-related human health and ecological impacts as per the IAQM guidance (IAQM, 2024).

Table 8 Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Impacts on People and Property					
Receptor Sensitivity	**Number of Receptors**	**Distance from Source (m)**			
		<20	**<50**	**<100**	**<250**
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	**Medium**	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

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

Sensitivity of the Area to Dust Related Ecological Impacts		
Receptor Sensitivity	**Distance from Source (m)**	
	<20	**<50**
High	**High**	Medium
Medium	Medium	Low
Low	Low	Low

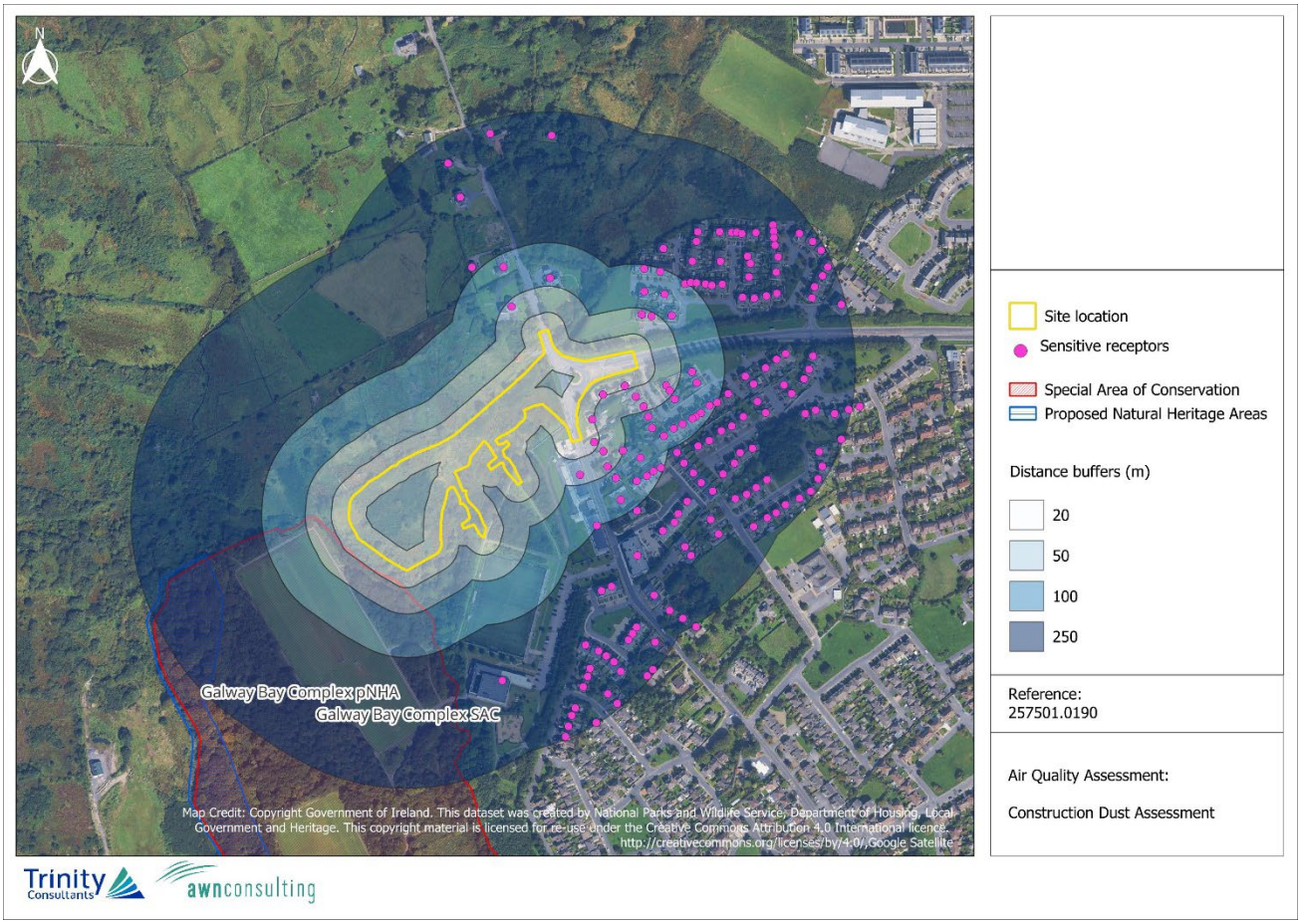
In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 100 m of the proposed development boundary (Figure 2). There are 1-10 high sensitivity residential properties within 20m of the site boundary, there are a further 10-100 within 50m and >100 properties within 100m of the site boundary. Based on these receptor numbers and using the IAQM criteria in Table 8, the sensitivity of the area to dust soiling impacts from the proposed development is medium.

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 16 µg/m^3. There are 1-10 high sensitivity receptors within 20 m of the proposed development boundary (Figure 2). Based on the IAQM criteria outlined in Table 8 the worst-case sensitivity of the area to dust-related human health impacts is low.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other impacts. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present.

Designated sites within 50m of the proposed development include the Galway Bay Complex pNHA and Galway Bay Complex SAC (Figure 2). High sensitivity ecological receptors are sites with European or National designation with particularly dust sensitive species present. The Galway Bay Complex SAC is a Natura 2000 site (European designation) and is therefore of high sensitivity. The same sensitivity has been used for the Galway Bay Complex pNHA due to their overlapping areas. Based on the IAQM criteria outlined in Table 3, the worst-case sensitivity of the area to dust-related ecological impacts is considered high.

Figure 2 Sensitive Receptors within 250m of the Site Boundary



4. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development, comprises the development of a Park and Ride Facility to include:

- A new car parking area capable of accommodating a total of 176 car parking spaces;
- Including 133 standard spaces, 9 disabled spaces, 17 no. electric vehicle charging spaces, 17 no. spaces including infrastructure for future EVs and 4 bus bays with passenger shelters;
- Construction of internal road network and circulation areas;
- 4 new bus bays and passenger shelters;
- New set-down areas;
- Hardstanding area for bike shelter and lockers (40 no. bicycle parking Sheffield stands, and 20 no. bike lockers);
- Construction of access arrangement; and
- Hard and soft landscaping, planting, lighting, boundary treatments, surface and foul water drainage, public lighting, CCTV, an ESB substation, and all other associated and ancillary works.

The following sections describe the primary sources of potential air quality impacts during the construction and operational phase.

4.1 Construction Phase

During the construction stage the main source of air quality impacts will be as a result of fugitive dust emissions from site activities. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site.

Construction stage traffic also has the potential to affect air quality through vehicle exhaust emissions.

4.2 Operational Phase

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development.

5. POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

5.1 Do Nothing Scenario

Under the 'Do Nothing' scenario the proposed development will not be constructed, no construction works associated with the proposed development will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the proposed development.

5.2 Construction Phase

5.2.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Shannon Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (Section 3.1). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30-year average data for Shannon Airport meteorological station indicates that on average 223 days per year have rainfall over 0.2 mm (Met Éireann, 2025). Therefore, it can be determined that 61% of the time dust generation will be reduced due to natural meteorological conditions.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (Section 3.3). As per Section 2.2 the major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;

- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

5.2.1.1 Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity has been determined below for the proposed development using the criteria in Table 3.

- Demolition: There is no demolition associated with the proposed development.
- Earthworks: The dust emission magnitude for the proposed earthwork activities can be classified as medium as the site area is between 18,000 m^2 and 110,000 m^2.
- Construction: The dust emission magnitude for the proposed construction activities can be classified as medium as the total building volume is between 12,000 m^3 and 75,000 m^3
- Trackout: The dust emission magnitude for the proposed trackout can be classified as medium, as at worst-case peak periods there will be between 20 and 50 outward HGV movements per day

5.2.1.2 Determining the Risk of Dust Impacts

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling and dust-related human health effects (Section 3.3). The level of risk associated with each activity is determined using the criteria in Table 4. The overall risk of dust impacts from the construction works is shown in Table 9 for each category.

- Demolition: There is no demolition associated with the proposed development.
- Earthworks: As the overall sensitivity of the area to dust soiling is medium, when combined with a medium dust emission magnitude, this produces an overall medium risk of dust soiling impacts (as per the criteria in Table 4). As the overall sensitivity of the area to dust-related human health effects is low, this results in a low risk of dust-related human health effects (as per the criteria in Table 4). As the overall sensitivity of the area to dust-related ecological effects is high, this results in a medium risk of dust-related ecological effects (as per the criteria in Table 4).
- Construction: Combining the medium dust emissions magnitude for the construction activities with the medium sensitivity to dust soiling results in a medium risk of dust soiling impacts using the criteria in Table 4. There is an overall low risk of dust-related human health impacts as a result of the proposed construction activities. There is an overall low risk of dust-related ecological impacts as a result of the proposed construction activities.
- Trackout: Combining the medium dust emission magnitude for the trackout activities with the medium sensitivity to dust soiling results in a medium risk of dust soiling impacts using the criteria in Table 4. There is an overall low risk of dust-related human health impacts as a result of the proposed trackout activities. There is an overall medium risk of dust-related ecological impacts as a result of the proposed trackout activities.

There is at most a medium risk of dust soiling impacts, a low risk of human health impacts and medium risk for ecological receptors associated with the proposed works therefore dust mitigation measures associated with medium-risk sites will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be ***short-term, direct, negative*** and ***not significant***.

Table 9 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

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

5.2.2 Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the movements of HGVs and construction workers accessing the site. The construction stage traffic was reviewed in line with the TII assessment criteria in Section 2.2.1 to determine whether a detailed air quality assessment of traffic emissions was required. As the construction stage traffic did not meet the screening criteria, a detailed air quality assessment of construction stage traffic emissions was screened out. It can be concluded that construction phase traffic emissions will have a ***short-term, direct, negative*** and ***not significant*** impact on air quality.

5.3 Operational Phase

There is the potential for vehicles accessing the site to result in emissions of NO_2, PM_{10} and $PM_{2.5}$. However, the proposed development will not increase traffic by 1,000 AADT or 200 HDV AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the screening criteria (Section 2.2.1). A detailed air quality assessment was scoped out for the operational phase of the development as per the TII screening criteria. Operational phase impacts on air quality are predicted to be ***direct, negative, long-term*** and ***not significant***.

6. MITIGATION MEASURES

6.1 Construction Phase

The proposed development has been assessed as having a medium risk of dust soiling impacts, a low risk of dust related human health impacts and a medium risk of dust related ecological impacts during the construction phase as a result of earthworks, construction and trackout activities (Section 5.2). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland, *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018), the UK, *Guidance on the Assessment of Dust from Demolition and Construction Version 2.2* (IAQM, 2024), *Controlling Particles, Vapours & Noise Pollution from Construction Sites* (BRE, 2003), *Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (The Scottish Office, 1996), *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (ODPM, 2002)) and the USA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities

6.1.1 Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

6.1.2 Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary where feasible, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

6.1.3 Preparing and Maintaining the Site

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

6.1.4 Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

6.1.5 Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

6.1.6 Waste Management

- No bonfires or burning of waste materials.

6.1.7 Measures Specific to Earthworks

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

6.1.8 Measures Specific to Construction

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

6.1.9 Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

6.1.10 Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

6.2 Operational Phase

No mitigation is proposed for the operational phase of the proposed development as impacts on air quality are predicted to be ***long-term, direct, negative*** and ***not significant.***

7. MONITORING OR REINSTATEMENT MEASURES

7.1 Construction Phase

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during ground works phase of the proposed development is required to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

Following the laboratory analysis of the monthly monitoring samples (typically 15-day turnaround), results will be reported on a monthly basis. If requested by Galway County Council this monitoring report will be made available. In the event of an exceedance the procedures, site activities and appropriate application of dust mitigation measures will be reviewed in consultation with Galway County Council and improved to achieve a level below 350 mg/m^2/day in future monitoring.

7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts on air quality is predicted to be not significant.

8. RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

8.1 Construction Phase

8.1.1 Air Quality

Once the dust minimisation measures outlined in Section 6.1 are implemented, the residual impact of the proposed development in terms of dust soiling will be ***short-term, direct, negative*** and ***not significant***.

8.1.2 Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of

emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development will be ***short-term, direct, negative*** and ***not significant.***

8.2 Operational Phase

8.2.1 Air Quality

An air dispersion modelling assessment of operational traffic emissions associated with the proposed development was scoped out. Therefore, the operational phase impact on air quality is ***long-term, direct, negative*** and ***not significant***.

8.2.2 Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health. Therefore, impacts on human health are ***long-term, direct, negative*** and ***not significant.***

9. CUMULATIVE IMPACTS OF THE PROPOSED DEVELOPMENT

A full list of developments that are currently permitted or under construction within the surrounding area are identified in Appendix 2.1.

9.1 Construction Phase

According to the IAQM guidance (IAQM, 2024) should the construction phase of the proposed development coincide with the construction phase of any other development within 500m then there is the potential for cumulative construction dust impacts on nearby sensitive receptors.

A review of the planned and permitted projects within the vicinity of the site was undertaken to identify developments with the potential for cumulative construction phase impacts. There is the potential for the construction phase of the proposed development to coincide with that of the following permitted developments: Galway County Council Planning ref. no. 18144, ref. no. 19375 and ref. no. 16161.

There is the potential for cumulative construction dust impacts should the construction phases overlap with that of the proposed development. However, the dust mitigation measures outlined in Section 6.1 will be applied throughout the construction phase of the proposed development which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development are deemed ***short-term, direct, negative*** and ***not significant*** .

9.2 Operational Phase

There is the potential for cumulative impacts on air quality during the operational phase due to traffic associated with other existing and permitted developments within the area. Specific cumulative developments were also investigated as part of the traffic assessment, but it was found that there were no specific permitted developments that would lead to cumulative traffic impacts due to their increased distance from the site (see Traffic Impact Assessment for further details). Therefore, the cumulative operational phase impact is assessed within Section 5.3. The cumulative operational stage impact is ***long-term, direct, negative*** and ***not significant.***

10. INTERACTIONS AND INTERRELATIONSHIPS

10.1 Population & Human Health

Air quality does not have a significant number of interactions with other environmental receptors. The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is ***short-term, negative*** and ***not significant*** with respect to population and human health during construction and ***long-term, negative*** and ***not significant*** during operation phase.

10.2 Land, Soils & Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials, rock breaking, etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land, soils and geology. In this assessment, the impact of the interactions between land, soils and geology and air quality are considered to be ***long-term, neutral*** and ***not significant***.

10.3 Biodiversity

Dust generation can occur during extended dry weather periods as a result of construction traffic. The site preparation works and earthworks may also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on biodiversity. Two designated ecological sites lie within 50 metres of the proposed development: the Galway Bay Complex pNHA and the Galway Bay SAC. Based on the Institute of Air Quality Management criteria outlined in Table 3, the sensitivity of the area to dust-related ecological impacts is considered to be high. While the dust emissions are expected to be temporary and controlled through the implementation of standard mitigation measures, there remains a medium risk of dust deposition affecting habitats and species within these nearby designated sites. Once mitigation measures appropriate for a medium risk site are implemented, impacts to ecology from dust emissions will not be significant. In this assessment, the impact of the interactions between biodiversity and air quality are considered to be ***long-term, negative*** and ***not significant***.

10.4 Traffic & Transportation

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be ***long-term, neutral*** and ***not significant***.

10.5 Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

11. REFERENCES

- BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites
- Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities
- Dublin City Council (DCC) (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition
- Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024) Air Quality in Ireland 2023 (& previous annual reports)
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2023) Clean Air Strategy for Ireland
- Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)
- Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)
- Met Éireann (2025) Met Éireann website: https://www.met.ie/
- The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings
- Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106
- Transport Infrastructure Ireland (2024) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- UK Office of Deputy Prime Minister (ODPM) (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance
- USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures
- World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)
- World Health Organisation (2021) Air Quality Guidelines 2021

APPENDIX F. CLIMATE ASSESSMENT

Trinity Consultants

awnconsulting

Climate Impact Assessment Report

Cappagh Park – Park and Ride Facility

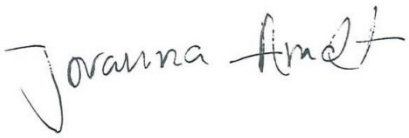
Client	DOCUMENT REFERENCE	DATE
National Transport Authority	257501.0190	30 August 2025

AWN Consulting Ltd, The Tecpro Building, IDA Business & Technology Park, Clonshaugh, Dublin 17, D17 XD90

DOCUMENT CONTROL SHEET

Document Control Sheet	
Our Reference	257501.0190
Original Issue Date	23 May 2025
Client:	National Transport Authority
Client Address:	Haymarket House, Smithfield, Dublin 7, D07 CF9

Revision	Revision Date	Description

Details	Written by	Approved by
Signature		
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1. INTRODUCTION

This report considers the likely significant climate impacts associated with the proposed development, consisting of 176 no. car space Park and Ride facility, a strategic bus-based park and ride facility development located immediately west of the existing roundabout at the junction of Cappagh Road and the Western Distributor Road, Galway, Co. Galway.

This report will provide an overview of the existing climate conditions at the proposed development site, identify the relevant climate standards and guidelines, describe the sources of climate pollution associated and potential impacts of the proposed development, define mitigation measures that will be implemented to minimise the potential climate impacts, and define the residual effects of the proposed development after the implementation of mitigation measures.

2. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development, comprises the development of a Park and Ride Facility to include:

- A new car parking area capable of accommodating a total of 176 car parking spaces;
- Including 133 standard spaces, 9 disabled spaces, 17 no. electric vehicle charging spaces, 17 no. spaces that include infrastructure for future EVs, and 4 bus bays with passenger shelters;
- Construction of internal road network and circulation areas;
- 4 new bus bays and passenger shelters;
- New set-down areas;
- Hardstanding area for bike shelter and lockers (40 no. bicycle parking Sheffield stands, and 20 no. bike lockers);
- Construction of access arrangement; and
- Hard and soft landscaping, planting, lighting, boundary treatments, surface and foul water drainage, public lighting, CCTV, an ESB substation, and all other associated and ancillary works.

The following sections describe the primary sources of potential climate impacts during the construction and operational phase.

2.1 Construction Phase

During the construction phase engine emissions from site vehicles and machinery have the potential to impact climate through the release of CO_2 and to a lesser extent, other greenhouse gases (GHGs). Embodied carbon of materials used in the construction of the development along with site activities for the proposed P&R will impact climate. Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

2.2 Operational Phase

During the operational phase vehicle emissions from traffic accessing the site has the potential to release CO_2 and other GHGs which will impact climate. In addition, the vulnerability of the proposed project in relation to future climate change must be considered during the operational phase.

3. GUIDANCE, LEGISLATION AND POLICY

3.1 Guidance

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

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

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

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2024);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- Advice Notes for Preparing Environmental Impact Statements – Draft (EPA, 2015);
- Research 339: High-Resolution Climate Projections for Ireland – A Multi-model Ensemble Approach (EPA, 2020a);
- State of the Irish Environment Report (Chapter 2: Climate Change) (EPA, 2020b);
- Publicly Available Specification (PAS) 2080:2023 on Carbon Management in Infrastructure and Built Environment (BSI, 2023); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021).

3.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland "*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*" (3. (1) of No. 46 of 2015). This is referred to in the Act as the 'National Transition Objective'. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale

measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a), a third update in December 2022 (Government of Ireland, 2022) with an Annex of Actions published in March 2023 and a fourth update in December 2023 (DECC, 2023). The current Climate Action Plan is CAP25, published in April 2025 (DECC, 2025).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021b) is to provide for the approval of plans "*for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050*". The 2021 Climate Act will also "*provide for carbon budgets and a decarbonisation target range for certain sectors of the economy*". The 2021 Climate Act defines the carbon budget as "*the total amount of greenhouse gas emissions that are permitted during the budget period*".

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states '*A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')*'. The carbon budget is to be produced for 3 sequential budget periods (Table 1). The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change.

In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) (Table 2).

Table 1 5-Year Carbon Budgets

Sector	Reduction Required	2018 Emissions ($MtCO_2e$)
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 2 Sectoral Emission Ceilings 2030

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

3.3 Policy

3.3.1 Greenhouse Gas Assessment Policy

In December 2023, CAP24 was published, establishing key actions to deliver a 51% reduction in GHG emissions by 2030 (compared to 2018 levels) and achieve climate neutrality by 2050 (DECC, 2023a). The updated and current CAP25 (DECC, 2025), published in April 2025, builds on the progress of the previous four iterations of the CAP, with CAP23 first publishing carbon budgets and sectoral emission ceilings, and reaffirms Ireland's climate ambition, with a focus on delivery, implementation and measurable outcomes, particularly ahead of the second carbon budget period (2026–2030). 2025 is the last year in the first 5-year carbon budget period. During the initial 5-year budget period the average annual reduction required was 4.8%, this increases to 8.3% in the second budget period (2026-2030). CAP25 retains the high-impact sectors where the biggest savings can be achieved, while emphasising public sector leadership and green procurement. These sectors include renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and land-use change.

CAP25 also includes targeted actions to decarbonise industrial heat and support the transition to carbon-neutral manufacturing processes (DECC, 2025). Public sector leadership is strengthened through a new *Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027)*, (DECC; OGC, 2024) the development of mandatory Climate Action Roadmaps, and enhanced emissions monitoring and reporting across government operations. he government has reinforced the public sector's responsibility to lead by example, particularly through climate-proofing operations and sustainable procurement initiatives. To support innovation and ensure future economic resilience, IDA Ireland continues to attract and support businesses investing in climate technologies and low-carbon solutions.

CAP25 highlights a significant 17% reduction in electricity emissions in early 2024, with wind power supplying nearly 40% of Ireland's total electricity demand and over 100,000 rooftop microgenerators connected to the grid. Investments are ongoing in grid reinforcement, offshore wind development, and interconnectors with France and the UK to enhance renewable generation capacity. According to legal and policy analysts, these developments place Ireland among the top countries globally in per capita wind

generation, while continuing to expand domestic and community-based renewable energy. EirGrid, Enterprise Ireland and IDA Ireland have recently signed an MoU to collectively support offshore wind development in Ireland.

CAP25 also reinforces targets first outlined in CAP24 to reduce the embodied carbon of construction materials, with a 10% reduction by 2025 and 30% reduction by 2030 for materials produced and used in Ireland. Cement and high embodied carbon construction materials can be reduced through product substitution, reduced clinker content in cement and uptake of low-carbon construction methods, including those outlined in the Construction Industry Federation 2021 report *Modern Methods of Construction* (Construction Industry Federation, 2021). There also remains scope for the construction industry to use more timber in construction. In 2022, 24% of new construction in Ireland was built using timber frames to satisfy the demand for housing. Public bodies are now required under the Public Sector Mandate to use best practice project design to reduce embodied carbon; procure concretes with clinker replacements (lower carbon); and require that large construction projects produce a whole life cycle GHG emissions assessment. Further guidance on how the built environment can contribute to a circular, low-carbon economy is detailed in the recently published *A Roadmap for a Resource Efficient Circular Built Environment.*

Furthermore, CAP25 advances sector-specific measures in green procurement, electrification of transport and heat, and just transition (with the introduction of a Just Transition Commission) to support vulnerable communities and ensure equitable decarbonisation. While transport emissions increased by 0.3%, electric vehicles and the expanded use of biofuels are highlighted as the most effective short- to medium-term strategies for emissions reductions in the sector.

CAP25 has retained the key transport actions from CAP24 and CAP23 using an 'Avoid-Shift-Improve' framework (DECC, 2025):

- Developing services, communities, and infrastructure in such a manner as to AVOID the need to travel as much as we do today;
- Improving the relative attractiveness of sustainable travel modes such as Public Transport, Cycling and Walking, to SHIFT away from car use. This will facilitate increased use of lower-carbon modes and reduce the percentage of total journeys that are made by private car (modal share) from 72% in 2018 to 53% in 2030; and
- Complement these measures by increasing the proportion of EVs in our car fleet to 30% by 2030, which will IMPROVE the efficiency of the national car fleet. Electrification of the freight and public transport sector will also be key.

As part of the AVOID and SHIFT policies, the CAP25 highlights the need for the reallocation of existing road space towards public transport and active travel.

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

The Galway County Council (GCC) Climate Action Plan 2024-2029 (GCC and Codema, 2024) outlines GCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The GCC Climate Action Plan states that GCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. GCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

3.3.2 Climate Change Vulnerability Policy

The second National Adaptation Framework (NAF) (DECC, 2024) was published in June 2024 in line with the five-year requirement of the 2015 Climate and Low Carbon Development Act (the Climate Act). The plan provides a whole of government and society approach to climate adaptation in Ireland to reduce

Irelands vulnerability to climate change risks including extreme weather events, flooding, drought, loss of biodiversity, sea level rise and increased temperatures. Similar to the *'Just Transition'* when considering carbon emissions, the NAF aims for *'Just Resilience'* stating that *"A climate resilient Ireland will have a reduced reliance on fossil fuel, it will have widely accessible electrified public transport and will have transitioned towards sustainable agricultural practices such as agroforestry and organic farming".*

With respect to the transport sector the 2nd NAF states that the potential adaptation measures for the transport sector, which is lead by the Department of Transport, are:

- Projected extreme precipitation may increase pluvial and fluvial flooding, impacting the transport sector with service disruptions, hazardous driving conditions, and bridge scour;
- Intensified windstorms may disrupt transport hubs, causing delays and cancellations, and affecting transport networks with fallen trees and debris;
- Sea level rise and intensified storms may significantly impact transport infrastructure in low-lying coastal areas, eroding coastlines, and estuaries; and
- Heatwaves and drought may degrade transport infrastructure, affecting road surfaces and rails, and require temperature control measures in hubs.

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

- **Hazard:** The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
- **Exposure:** The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
- **Vulnerability:** The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- **Risk:** The potential for adverse consequences for human or ecological systems.

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

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

The GCC Climate Action Plan highlights the risks that climate change poses to the transportation network, with risks mainly associated with extreme weather events. The GCC Climate Action Plan notes that cold spells and flooding (pluvial, fluvial coastal, etc.) and have the greatest future risk when both the likelihood and consequence are accounted for. Increases in flooding will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

4. METHODOLOGY

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

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

4.1 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (Section 5).

4.1.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool (TII, 2024). Embodied carbon refers to the sum of the carbon emitted by producing a good or providing a service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and assist in aligning the project to Irelands CAP25 goal of Net Carbon Zero for 2050.

The Carbon Assessment Tool aligns with TII's project phases as well as Section 7 of *PAS 2080 Carbon Management in Construction*, which was published by the British Standards Institution (BSI), the Construction Leadership Council and the Green Construction Board in 2023 (BSI, 2023). The tool includes an emission factors library, using factors developed by relevant industry bodies including:

- Institution of Civil Engineers (ICE, 2013), Civil Engineering Standard Method of Measurement 4 (CESMM4) Carbon & Price Book 2013;
- Sustainable Energy Authority of Ireland (SEAI, 2023), Conversion Factors;
- European Commission (2010) Guidelines for the calculation of land carbon stocks;
- Environment Agency, Carbon Calculator for Construction Activities (Version 3.6) (UKEA, 2014); and
- UK Government (2021), Greenhouse Gas Reporting Conversion Factors.

The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction/maintenance phase. The TII Carbon Assessment Tool (TII, 2024) has been commissioned by TII to assess GHG emissions associated with infrastructure projects using Ireland-specific emission factors and data. The goal of the tool is to assist project development as a decision-making tool that drives lower carbon infrastructure and to facilitate the integration of environmental issues into transport infrastructure planning, construction and operation.

Detailed information for the proposed development including volumes of materials were obtained from the design team. Construction materials and construction activities with associated embodied carbon or GHG emissions are given and discussed in Section 6.2.

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period is 120 years as it is classed as an infrastructure assets/civil engineering work (as stipulated in the Royal Institution of Chartered Surveyors (RICS) *Whole Life Carbon Assessment for the Built Environment,* published 2023). Embodied carbon emissions are attributed to four main categories, taken from BS EN 15978. The categories are:

- **Product Stages (Category A1 to A3):** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products. These stages have been included within the scope of this assessment.
- **Construction (Category A4 to A5):** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building. This has been included within the scope of the assessment.
- **In-Use Stages (Category B1 to B5):** This covers a wide range of sources from the embodied carbon emissions associated with operation, including the materials used during maintenance, replacement and refurbishment. Category B6 and B7 refer to operational emissions. In-Use Stages are not included in the assessment scope of this study. Material refurbishment and replacement throughout the lifetime of the development (Category B4 – B5) has been included within this assessment.
- **End of Life Stages (Category C1 to C4):** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products. This stage was not included within the scope of this study due to the variability and uncertainty in deconstruction methods which may be in place at the end of the development's lifespan.
- **Benefits and Loads Beyond the System Boundary Module (D):** Any potential benefit from the reuse, recovery and recycling potential of a building or a building product. This module is not included in the assessment scope of this study.

The assessment conducted included categories A1 – A5 and B4 – B5. All other categories were outside the scope of this assessment as this level of detailed information was not available at this stage or these categories are not considered relevant to this development type.

To quantify the construction phase embodied carbon, the assessment team utilised the TII Carbon Tool (TII, 2022d). Detailed information on building materials was not available at this stage in the project. Therefore, the carbon footprint of the proposed development during the construction phase is estimated, based on an assessment of worst-case carbon equivalents, outlined in Table 7, to provide an initial high-level assessment of the potential embodied carbon impact of the project. The carbon assessment assumes no improvement in the carbon intensity of the production of cement and steel is achieved over time. The assessment assumes, as a worst-case, the recycling processes for materials being reused on site will occur off-site which is reflected in the transport distances.

4.1.2 Operational Phase

4.1.2.1 Traffic Emissions

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

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022c), states that road links meeting one or more of the following criteria can be defined as being "affected" by a proposed development and should be included in the local air quality assessment, and also the climate assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic:

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

The operational phase traffic will not increase by 1,000 AADT or 200 HDV AADT and therefore, does not meet the above scoping criteria. In addition, there are no proposed changes to the traffic speeds or road alignment. As a result a detailed air assessment of construction phase traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

4.1.3 Significance Criteria for GHGA

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

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

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

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

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

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

Significance is determined using the criteria outlined in Table 3 (derived from Table 6.7 of PE-ENV-01104 (TII, 2022a)) along with consideration of the following two factors:

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

The significance of the impact of GHG emissions on climate is assessed for the total GHG emissions across all project stages.

Table 3 GHGA Significance Criteria (TII, 2022a)

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

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2025, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan.

4.2 Climate Change Risk Assessment

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

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

► Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and

- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020a).

The baseline environment information provided in Section 5, future climate change modelling and input from other experts working on the proposed development (e.g. hydrologists) should be used to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104 (TII, 2022a). This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

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

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

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

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

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

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

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability (Table 4).

4.2.1 Significance Criteria for CCRA

The CCRA of vulnerability to climate change combines the outcomes of the sensitivity and exposure analysis with the aim of identifying the key vulnerabilities and potentially significant climate hazards which could impact the proposed development. The vulnerability assessment takes any proposed mitigation into account.

Vulnerability = Sensitivity x Exposure

Table 4 details the vulnerability matrix. Vulnerabilities are scored on a high, medium and low scale. A risk that is low or medium is classed as non-significant, while a high or extreme risk is classed as a significant risk.

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

Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 4 Vulnerability Matrix

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

The screening CCRA, discussed in Section 6.2.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 7.1.

4.3 Difficulties in Compiling the Assessment

There were no significant difficulties encountered in compiling the specified information for this assessment.

5. RECEIVING ENVIRONMENT

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

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

5.1 Current GHGA Baseline

Data published in July 2025 (EPA, 2025a), indicates that Ireland exceeded, without the use of flexibilities, its 2024 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 1.03 $MtCO_2e$. However, the 2024 emissions represent the second consecutive year in which Ireland's emission were below (-4.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-7.4%) and ESR (Effort

Sharing Regulation) emissions decreased (-0.5%). Ireland's target is an emission reduction of 626 kt of CO_2e by 2030 on an average baseline of 2016 to 2018.

The EPA estimate that 2024 total national GHG emissions, excluding LULUCF, have decreased by 2.0% on 2023 levels to 53.75 Mt CO_2e, with a 0.7 Mt CO_2e (-8.9%) reduction in electricity industries alone. This was driven by a 39.6% share of energy from renewables in 2024 and the complete phase-out of peat for electricity generation. Manufacturing combustion and industrial processes decreased by 4.6% to 6.0 Mt CO_2e in 2024 due to declines in fossil fuel usage. The sector with the highest emissions in 2024 was agriculture at 38% of the total, followed by transport at 21.7%. For 2024, total national emissions (including LULUCF) were 57.65 Mt CO_2e (EPA, 2025a) (Table 5).

The current estimates of National greenhouse gas emissions (including LULUCF) in 2024 are 12.0% below 2018, well off the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021- 2024 Ireland has used 82.5% of the 295 Mt CO_2e Carbon Budget for the five-year period 2021-2025. This leaves 17.5% of the budget available for 2025, requiring a substantial 10.3% annual emissions reduction for 2025 to stay within budget.

Table 5 Trends in Total National GHG Emissions 2021 - 2024

Sector [Note 1]	2021 Emissions (Mt CO_2e)	2022 Emissions (Mt CO_2e)	2023 Emissions (Mt CO_2e)	2024 Emissions (Mt CO_2e)	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	% Annual Change from 2023 to 2024
Electricity	9.893	9.694	7.57	6.95	40.0	85.25%	-8.19%
Transport	11.089	11.760	11.80	11.65	54.0	85.74%	-1.27%
Buildings (Residential)	6.868	5.753	5.35	5.61	29.0	81.31%	4.86%
Buildings (Commercial and Public)	1.444	1.447	1.39	1.49	7.0	82.43%	7.19%
Industry	7.093	6.622	6.31	6.01	30.0	86.77%	-4.75%
Agriculture	21.940	21.795	20.72	20.41	106.0	80.05%	-1.50%
Other [Note 2]	1.864	1.931	1.81	1.63	9.0	80.33%	-9.94%
LULUCF	4.628	3.983	3.89	3.89	–	–	0
Total including LULUCF	**64.819**	**62.986**	**58.83**	**57.64**	**295.0**	**82.81%**	**-2.04%**

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024a).

Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste.

5.2 Future GHGA Baseline

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

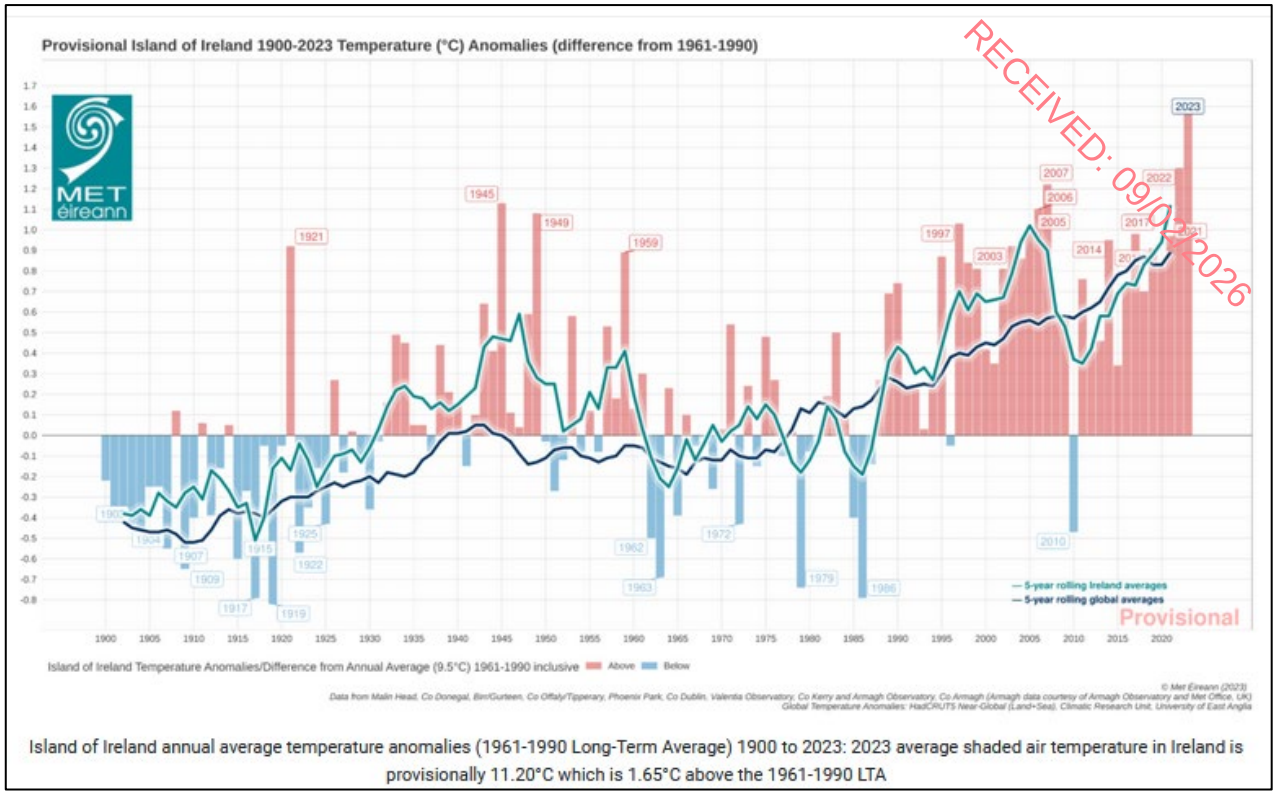
The future baseline will be determined by Ireland meeting its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets. To meet the commitments under the Paris Agreement, the European Union (EU) enacted 'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013' (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its ETS and non-ETS greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

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

5.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Shannon is the nearest weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Shannon Airport meteorological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 (Met Éireann, 2025a) indicates that the wettest months at Shannon Airport metrological station were November, and the driest month on average was March. July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2023) states 2023's average shaded air temperature in Ireland is provisionally 11.20 °C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record; however, 2023 was 0.38 °C warmer (Figure 1).



Island of Ireland annual average temperature anomalies (1961-1990 Long-Term Average) 1900 to 2023: 2023 average shaded air temperature in Ireland is provisionally 11.20°C which is 1.65°C above the 1961-1990 LTA

Figure 1 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

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

Met Éireann's 2024 Climate Statement (Met Éireann, 2025b) states 2024's average shaded air temperature in Ireland is provisionally 10.72°C, which is 1.17°C above the 1961-1990 long-term average or 0.55°C above the most recent 1991-2020 long-term average. This is the 4th warmest year on record with 2023 breaking previous records. Seven of the top ten warmest years have occurred since 2005. Record high sea surface temperatures (SST) were recorded in 2022, and in 2024 continued at or near record high levels. 2024 was overall drier than average, however there were many instances of heavy or intense rainfall which led to flooding events. This trend is predicted to continue with climate change with an increase in both dry periods and heavy rainfall events. Considering the extraordinary data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

5.4 Future CCRA Baseline

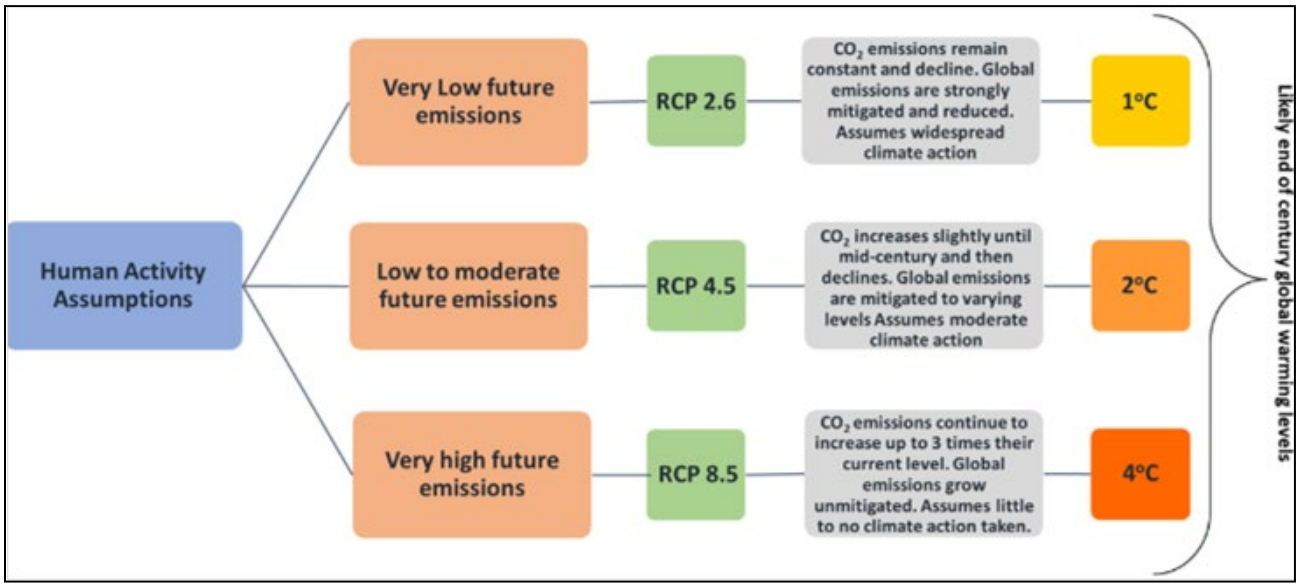
Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration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

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

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

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

National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for *"least"* (RCP2.6), *"more"* (RCP4.5) or *"most"* (RCP8.5) climate change (Figure 2).

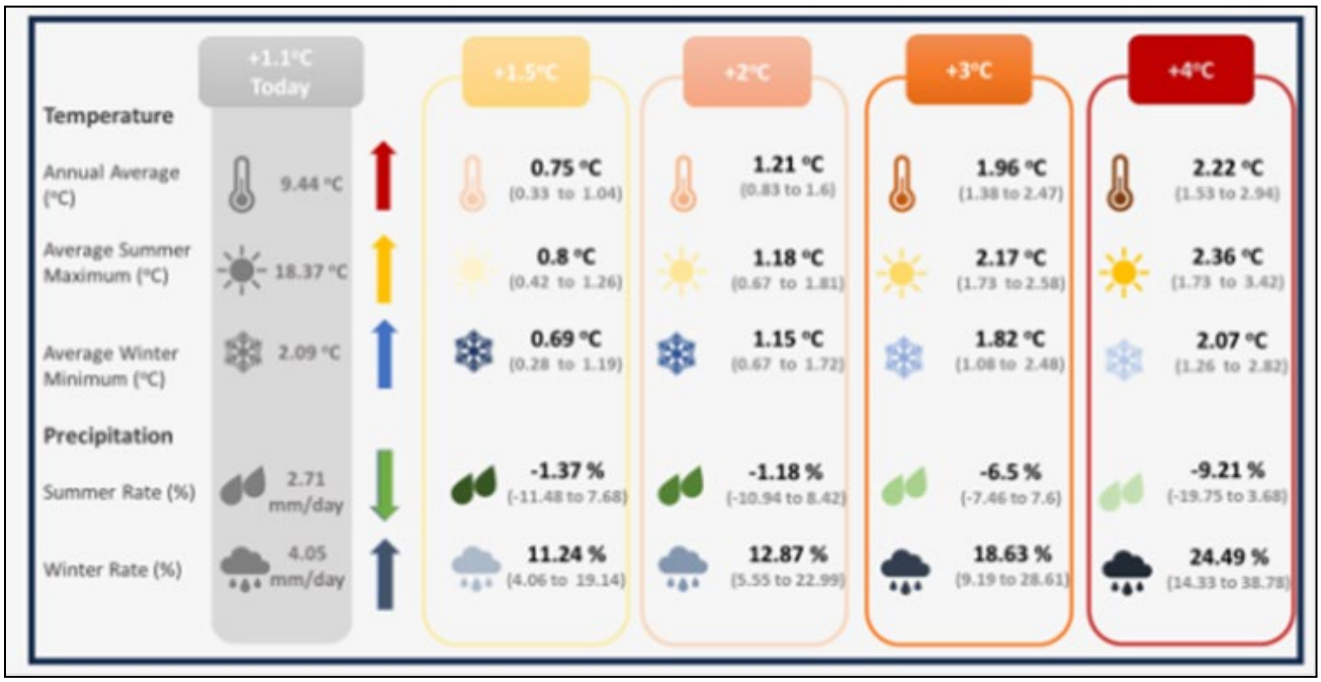


Source *TRANSLATE Project Storymap (Met Éireann, 2023)*

Figure 2 Representative Concentration Pathways associated emission levels

TRANSLATE (Met Éireann, 2023) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5°C, 2°C, 2.5°C, 3°C or 4°C (Figure 3). Projections broadly agree with previous projections

for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SST)s (Met Éireann, 2023). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24%. Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



Source *TRANSLATE Project Storymap (*Met Éireann, *2023)*

Figure 3 Change of Climate Variables for Ireland for Different Global Warming Thresholds

The TRANSLATE research report (Met Éireann, 2023) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer (with an increase of 0.5°C to 3.5°C). Autumn is projected to have the highest increase in average minimum temperatures (with an increase of 1.1°C to 4.4°C). The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected, however this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

Climate Ireland data in partnership with the TRANSLATE project (Met Éireann, 2023) have a future projections tool which facilities the viewing of observation data and future predicted modelling scenarios RCP4.5 and RCP8.5 in a web-based GIS format (Climate Ireland 2024). Future projections using the tool for the area of Shannon Airport Metrological Station are shown in Table 6.

Table 6 Future Projections (All Seasons - Annual) for Shannon Airport for 2041 – 2060 (change relative to 1981-2000)

Variable	Projection	
	RCP4.5	RCP8.5
Projected change in average temperature at 2 m	1.1°C	1.5°C
Heatwaves - Projected change in the number of heatwave events (periods of at least three consecutive days where maximum temperatures exceed >95% of the normal monthly distribution)	4.5 #	6.6 #
Dry Periods - Projected change number of dry periods (%) defined as at least 5 consecutive days on which daily precipitation is less than 1 mm	10.90%	10.30%
Precipitation - Projected percentage (%) change in average levels of precipitation	-1.40%	-0.20%
Wet Days - Projected change (%) in number of days with rainfall >20 mm	15.70%	22.00%
Frost days. Projected change (%) in the number of days when minimum temperatures are <0°C	-45.90%	-57.30%
Ice Days - Projected change (%) in the number of days when maximum temperatures are <0°C	-72.70%	-74.40%
Snowfall - Projected change (%) snowfall	-55.90%	-68.60%
Wind Speed - Projected change (%) in wind speed at 10 m	-2.20%	-2.90%
Wind Energy - Projected change (%) in wind energy resource at 120m elevation (onshore)	-5.10%	-6.90%

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

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

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

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

Volume 3 (EPA, 2024a) discusses how water supplies will face growing pressures resulting in increased water demand and how options need to be developed, including potential new sources. The report states

the key role of critical infrastructure for delivering public services, economic development and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk due to climate change.

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

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

The projections were echoed by the *Updated High-resolution Climate Projections for Ireland Research Report: 471* (EPA, 2024d) which was in broad agreement with previous research. The future autumn and winter months are projected to be up to 10% wetter, while summer is projected to be up to 8% drier.

6. POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.1 Do Nothing Scenario

Under the Do-Nothing Scenario no construction works will take place and the site will remain as it currently is. The climate baseline will continue to develop in line with the identified trends (Section 5). This scenario is considered neutral in relation to climate.

6.2 Greenhouse Gas Assessment

6.2.1 Construction Phase

The embodied carbon within the construction materials has been calculated. This calculation was based on the online TII Carbon tool (TII, 2024) and the breakdown of the activities between the different phases of the proposed development has been assessed. The assessment indicates that the key sources of GHG emissions are associated with the embodied carbon of the construction materials and construction waste (Table 7).

The proposed development is estimated to result in total construction phase GHG emissions of 1,737 tonnes embodied CO_2e for the product and construction processes and maintenance over a 120-year lifecycle. The majority of the embodied carbon relates to road surfacing materials and its ongoing maintenance. This is equivalent to an annualised total of 0.03% of the 2030 industrial sector budget or 0.0003% when annualised over the lifespan of the proposed development.

In line with TII (TII, 2022a) and IEMA guidance (IEMA, 2022), the impact of GHG emissions associated with a proposed development on climate should be assessed over its lifetime, rather than for individual phases. The overall impact of the Proposed development on climate due to GHG emissions is therefore discussed in Section 6, where the operational phase and mitigation is also taken into account

Table 7 GHG Assessment Results

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Predicted GHG Emissions as % of Project Total	Relevant Sector for Carbon Budget Comparison
A1-A3	Materials	1,378	79.30%	Industry
A4	Material Transport	129	7.41%	Transport
A5	Clearance and Demolition	0.9	0.05%	Waste
	Land Use Change and Vegetation Loss	52	2.97%	LULUCF
	Excavation	8	0.49%	Waste
B4 - B5	Construction Water Use	123	7.11%	Industry
	Construction Fuel/Energy Use	25	1.41%	Electricity
	Construction Worker Travel to Site	10	0.60%	Transport
	Construction Waste Disposal	6	0.35%	Waste
	Construction Waste Transport	5	0.31%	Transport
Project Total		**1,737 tCO_2e**		

The predicted GHG emissions can be averaged over the full lifespan of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets (Table 2).

In Table 8, GHG emissions have been compared against the carbon budget for the industry, transport and waste sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2023 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 120 year proposed development lifespan, are equivalent to 0.00002% of Ireland's total GHG emissions in 2023 and 0.00004% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with industry-related activities are 0.0003% of the 2030 industry budget, transport-related activities are 0.00002% of the 2030 transport budget, electricity-related activities are 0.000007% of the 2030 electricity budgets and construction waste GHG emissions are 0.00001% of the 2030 waste budget.

Table 8 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Annualised Development GHG Emissions (tCO_2e)		% of Relevant Target/Budget
Ireland's 2023 Total GHG Emissions (existing baseline)	60,764,000	14.5	Total GHG Emissions	0.00002%
Non-ETS 2030 Target	27,722,000	14.5	Total GHG Emissions	0.00005%
2030 Sectoral Budget (Industry Sector)	4,000,000	1,501	Total Industry Emissions	0.0003%
2030 Sectoral Budget (Transport Sector)	6,000,000	144	Total Transport Emissions	0.00002%
2030 Sectoral Budget (Electricity Sector)	3,000,000	25	Total Electricity Emissions	0.000007%
2030 Sectoral Budget (Waste Sector)	1,000,000	16	Total Waste Emissions	0.00001%

6.2.2 Operational Phase

The proposed development includes the construction of a new car parking area, along with the development of an internal road network and circulation areas. The project also features the construction of new bus bays and passenger shelters and a hardstanding area for a bike shelter and lockers. These measures will facilitate improved pedestrian, cyclist, private/commercial vehicles and public bus accessibility and movement, infrastructural works and improvements to the public realm.

The infrastructural works proposed as part of the proposed development will provide an attractive alternative to private car travel, encouraging more passenger travel by more sustainable modes. A greater share of the demand will be by sustainable modes (public transport, walking and cycling).

There is the potential for vehicles accessing the site to result in GHG emissions. However, the Proposed Development will not increase traffic by 1,000 AADT or 200 HDV AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the Proposed Development meet the screening criteria (Section 4.1.2.1). A detailed climate assessment was scoped out for the operational stage of the development as per the TII screening criteria.

6.2.3 GHGA Significance of Impacts

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

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

The level of mitigation described in Section 1.7 has been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 4.1.3 and Table 2, the significance of the GHG emissions during the construction and operational phase is minor adverse. The proposed development has mitigated GHG impacts and is in line with Ireland's trajectory towards net zero.

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

6.3 Climate Change Risk Assessment

6.3.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 4.2 and Section 6.3, which state that there are no residual medium or high risk vulnerabilities to climate change hazards. Therefore, a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 7.1:

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

6.3.2 Operational Phase

The sensitivity and exposure of the development to various climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog have been considered as climate hazards in the context of the proposed development.

The sensitivity of the proposed development to the climate hazards is assessed irrespective of the project location. Table 9 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 4. The results of the vulnerability assessment are detailed in Table 5.

Table 9 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low Risk)
Wildfire	1 (Low)	1 (Low)	1 (Low Risk)
Drought	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low Risk)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low Risk)
Landslides	1 (Low)	1 (Low)	1 (Low Risk)
Fog	1 (Low)	1 (Low)	1 (Low Risk)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

6.3.2.1 Flooding

A Flood Risk Assessment (FRA) conducted for the proposed location by the National Transport Authority (NTA) notes that the probability of flooding from rivers and the sea is low (less than 1:1000) for both river and coastal flooding which would be equivalent to Flood Zone C. The FRA concludes that the proposed development site is not at risk of flooding.

Additional information in relation to flood risk for the site indicates that, pockets of Flood Zone B were identified along the western boundary of the site, corresponding with the Barna Stream and Tonabrocky Stream. The existing topography of the site slopes from north (approx. 28.5m AOD) to south (approx. 15.0m AOD). A tributary of the Barna Stream, known locally as the Tonabrocky Stream, traverses the site from northeast to southwest and merges with the Barna Stream near the southern boundary. A portion of this stream is to be diverted (approx. 130m in length) to facilitate construction.

Based on available data, site inspection, and the local topography, the proposed development is not considered to be at significant risk of flooding. Examination of the OPW's flood hazard database (floodmaps.ie) shows two recorded flood events within 2.5 km of the site, as detailed in the Past Flood Event Local Area Summary Report. One event, to the north of the site, is a recurring issue noted in 1995

involving a tributary of the Kernaun River. The second event, to the southwest, was a single incident recorded in 2014.

The proposed development does not obstruct any existing flow paths. Furthermore, surface water discharge from the site is restricted to greenfield runoff rates, thereby not increasing flood risk within the existing catchment or for adjacent and downstream areas. The proposed development has been classified as a 'Less Vulnerable Development'; however, best practice mitigation measures will be implemented as outlined in Section 7.2.

6.3.2.2 Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the appropriate wind loadings are to be calculated in line with the relevant structure requirements (e.g. signage and lamp poles). The EPA published *Ireland's Climate Change Assessment Synthesis Report Volume 1* (EPA, 2024a) in early 2024 which states that there is a likely reduction in mean average wind speeds and an increase in wind variability. However, any increase in variability or storminess have not been able to be comprehensively assessed to date and projections require further assessment by the EPA or other agencies.

Lightning and hail are not deemed to pose an unusual risk to the development.

Fog can obscure visibility of signs, light posts, and fences, reducing their effectiveness and potentially causing hazards for motorists and pedestrians. However, reflective designs and actions taken by drivers to reduce speeds in such scenarios are put in place to ensure risks are low as it is an adverse event that can be absorbed by taking business continuity actions.

6.3.2.3 Wildfires

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2025), indicates that the wildfire hazard is classified as medium for the Galway County area. This means that there is between a 10% to 50% chance of experiencing weather that could support a hazardous wildfire that may pose some risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, as the project is located in a built-up, suburban area, the risk of wildfire is significantly lessened. It can be concluded that the proposed development is of low vulnerability to wildfires.

Wildfire may cause issues with pavement softening due to extreme heat conditions. This would be classed as an adverse event that may require repair work; however, it is unlikely to require emergency repair works and the risk remains low.

6.3.2.4 Landslides

The GSI landslide susceptibility mapping database (GSI, 2025) was reviewed to determine the risk from landslides at the proposed development. There have not been any historical landslide events in the vicinity of the proposed development and the area has a low susceptibility to future landslides. Therefore, landslides are not a risk for the proposed development site.

6.3.2.5 Extreme Temperatures (Heat & Cold) & Drought

Increased temperatures have the potential to cause the temperature of construction materials, such as asphalt/bitumen, to increase. However, based on an increase in average temperature of up to 2°C under RCP8.5, it is considered that the impact of increased temperatures on construction materials will be not significant once correctly designed. Extreme cold may lead to freezing of drainage systems which may cause a cracking or damage to pipe networks, this has been given a medium risk as it would require emergency actions to repair it. At the detailed design stage the building materials chosen will be high

quality, durable and hard-wearing and chosen to withstand increased variations in temperature in the future as a result of climate change. Extreme heat may result in the loss of plant life, as this may lead to prolonged dry spells which may result in vegetation loss. The CIViC report (EPA, 2021) states that roads are low risk to extreme heat and medium risk to snowstorms.

In relation to drought, planting material for the proposed development landscaping is typical of the locality and is generally tolerant of climatic zones which experience variable warmer and cooler conditions. Therefore the sensitivity to drought is considered low and the vulnerability is also low.

6.3.2.6 Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

6.3.3 CCRA Significance of Impacts

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

7. MITIGATION MEASURES

7.1 Construction Phase

The construction traffic and the embodied energy of construction materials will be the dominant source of GHG emissions as a result of the Construction Phase of the proposed development. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Alignment with requirements under the Local and National Climate Action Plan;
- Where possible, adoption of the methods set out in the Construction Industry Federation 2021 report *Modern Methods of Construction*.
- Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for construction wastes;
- Materials will be reused on site where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;
- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site;
- Material choices and quantities will be reviewed during detailed design, to identify and implement lower embodied carbon options where feasible;
- Sourcing materials locally where possible to reduce transport related CO_2 emissions; and
- The project shall review and determine compliance with the requirements set out in the EU Taxonomy Regulation *(Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 in relation to circular economy)*. This is specific to reuse, recycling and material recovery of demolition and construction wastes.

The construction traffic GHG emissions associated with the construction phase of the proposed development will be short-term and temporary in nature. The appointed contractor will develop a Construction Traffic Management Plan (CTMP) to manage traffic during the Construction Phase.

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

7.2 Operational Phase

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 6.3.2).

All lighting uses energy-efficient light-emitting diode (LED) technology. Further mitigation measures will be put in place during detailed design in line with the TII Sustainability Implementation Plan (TII, 2021).

The proposed development has been designed to reduce the impact on climate as a result of modal shift from private vehicles to public transport. The transfer of a proportion of these single occupancy car trips onto public transport would not only reduce carbon emissions but also reduce congestion along this corridor. The Park and Ride facility will also provide secure bike parking to facilitate use of active transport options for the initial stage of the journey.

By creating a more accessible public and active transport network, the proposed infrastructural works will provide an attractive alternative to private car travel, encouraging more passenger travel by more sustainable modes while providing a better quality of life for citizens. Total trip demand is increasing into the future in line with population, employment and growth of jobs.

8. RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts including alignment with CAP25, where feasible.

It should be noted that operational phase emission changes are only associated with the roads in close proximity to the Park and Ride facility and therefore do not indicate the full extent of the potential benefits of the proposed Park and Ride facility. The modal shift to from private vehicles to public transport at the P&R is likely to have a beneficial impact if emissions across a wider area are considered and therefore the likely operational impact is beneficial. The promotion of Park and Ride facilities aligns with CAP25 which aligns with the SHIFT element of the 'Avoid-Shift-Improve' transport framework. The Park and Ride facility aims to shift people from completing full journey in private vehicles to only using their private vehicles for part journeys or facilitating use of active travel due to bike storage.

As per the assessment criteria in Table 3 the impact of the proposed development in relation to GHG emissions is considered direct, ***long-term, negative*** and ***not significant***.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual impact of climate change on the proposed development is considered ***direct, long-term, negative*** and ***not significant***.

9. CUMULATIVE IMPACTS OF THE PROPOSED DEVELOPMENT

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that *"the identified receptor for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative"*.

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

10. REFERENCES

- BSI (2023) Publicly Available Specification (PAS) 2080:2023 on Carbon Management in Infrastructure and Built Environment
- Civil Engineering Standard Method of Measurement (CESMM) (2013) Carbon and Price Book database
- Department of Environment, Climate and Communications (DECC) (2023a) Climate Action Plan (CAP) 2024
- Department of Environment, Climate and Communications (DECC) (2023b) Long-term Strategy on Greenhouse Gas Emissions Reductions
- Department of Environment, Climate and Communications (DECC) (2024) Climate Action Plan (CAP) 2025
- Department of Environment, Climate and Communications (DECC) (2024) National Adaptation Framework (NAF)
- Department of Environment, Climate and Communications (DECC) (2025) Climate Action Plan (CAP) 2025
- Department of the Environment, Climate and Communications; Office of Government Procurement (2024) Buying Greener: Green Public Procurement Strategy and Action Plan 2024-2027
- Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft
- Environmental Protection Agency (2020a) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach.
- Environmental Protection Agency (2020b) State of the Irish Environment Report (Chapter 2: Climate Change)
- Environmental Protection Agency (2021a) What impact will climate change have for Ireland? [Online] Available at https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/
- Environmental Protection Agency (2021b) Critical Infrastructure Vulnerability to Climate Change Report no. 369
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024a) Ireland's Climate Change Assessment Synthesis Report
- Environmental Protection Agency (2024b) National Climate Change Risk Assessment (NCCRA)
- Environmental Protection Agency (2024c) Ireland's Greenhouse Gas Emissions Projections 2023-2050
- Environmental Protection Agency (2024d) Updated High-resolution Climate Projections for Ireland Research Report: 471
- European Commission (2010) Guidelines for the calculation of land carbon stocks
- European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- European Commission (2021) Technical guidance on the climate proofing of infrastructure in the period 2021-2027
- European Union (2018) Regulation 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013
- Galway County Council & Codema (2024) Fingal County Council Climate Change Action Plan 2024 - 2029
- Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) Think Hazard!
- Government of Ireland (2015) Climate Action and Low Carbon Development Act
- Government of Ireland (2019) Climate Action Plan 2019
- Government of Ireland (2021a) Climate Action Plan 2021

- Government of Ireland (2021b) Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)
- Government of Ireland (2022) Climate Action Plan 2023
- Institute of Environmental Management & Assessment (IEMA) (2020a) EIA Guide to: Climate Change Resilience and Adaptation.
- Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy. Assessing Greenhouse Gas Emissions and Evaluating their Significance
- Institute of Environmental Management & Assessment (IEMA) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance
- Met Éireann (2023) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate
- Met Éireann (2025a). Ireland's 30-year Climate Averages. Available from: https://www.met.ie/climate/30-year-averages
- Met Éireann (2025b) Met Éireann's 2024 Climate Statement Available at: https://www.met.ie/annual-climate-statement-for-2024
- Sustainable Energy Authority of Ireland (SEAI) (2023) Conversion Factors
- The Geological Society of Ireland (GSI) (2025) Landslide Susceptibility Mapping Database
- Transport Infrastructure Ireland (TII) (2021) Sustainability Implementation Plan – Our Future
- Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01104: Climate Guidance for National Rods, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads
- Transport Infrastructure Ireland (TII) (2022c) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects
- Transport Infrastructure Ireland (TII) (2024) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document
- UK Environment Agency (UKEA) (2014) Carbon Calculator for Construction Activities (Version 3.6)
- UK Government (2021) Greenhouse Gas Reporting Conversion Factors