DART+ Coastal North

# APPROPRIATE ASSESSMENT (AA) SCREENING REPORT

JULY 2024


NTA Údarás Náisiúnta Iompair National Transport Authority

Rialtas na hÉireann Government of Ireland | Tionscadal Éireann Project Ireland 2040

Iarnród Éireann Irish Rail

ARUP

# CONTENTS

# 1. INTRODUCTION

This report, which contains information required to assist the competent authority to undertake a screening for Appropriate Assessment (AA) in respect of the DART+ Coastal North Scheme (hereinafter referred to as the Proposed Development), and has been prepared by Scott Cawley Ltd., on behalf of the applicant Córas Iompair Éireann (CIÉ). It provides information on and assesses in view of best scientific knowledge the potential for the Proposed Development to have significant effects either individually or in combination with other plans or projects on the Natura 2000 network (hereafter referred to as European sites)[1].

The DART+ Coastal North project, as part of the DART+ Programme, will deliver an improved and extended electrified rail network and will enable increased passenger capacity and an enhanced train service between Dublin City Centre and Drogheda, including the Howth Branch. This increased rail capacity will be achieved by implementing an extended electrified railway network with high-capacity DART trains and an increased frequency of rail services. In addition, the DART+ Coastal North project requires that some track modifications are implemented, including the provision of turnback facilities at Malahide, Clongriffin and Howth Junction & Donaghmede Stations. These modifications are essential to facilitate the increase in train services by improving operational flexibility, allowing trains to be turned back clear of continuing services and enabling a higher frequency and a more reliable service. The objectives of the Proposed Development are described in Chapter 1 (Introduction) of the Environmental Impact Assessment Report (EIAR). The Proposed Development, which is described in Chapter 4 (Description of Proposed Development) of the EIAR and is replicated in Section 2 of this AA Screening report, has been designed to meet these objectives.

The design of the Proposed Development has evolved through comprehensive design iteration, with particular emphasis on minimising the potential for environmental impacts, where practicable, whilst ensuring the objectives of the Proposed Development are attained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development process have been incorporated, where appropriate.

An AA is required if significant effects on European sites arising from a Proposed Development cannot be ruled out at the screening stage, either alone or in combination with other plans or projects. It is the responsibility of the competent authority to make a decision as to whether or not the Proposed Development is likely to have significant effects on European sites, either individually or in combination with other plans or projects.

[1]The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special Conservation Areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special Protection Areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

For the reasons set out in detail in this AA Screening Report, a Stage Two **Appropriate Assessment of the Proposed Development is required in this instance** as it cannot be concluded, on the basis of objective information, that the Proposed Development, either individually or in combination with other plans or projects, will not have a significant effect on the following European site(s):

**Malahide Estuary SAC [000205], Rogerstown Estuary SAC [000208], River Boyne and River Blackwater SAC [002299], Baldoyle Bay SAC [000199], Boyne Coast and Estuary SAC [001957], Rockabill to Dalkey Island SAC [003000], Lambay Island SAC [000204], North Dublin Bay SAC [000206], South Dublin Bay SAC [000210], Codling Fault Zone SAC [003015], River Nanny Estuary and Shore SPA [004158], Boyne Estuary SPA [004080], River Boyne and River Blackwater SPA [004232], South Dublin Bay and River Tolka Estuary SPA [004024], Howth Head Coast SPA [004113], North Bull Island SPA [004006], Baldoyle Bay SPA [004016], Dalkey Island SPA [004172], Malahide Estuary SPA [004025], Rogerstown Estuary SPA [004015], Dundalk Bay SPA [004026], Skerries Islands SPA [004122], Ireland's Eye SPA [004117], Lambay Island SPA [004069], Rockabill SPA [004014], The Murrough SPA [004186], Stabannan-Braganstown SPA [004091], North-West Irish Sea SPA [004236], Wicklow Head SPA [004127], the Seas Off Wexford cSPA [004237], and the Saltee Islands SPA [004002].**

# 2. DESCRIPTION OF THE PROJECT

The DART+ Coastal North project is the third infrastructure project to launch as part of the DART+ Programme, the subject of this report. The DART+ Coastal North Project will require modernisation and modifications to the existing railway line. There is a range of general linear works required along the full length of the Proposed Development to enable the electrification of the line and the upgrade of the existing network. This Project Description sets out the main elements of the Proposed Development and has been used for the purposes of the Stage 1 – Screening.

## 2.1 DART+ Coastal North Overview

The DART+ Programme is a key transportation improvement to form a high-quality and integrated public transport system. It will have benefits for the residents of the Greater Dublin Area (GDA) and also those living in the other regions. It will assist in providing a sustainable transport system and a societal benefit for current and future generations.

The current electrified DART network is circa 50km long, extending from Malahide / Howth to Bray / Greystones and the DART+ Programme seeks to increase the high capacity and electrified network to 150km. The DART+ Programme is required to facilitate increased train capacity to meet current and future demands which will be achieved through a modernisation of the existing railway corridors. This modernisation includes the electrification, re-signalling, and certain interventions to remove constraints across the four main rail corridors within the Greater Dublin Area, as per below:

- DART+ Coastal North (Proposed Development) – circa 50km from Drogheda to the City Centre, with the main extent of the works between Malahide and Drogheda for the Overhead Line Equipment (OHLE) and electrification of the line;
- DART+ South West – circa 16km between Hazelhatch & Celbridge Station to Heuston Station and also circa 4km between Heuston Station to Glasnevin Junction, via the Phoenix Park Tunnel Branch Line;
- DART+ West – circa 40km from Maynooth & M3 Parkway Stations to the City Centre;
- DART+ Coastal South – circa 30km from Greystones to the City Centre; and
- DART+ Fleet – purchase of new electrified fleet to serve new and existing routes.

The DART+ Coastal North project, as part of the DART+ Programme, will deliver an improved and extended electrified rail network and will enable increased passenger capacity and an enhanced train service between Dublin City Centre and Drogheda, including the Howth Branch. This increased rail capacity will be achieved by implementing an extended electrified railway network with high-capacity DART trains and an increased frequency of rail services. In addition, the DART+ Coastal North project requires that some track modifications are implemented, including the provision of turnback facilities at Malahide, Clongriffin and Howth Junction & Donaghmede Stations. These modifications are essential to facilitate the increase in train services by improving operational flexibility, allowing trains to be turned back clear of continuing services and enabling a higher frequency and a more reliable service.

The majority of the Proposed Development and interventions are expected to be carried out within the existing railway corridor boundary. Some works and interventions, however, will be required outside of the existing railway boundary such as:

- Bridge modifications/improvements to facilitate extended electrification;
- Construction of substations (to facilitate the provision of power to the line); and
- Use of land for temporary construction/storage compounds.

The key infrastructural components of the DART+ Coastal North Project include:

- Extension of existing 1500V DC electrification, which currently terminates at Malahide, as far as Drogheda MacBride Station (approximately 37km). This includes;
    - The installation of foundations, masts, and overhead wires to supply power to the railway;
    - Undertaking upgrades to existing signalling, telecoms, and power supplies to support the planned increase in train services, including the introduction of new electrical substations at key locations alongside the railway line:
        - Drogheda;
        - Bettystown;
        - Gormanston;
        - Balbriggan;
        - Skerries North;
        - Skerries South;
        - Rush & Lusk (this location also incorporates an overhead line equipment (OHLE) maintenance compound); and
        - Donabate.
    - Undertaking improvements / modifications to bridges spanning the railway arising from track reconfigurations and / or meeting required electrical clearances;
    - Undertaking localised bridge modifications to enable OHLE to be fixed to bridges carrying the railway;
    - Canopy modifications at Drogheda MacBride Station to accommodate OHLE clearances; and
    - Modified railway boundary fences to protect the public from contacting the overhead line.
- Infrastructure works to facilitate the increase in service frequency and capacity, in specific areas of intervention as outlined below.
    - works around Howth Junction & Donaghmede Station;
    - works around Clongriffin Station;
    - works around Malahide Station & Viaduct;
    - works to the existing user worked level crossing (XB001) south of Donabate; and
    - works around Drogheda MacBride Station.
- Modifications to existing depots at Drogheda and Fairview to support the new train fleet, including the provision of additional train stabling at Drogheda;
- Ancillary civils, utility diversions, drainage, and power work to cater for the changes.

For the purposes of describing the DART+ Coastal North project in this AA Screening and the overall Railway Order, the Proposed Development has been divided into 5 geographical zones (A-E) from south to north.

The five geographical zones are described using the local authority boundaries. As Fingal County Council covers a large area of the Proposed Development this has been spilt into two zones. The zones are described in Table 2-1.

**Table 2-1 DART+ Coastal North geographical zones**

| Zone | Location | Description | Local Authority |
|---|---|---|---|
| Zone A | North of Connolly Station to south of Howth Junction & Donaghmede Station | The area between north of Connolly Station to south of Howth Junction & Donaghmede Station, including Fairview Depot. | Dublin City Council |
| Zone B | South of Howth Junction & Donaghmede Station to north of Malahide Viaduct. (Including Howth Branch) | The area between Howth Junction & Donaghmede Station, and the Malahide Viaduct, plus the entire Howth Branch. Includes works within Howth Junction & Donaghmede Station, Clongriffin Station and the Malahide Viaduct. | Fingal County Council |
| Zone C | North of Malahide viaduct to south of Gormanston Station (Fingal boundary) | The area between Malahide Viaduct to south of Gormanston Station. Area includes Donabate, Rush & Lusk, Skerries and Balbriggan Stations. | Fingal County Council |
| Zone D | South of Gormanston Station (Fingal border) to Louth/Meath border | The area between Gormanston Station (Fingal border) and the Louth/Meath border (boundary of Louth approx. 1.5km southeast of Drogheda MacBride Station). Includes Gormanston and Laytown Stations. | Meath County Council |
| Zone E | Drogheda MacBride Station and surrounds | Drogheda MacBride Station and surrounds including the area between the Dublin Road Bridge (UBK01) to the Louth/Meath border | Louth County Council |

The railway line passes between a variety of habitats, including urban and rural areas. In general, the existing railway corridor is comprised of a mixture of semi-natural habitat, with ballast bordered by managed and unmanaged grassy verges, scrub, hedgerows, and treelines. The railway line in Zone A is bordered by residential and urban areas, whilst Zone B is comprised of mainly urban habitats, with some agricultural fields, golf courses, and estate grounds also present. Zone B also includes Malahide Estuary and Causeway, and its associated wetland habitats. Zones C and D are very similar in composition, dominated by rural and agricultural habitats, with towns such as Balbriggan, Laytown, and Skerries present along this route. These zones also include coastal and intertidal habitats around Rogerstown Estuary, and Laytown. Zone E is comprised of Drogheda town and surrounds, and the River Boyne and River Boyne Viaduct in the northern most section of Zone E.

The Proposed Development crosses a number of watercourses, estuaries, and small streams, ditches and drains, including the Tolka River, Malahide Estuary, Rogerstown Estuary, Laytown Estuary, Delvin River, and the River Boyne. A number of these water features are designated for nature conservation purposes and are discussed further in the sections below.

The main characteristics of the Proposed Development of relevance to the ecological assessment are outlined under the Sections below.

### 2.1.1 Drainage Infrastructure

New sections of track drainage will be provided, as required, in areas of proposed works along the route. The drainage design has been developed to meet project requirements in relation to trackside areas and areas located adjacent to the railway corridor. These areas will typically be in areas of new low points on the alignment, where retaining structures are to be constructed, and at stations and depots.

Non-lineside drainage will comprise the surface water drainage affecting the new platform and substation buildings, new hardstanding areas and other retaining structures. This will also include any foul drainage which may be required.

This drainage and associated outflows will be managed with the use of attenuation structures and infiltration measures to ensure that the existing drainage network or watercourses are not adversely affected at times of peak flow.

### 2.1.2 Utility Diversions

Existing 3rd party utilities such as water mains, electricity cables, telecommunication cables and gas mains, both underground and above ground, will require diversion to accommodate the Proposed Development. These diversions will typically involve:

- Relocating existing services along new routes to make space for the new infrastructure;
- Diversion of all existing overhead power line crossings, either over bridge crossings where possible, otherwise through underground track crossing (UTX) to mitigate the maintenance and operational risk associated with working on or near overhead power lines; and
- Diversion of all existing parallel overhead power lines that fall within the risk zone identified for the new railway electrification infrastructure to mitigate the maintenance and operational risk associated with working on or near overhead power lines.

An assessment of the HV electrical infrastructure has been completed to identify the significant main supplies which are impacted, and which will need re-routing, in most cases underground.

### 2.1.3 Lighting

There are no plans to provide any new lighting along the railway corridor beyond that listed below, around the buildings and in the depot/stabling areas.

#### *2.1.3.1 Substations*

External lighting is to be utilised using the following:

- Use of LED technology.
- Light level in accordance with the minimum requirements applicable to the outdoor access path to the new traction substations.
- Lighting fixtures: ≥ IP56.
- Protection against vandalism as per EN 12464-2.
- Average lux levels are likely to be 15 lux and min of 5 lux.

Flood lighting Photocell and Passive Infrared (PIR) sensors will be mounted on buildings to illuminate areas in front of entrances during darkness in presence of IÉ and ESBN staff.

#### *2.1.3.2 New signalling equipment buildings (SEB)/ telecommunication equipment rooms (TER) compound lighting*

Similar to the traction substations above. Located at:

- Drogheda Station;
- Malahide Station;
- Clongriffin Station;

- Howth Junction.

#### *2.1.3.3 Platforms/Walkways*

**Drogheda station platform 4 and Clongriffin station platform 0**

- Lighting improvements to bring lux levels up to minimum required by TSI PRM (DECISION 2008/164/EC concerning the technical specification of interoperability relating to persons with reduced mobility in the trans-European conventional and high-speed rail system). Average 20 lux at floor level with 10 lux minimum.

**Drogheda Depot**

- There can also be expected to be additional low-level lighting in the Drogheda depot area to improve walkway safety with average 15 lux.
- new low level bollard lighting will be installed between roads. The bollard lighting shall be of LED type and shall be of a fixed colour: cool white, with 720 lumen per meter, 10 watt per stripe typically 5 m and with a LED live warranty of min 50,000 hours.

**Malahide turnback Chainage**

- Between tracks low level lighting with average of 15 lux on driver's walkway length about 150m.

**Fairview Lighting**

- The lighting requirements for Fairview will consist of external low-level lighting for maintenance activities and/or for the driver platforms.

### 2.1.4 Construction Compounds

Construction Compounds are temporary facilities that support the construction of different elements of the project. Some will focus on line-wide works spread along the railway, such as trackwork, overhead electrical cables (OHLE) and signalling, whilst others will support more isolated works such as new substations and bridge works. Some compounds will support both isolated and line-wide works. A list of all Construction Compounds is provided in Table 2-2.

Initial site clearance and establishment activities for the Construction Compounds will typically include:

- Forming the site entrances and exits adjoining public roads;
- Clearing the site as required;
- Installing the site hoarding and gates to ensure that the site is secure;
- Installing general site lighting;
- Carrying out any necessary levelling;
- Stripping topsoil and forming any construction access routes that may be required;
- Laying down areas of hardstanding for material storage;
- Performing all the necessary connections to mains water, sewerage, power, and communications;
- Provision of bunded refuelling areas;
- Installing the site office and welfare facilities;

- Installing site security facilities, goods received checking area, unloading, and loading areas and wheel-washing facilities;
- Establishing segregated pedestrian and vehicle routes to the working areas with clear, designated crossing points and establishing areas for materials and waste storage;
- Establishing power and water distribution and wastewater collection; and
- Forming any Heavy Goods Vehicle (HGV) holding area that may be required for each site.

The activities that will take place on these sites, during the construction phase include:

- Material unloading, storage and loading;
- Erection of prefabricated sections for construction;
- Use of welfare and on-site office space;
- Personnel and machinery access to the railway;
- Parking space for personnel and work vehicles;
- Refuelling of construction plant and vehicles;
- Lifting of material/precast elements, especially in the compounds corresponding to modification of existing overbridges, construction of new bridges and erection of buildings;
- Assembling of catenary cantilevers (the cantilevers consist of metallic bars that are connected by bolts);
- Heavy Goods Vehicles (HGV) and usual construction machinery movement;
- Staff vehicles movement;
- Installation and maintenance of dedicated track access points for Road-Rail Vehicles (RRV); and
- Construction traffic on the access routes for the material/equipment supply by HGV.

Each Construction Compound will require to remain operational for the duration of the works with which it is associated. This is dictated by the construction programme and varies for each compound, ranging from several months (in the case of the overbridge modifications) to three years (for instance, those servicing line wide works).

Construction Compounds will often be set up to be operational 24 hours per day, 7 days per week, especially where they are supporting works to be undertaken during track possessions. For much of this time construction plant and materials will be delivered, marshalled, and delivered along the project, with both road and rail vehicles involved. Temporary lighting will be installed to facilitate works during hours of darkness, and new utility connections may be required to service the compounds. Where activities are happening at compounds outside core working hours these will be coordinated with the local authorities and in consultation with the local community.

Construction Compound locations have been selected based on where most space is available in close proximity to the majority of the proposed major works, and with access to the National and Regional Road network. The Construction Compounds are briefly described below in Table 2-2.

## Table 2-2 List of Construction Compounds

| Code | Zone | Location | Primary Discipline | Proposed Development Chainage | Within IÉ property? |
|---|---|---|---|---|---|
| CC-2650 | A | Fairview Depot South (R834 Entrance car park) | Station | 2,650 | Yes |
| CC-2700 | A | Fairview Depot Centre (R834 Entrance car park) | Station | 2,700 | Yes |
| CC-3000 | A | Fairview Depot North (R807 Entrance car park) | Station | 3,000 | Yes |
| CC-9000 | B | Howth Junction and Donaghmede Station (Donaghmede Entrance) | Station | 9,000 | No |
| CC-9050 | B | Howth Junction and Donaghmede Station (Kilbarrack Entrance) | Station | 9,050 | No |
| CC-9100 | B | Howth Junction and Donaghmede Station (Central Access) | Station | 9,100 | Yes |
| CC-9200 | B | Howth Junction and Donaghmede Station (Baldoyle Industrial Estate) | Station | 9,200 | No |
| CC-10600 | B | Clongriffin Station | Permanent Way | 10,600 | No |
| CC-15900E | B | Malahide Turnback (Strand Court) | Permanent Way | 15,900 | No |
| CC-15900W | B | Malahide Turnback (Bissett's Strand) | Permanent Way | 15,900 | No |
| CC-16100 | B | Malahide Turnback (Caves Strand) | Permanent Way | 16,100 | No |
| CC-16250 | B | Malahide Turnback (Marina Car Park) | Permanent Way | 16,250 | No |
| CC-16400 | B | UBB30 Malahide Viaduct | Structures | 16,400 | No |
| CC-18800 | C | Donabate Substation | Substation & SET line-wide works | 18,800 | No |
| CC-19800 | C | Donabate Station | SET line-wide works | 19,800 | Yes |

| Code | Zone | Location | Primary Discipline | Proposed Development Chainage | Within IÉ property? |
|---|---|---|---|---|---|
| CC-23500 | C | Rush and Lusk Station | Substation & SET line-wide works | 23,500 | No |
| CC-23772 (E) | C | Rush & Lusk | Utility Diversions | 23,772 | No |
| CC-23772 (W) | C | Rush & Lusk | Utility Diversions | 23,772 | No |
| CC-25626 (E) | C | Tyrrelstown | Utility Diversions | 25,626 | No |
| CC-25626 (W) | C | Tyrrelstown | Utility Diversions | 25,626 | No |
| CC-27460 (E) | C | Baldongan | Utility Diversions | 27,460 | No |
| CC-27460 (W) | C | Baldongan | Utility Diversions | 27,460 | No |
| CC-29000 | C | Skerries South Substation | Substation | 29,000 | No |
| CC-29140 (E) | C | Golf Links Road | Utility Diversions | 29,140 | No |
| CC-29140 (W) | C | Golf Links Road | Utility Diversions | 29,140 | No |
| CC-30200 | C | Skerries Station | Permanent Way & SET line-wide works | 30,200 | Yes |
| CC-31100 | C | Skerries | SET local works | 31,100 | No |
| CC-32200 | C | Skerries North Substation | Substation | 32,200 | No |
| CC-34400 (E) | C | Balbriggan | Utility Diversions | 34,400 | No |
| CC-34400 (W) | C | Balbriggan | Utility Diversions | 34,400 | No |
| CC-36000 | C | UBB56 Balbriggan Viaduct | Structures | 36,000 | No |
| CC-37700 | C | Balbriggan Substation | Substation & SET line-wide works | 37,700 | No |
| CC-39800 (E) | D | Gormanston Station | Utility Diversions | 39800 | No |

| Code | Zone | Location | Primary Discipline | Proposed Development Chainage | Within IÉ property? |
|---|---|---|---|---|---|
| CC-39800 (W) | D | Gormanston Station | Utility Diversions | 39800 | No |
| CC-40200 | D | Gormanston Station | Permanent Way & SET line-wide works | 40,200 | No |
| CC-41400 | D | Gormanston Substation | Substation | 41,400 | No |
| CC-44390 (E) | D | Laytown | Utility Diversions | 44,390 | No |
| CC-44390 (W) | D | Laytown | Utility Diversions | 44,390 | No |
| CC-44500 | D | UBB72 Laytown Viaduct (South Abutment) | Structures | 44,500 | No |
| CC-44600 | D | UBB72 Laytown Viaduct (South Pier) | Structures | 44,600 | No |
| CC-44700 | D | UBB72 Laytown Viaduct (North Pier) | Structures | 44,700 | No |
| CC-44900 | D | Laytown Station | SET line-wide works | 44,900 | No |
| CC-44920 (E) | D | Laytown | Utility Diversions | 44,920 | No |
| CC-46900 | D | Bettystown Substation | Substation | 46,900 | No |
| CC-49600 | D | OBB78 Track Lowering | Permanent Way | 49,600 | No |
| CC-50270 (S) | D | Drogheda | Utility Diversions | 50,270 | No |
| CC-50270 (N) | D | Drogheda | Utility Diversions | 50,270 | No |
| CC-51700 (S) | D | Drogheda | Utility Diversions | 51,700 | No |
| CC-51800 | E | OBB80 (North) | Structures & SET line-wide works | 51,800 | No |
| CC-51900 | E | OBB80 (South) | Structures | 51,900 | Yes |
| CC-52050 | E | Drogheda Substation | Substation | 52,050 | No |
| CC-52250 | E | Drogheda Station | Station | 52,250 | Yes |

| Code | Zone | Location | Primary Discipline | Proposed Development Chainage | Within IÉ property? |
|---|---|---|---|---|---|
| CC-52200 | E | UBK01 Dublin Road Overbridge (Car Park) | Structures | 52,200 | Yes |

### 2.1.5 Estimated Project Duration

The overall construction phase of the Proposed Development is anticipated to be approximately 36 months. This construction programme has considered both efficiency in terms of phasing and duration as well as any measures needed to reduce the potential for environmental impacts.

A high-level indicative construction programme is set out in Figure 2-1 identifying the key construction phases and the duration of same over the construction period. It is noted that the period allowed for testing and commissioning also includes sufficient time for decommissioning of redundant assets, other than those decommissioned at the start of the project.

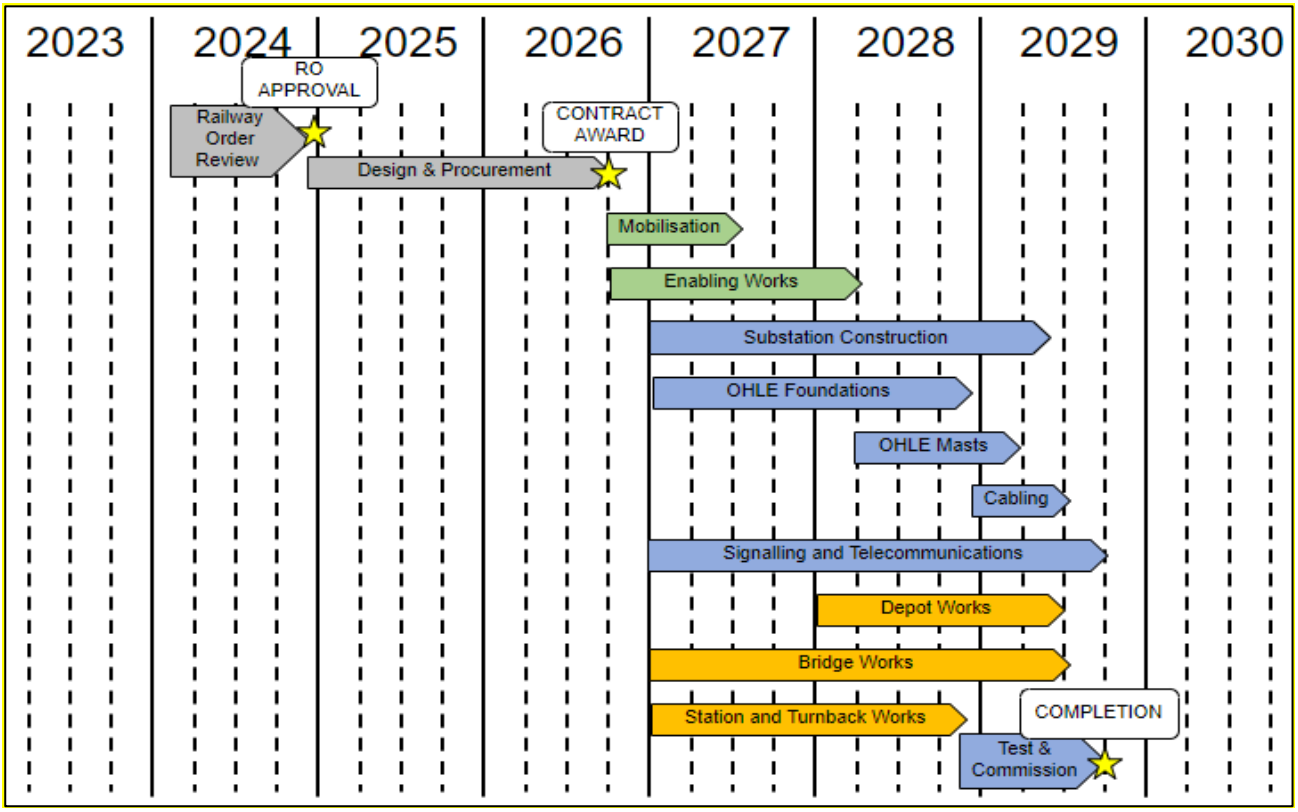


**Figure 2-1 High-level construction programme[3]**

### 2.1.6 Construction Working Hours

A key consideration in the design of the construction strategy and programme is the requirement to reduce the impact during construction, on the operation of the railway line and hence, to maintain rail services for passengers.

[3] EIAR Volume 2: Chapter 5 Construction Strategy, DART+ Coastal North

The construction works range from those that are located outside of the railway boundary (thus, having no impact or minimal impact on train operations) to those that will require a temporary closure of a section of railway line normally during night-time or weekend possessions to allow construction to proceed and to limit the impact on rail services.

The general construction hours for the project, particularly for works away from the immediate vicinity of railway line (these typically needing track closures) are:

- Monday to Friday 07:00 to 19:00 (12 hours)
- Saturday 08:00 to 14:00 (6 hours)
- Sunday Only when agreed in advance with the local authority and IÉ.

Where required, track possession times will vary across the rail corridor. The times listed below are indicative and are likely to be utilised to a greater or lesser degree depending on likely disruption of railway operations. Non-disruptive track possessions are those possessions which occur outside of the general operational timetable for the railway line, whereas disruptive possessions refer to those track possessions where normal railway operations are disrupted.

Any proposed track possession periods would be finalised when detailed design and detailed construction planning is undertaken.

For the purposes of the application for a railway order, a reasonable worst-case scenario has been assumed here and for the assessments undertaken in the AA. In general, night-time possessions will be utilised, but is anticipated that a number of daytime and weekend possessions will also be required, to accommodate the construction works. These possessions will be planned with other railway works and peak railway user demand periods in mind. Specific possession hours would be advised nearer the start of construction however, possible types of track possessions are noted in Table 2-3.

**Table 2-3 Possession Types and Durations**

| Possession Type | Duration / Timings |
|---|---|
| Non-disruptive Weekday night | 4 hours / 01:00 to 05:00 |
| Non-disruptive Saturday night | 6 hours / 01:00 to 07:00 |
| Disruptive Extended Saturday night | 10-12 hours |
| Disruptive Long Weekend (October and Easter) | 3-4 days, twice per year |
| Disruptive Full weekend (anticipated rarely) | 52 hours / Saturday morning at 01:00 to Monday morning at 05:00 |
| Disruptive Bank Holiday weekend (anticipated rarely except October and Easter) | 72-76 hours / for example Saturday morning at 01:00 to Tuesday morning at 05:00 |
| Disruptive Single Line working at weekends (anticipated rarely). | This may be feasible in specific locations, especially at Malahide, where design and logistics allow. |

There are a number of temporary Construction Compounds identified for the Proposed Development. Given that some works need to be undertaken when the railway is closed to train services, these Construction Compounds will often need to be active at night and at weekends. At these times, contractors would be marshalling construction plant and materials via the Construction Compounds, involving both road and rail vehicles. Many deliveries to the compounds can be made during daytime hours, to reduce disturbance at night for the local community and this will be planned and implemented wherever possible during the construction works. Wherever practicable, measures will be taken to minimise impacts in the vicinity of Construction Compounds during night-time works. For example, where night-time concrete operations are required, a contractor might obtain their concrete from a local concrete batching plant, or batch it themselves, drive it to a trackside compound, transfer the wet concrete to a suitable vehicle (e.g., Road Rail Vehicle (RRV) dumper) and then transport it along the railway.

### 2.1.7 Malahide Station area proposed track works (Malahide Turnback)

Malahide Station is located on the Dublin to Belfast Line at approximate mileage 9 miles from Dublin Connolly (approximate chainage 15+650 to 15+880). The station consists of two platforms: Platform 1 on the Up Main line and Platform 2 on the Down Main line. North of Malahide Station is the Malahide Estuary which includes European sites with protections for biodiversity. The railway crosses the estuary by way of a southern and northern causeway, connected by Malahide Viaduct (UBB30) which is a protected structure.

The proposal is for construction of a new turnback facility north of the station, required to improve operational flexibility and support an increase in the frequency of train services.

The works will introduce a new pocket track between the Up and Down Line located along the southern causeway, in the area between the Strand Road underbridge (UBB29) and the Malahide Viaduct (UBB30). To facilitate the new turnback line the existing corridor needs to be widened to the west above the existing embankment. The works will include the construction of a new modular reinforced earth wall, and a modified earthworks embankment alongside the proposed Broadmeadow Way greenway. The existing OHLE and signalling systems will be modified with the installation of new OHLE and signalling assets beginning just south of the viaduct.

Construction plant for these operations will include excavators, dump trucks, rollers (compactors) and a variety of heavy goods vehicles (HGVs) including tipper trucks, low loaders, and concrete wagons. Additionally, there is the potential for a soil nailing equipment, drilling rig, grout pump and mixers if further stabilisation measures are identified.

The construction works will impact on the Broadmeadow Way greenway (if in place prior to the commencement of construction) with the full width of the greenway being reduced for the duration of construction. Working space will vary along the wall but will be kept to the minimum to ensure a minimum 3m width of greenway is maintained to reduce the impact on the newly constructed greenway. Phasing of the work in small sections will also be used to limit the impact to the greenway and the existing embankment. The phasing and reduced width sections will continue over the full construction duration.

Access to the work front for the wall will only be available from the south direction for operations and suitable traffic management plans are to be in place to be most efficient. Key activities will include using an excavator to remove rock armour and excavate into the existing embankment, loading tipper trucks to remove rock armour, unloading low loader trucks with wall elements and geotextiles, and discharging concrete wagons, as well as then ultimately placing the earthworks and topsoil backfill material and access equipment to install the fence. If soil nailing is required, these operations will be carried out during daytime hours only.

Presently OHLE extends along where the turnback is planned to be built but ceases close to its northern end. To ease the management of track possessions in the area, the staging and temporary reduction of the existing OHLE just north of Malahide Station will need to be agreed by the Contractor with IÉ and checked against operational requirements and timetabling.

# 3. METHODOLOGY

## 3.1 Guidance

This Appropriate Assessment Screening Report has been prepared with regard to the following guidance documents, as relevant:

- OPR Practice Note PN01. Appropriate Assessment Screening for Development Management (Office of the Planning Regulator, 2021);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 revision);
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPW 1/10 & PSSP 2/10;
- Assessment of Plans and Projects in Relation to Natura 2000 sites: Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021);
- Communication from the Commission on the precautionary principle (European Commission, 2000);
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (European Commission, 2019); and,
- EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.

## 3.2 Assessment Methodology

The above referenced guidance sets out a staged process for carrying out Appropriate Assessment. To determine if an Appropriate Assessment is required, documented screening is required. Screening identifies the potential for effects on the conservation objectives of European sites, if any, which could arise from a Proposed Development plan or project, either alone or in combination with other plans and projects (i.e., likely significant effects).

Significant effects on a European site are those that would undermine the conservation objectives supporting the favourable conservation condition of the Qualifying Interest (QI) habitats and/or the QI/Special Conservation Interest (SCI) species of a European site(s).

Screening for Appropriate Assessment involves the following steps as shown in Figure 3-1.


**Figure 3-1 Steps for Screening for Appropriate Assessment**

If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites as a result of the Proposed Development plan or project, either alone or in combination with other plans and projects, then there is no requirement to undertake a Stage Two Appropriate Assessment.

In establishing which European sites are potentially at risk (in the absence of mitigation) from the Proposed Development, a source-pathway-receptor approach was applied.

In order for an impact to occur, there must be a risk enabled by having a source (e.g. water abstraction or construction works), a receptor (e.g. a European site or its QI(s) or SCI(s) 4), and a pathway between the source and the receptor (e.g. by air for airborne pollution, or a pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.

The identification of source-pathway-receptor connection(s) between the Proposed Development and European sites essentially is the process of identifying which European sites are within the Zone of Influence (ZoI) of the Proposed Development, and therefore potentially at risk of significant effects. The ZoI is the area over which the Proposed Development could affect the receiving environment such that it could potentially have significant effects on the QI habitats or QI/SCI species of a European site, or on the achievement of their conservation objectives[5].

The identification of a source-pathway-receptor link does not automatically mean that significant effects will arise. The likelihood for significant effects will depend upon the characteristics of the source (e.g. extent and duration of construction works), the characteristics of the pathway (e.g. direction and strength of prevailing winds for airborne pollution) and the characteristics of the receptor (e.g. the sensitivities of the European site and its QIs/SCIs).

The 'likely significant effects' test is based on the precautionary principle[6]. The precautionary principle means that, based on the most reliable available information, where there is uncertainty or doubt as to the absence of significant effects, the project cannot be screened out and an appropriate assessment must be carried out.

## 3.3 Desktop Data Review

A desk study involved collection and review of relevant published and unpublished sources of data, collation of existing information on the ecological environment and consultation with relevant statutory bodies.

The following sources were consulted during the desk study to inform the scope of the ecological surveys:

- Online data available on European sites and on Natural Heritage Areas (NHAs) or Proposed Development Natural Heritage Areas (pNHAs) as held by the NPWS (NPWS 2024)[7];
- Online data records available on National Biodiversity Data Centre Database (NBDC Online Database, Accessed 2024;

[4] The term Qualifying Interest is used when referring to the habitats or species for which an SAC is designated; the term Special Conservation Interest is used when referring to the bird species (or wetland habitats) for which an SPA is designated.

[5] As defined in the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2022)

[6] The precautionary principle is a guiding principle that derives from Article 191 of the Treaty on the Functioning of the European Union and has been developed in the case law of the European Court of Justice (e.g. ECJ case C-127/02 – Waddenzee, Netherlands).

The guidance document *Communication from the Commission on the Precautionary Principle* (European Commission, 2000) notes that the precautionary principle "*covers those specific circumstances where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection*"..

[7] The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2024_05 and SPA_ITM_2024_01.

- Ordnance Survey Ireland (OSI) orthophotography (from 2013 - 2018) for the Proposed Development;
- Records of rare and / or protected species for the 10km (kilometre) grid squares O13, O23, O24, O25, O26, O16, O17, and O07 held by the NPWS;
- Habitat and species Geographic Information System (GIS) datasets provided by the NPWS, including Article 12 and Article 17 data[8];
- Bat records from Bat Conservation Ireland's (BCI) database;
- Records from the Botanical Society of Britain and Ireland (BSBI);
- Information contained within the Flora of County Dublin (Doogue et al., 1998);
- Environmental information / data for the area available from the EPA website (EPA 2024);
- Information on the status of European Union (EU) protected habitats and species in Ireland (NPWS 2019a, NPWS 2019b and NPWS 2019c);
- Information contained within the Environmental Impact Assessment Report (EIAR) prepared for the railway order application, including Chapter 2 Policy Context and Need for the Scheme, Chapter 4 Description of the Scheme, Chapter 5 Construction Strategy, Chapter 9 Land and Soils, Chapter 10 Water, Chapter 11 Hydrogeology, Chapter 12 Air Quality, Chapter 14 Noise and Vibration, and Chapter 15 Landscape and Visual.
- Information on light-bellied Brent goose inland feeding sites (Scott Cawley Ltd., 2017); and
- Macklin, R., Brazier, B. and Sleeman, P. (2019) Dublin City otter survey. Report prepared by Triturus Environmental Ltd for Dublin City Council as an action of the Dublin City Biodiversity Action Plan 2015-2020.

## 3.4 Ecology Surveys

The majority of field surveys for the Proposed Development were undertaken in 2021, 2022 and 2023. Additional wintering bird surveys were undertaken in the 2023-2024 season in respect of the proposed Construction Compound locations, with further breeding bird and habitat surveys at the Malahide Construction Compounds and proposed work areas along the Malahide Causeway also undertaken in 2024[9] (See Table 3-1 for details). The surveys aimed to detect the presence, or likely presence, of rare/threatened, protected and invasive species, and to record the habitats present in the Proposed Development. The surveys provided baseline information regarding the existing ecology of the Proposed Development. Incidental records of plants, bird species and protected species were collected throughout the surveys in 2021, 2022 and 2023, as well as localised areas arising from design iterations, in 2024. Specific ecological surveys were carried out with respect to the following:

- Habitats (including Annex I habitats);
- Bats;
- Otter;
- Badger;

[8] Article 17 of the EU Directive on the Conservation of habitats, Floras and Fauna (Habitats Directive) requires that all member states report to the European Commission every six years on the status and on the implementation of the measures taken under the Habitats Directive. In a similar manner, there is an obligation to report on the status and trends of bird species required under Article 12 of the Bird's Directive.

[9] Additional breeding bird and habitat surveys were undertaken in Malahide in 2024 due to changes in the design and Proposed Development boundary as a result of significant feedback from the second Public Consultation, in which concerns were raised in relation to proposed design elements along the Malahide Causeway.

- Amphibian habitat suitability;
- Reptile habitat suitability;
- Birds (wintering and breeding); and,
- Invasive Species.

Section 0 describes the various ecological survey methodologies used to collate baseline ecological information in the preparation of this report. Results of these surveys are presented in Section 4. The ecological surveys carried out, dates and personnel involved are summarised in Table 3-1. It is noted that some of the surveys, and the ecological receptors, are not pertinent to the Appropriate Assessment process as they are not qualifying interests/special conservation interests of European sites as defined under the EU (Birds and Natural Habitats) Regulations 2011 (as amended).

In this regard the Assessment presented in this AA Screening relates to habitats, rare and protected species, marine mammals, otters, and birds, the remainder being assessed in the Biodiversity Chapter (Chapter 8 of the EIAR). Whilst dedicated marine mammal surveys were not carried out as part of the project, they are assessed below under Section 4.3.3.

**Table 3-1 Ecological Surveys carried out in 2021, 2022 and 2023 for the Proposed Development**

| Survey | Date | Surveyor |
|---|---|---|
| Habitats (including Annex I habitats and invasive species) | August 2021<br>June 2022<br>August – September 2023 (Construction Compounds, substation and utilities locations)<br>May 2024 (Malahide Causeway and Malahide Construction Compounds) | Scott Cawley Ltd. |
| Otter | October 2022<br>November 2022<br>December 2022 | Scott Cawley Ltd. |
| Bats[10] | *Bridge Potential Roost Assessments*<br>July 2021<br>August 2021<br>January 2022<br>May 2022<br>*Activity surveys*<br>August 2021 – September 2021<br>May – July 2022<br>*Static detector deployments*<br>August – September 2021<br>October – November 2021<br>January – February 2022 | Scott Cawley Ltd. |
| Breeding birds | April – June 2022 | Scott Cawley Ltd. |

[10] The lesser horseshoe bat is the only bat species in Ireland listed on Annex 2 of the EU's Habitats Directive and is only found in the west and southwest of the country. As there are no European sites designated for bats in the east of Ireland, there are no impacts likely on this species. Bats are therefore not discussed further.

| Survey | Date | Surveyor |
|---|---|---|
| | April – June 2023<br>May 2024 (Malahide Causeway and Malahide Construction Compounds) | |
| Wintering birds | October 2021 – March 2022<br>October 2022 – March 2023<br>September 2023 -March 2024 (Construction Compound and substation locations) | Scott Cawley Ltd. |

### 3.4.1 Survey Methodology

#### *3.4.1.1 Habitats*

Terrestrial and coastal habitat surveys were undertaken along the length of the Proposed Development by Shane Brien B.Sc. M.Sc. ACIEEM, Cathal O'Brien B.Sc. M.Sc., Wayne Daly B.Sc and Lorna Gill BA M.Sc. between August 2021 and June 2022. Shane, Cathal and Wayne conducted the primary surveys along the current rail line between Drogheda MacBride station and Malahide station between 9th and 12th August 2021 with IÉ track safety coordinators (TSC). Other offline habitats such as proposed substation locations, construction compound locations on lands adjacent to the line were recorded on multiple dates between August and September 2023. Methodology for recording habitats on the rail line followed the *Best Practice Guidance for Habitat Survey and Mapping (*Smith *et al.,* 2011*)*. Additional habitat surveys were undertaken at the Malahide Causeway and Malahide Construction Compounds on 22nd May 2024 by Wayne Daly.

All habitat types were classified using the *Guide to Habitats in Ireland (*Fossit, 2000*)*, recording the indicator species and abundance using the DAFOR scale[11] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database* (Weekes & Fitzpatrick, 2010) having regard to more recent taxonomic changes to species names after the New Flora of the British Isles (Stace, 2019) and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide* (Atherton *et al*., 2010). Non-native invasive plant species listed on the Third Schedule of the Birds and Habitats Regulations were also recorded. The habitat's extent was mapped onto a field tablet using proprietary QField software. Vascular plant nomenclature follows that of the *New Flora of the British Isles Fourth Edition* (Stace 2019).

Shane Brien B.Sc. M.Sc. ACIEEM and Tim Ryle BSc (Hons)., Ph.D., MIEnvSc conducted a survey for Annex I habitats on 22nd June 2022, which were classified after the *Interpretation manual of European Union Habitats EUR28* (CEC, 2013) with reference to the corresponding national habitat survey reports and NPWS wildlife manuals, as applicable. The nomenclature for Annex I habitats follows that of the Interpretation manual of European Union Habitats EUR28 with abbreviated names after those used in *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview* (NPWS, 2019).

[11] The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

Relevés (*i.e.* sampling points of a defined size) were also taken within saltmarsh/estuary habitats i.e., Atlantic Salt Meadows [1330] in close proximity to the existing railway line in order to determine whether or not they conformed to Annex I habitats. The relevé size was $2m^2$ for the saltmarsh habitat, and information collected included the following:

- A list of all plant species presents along with their associated percentage cover;
- A habitat condition assessment based on criteria which were drawn from the national surveys of this Annex I habitat conducted on behalf of NPWS (i.e. Long *et al*., 2018; Martin *et al*., 2018; O'Neill *et al.,* 2013; Perrin *et al.,* 2014; Wilson & Fernández, 2013); and,
- Notes on the threats and/or management of the overall surrounding area. Where applicable, the Annex I habitat was also assigned to a vegetation community.

#### *3.4.1.2 Otter*

Surveys to check for the presence of otter *Lutra lutra* within the Proposed Development were undertaken between October – December 2022 at a number of watercourses crossed by the railway line, where works are proposed and included suitable accessible habitat 150m upstream and downstream from the railway line. Locations included the Tolka River by the R131 at Fairview Park, Mayne River south of the Moyne Road, Malahide Estuary, Rogerstown Estuary, River Matt at Balbriggan viaduct, River Delvin at Delvin Bridge, Mosney River at Mosney beach, and the River Nanny at Laytown. The survey involved a search for signs of otter activity (prints, spraints, trails, holts, couches, slides, feeding remains etc.). Drainage ditches and small streams were not surveyed due to inaccessibility and as no works are being undertaken within or at any drainage ditches/small streams.

Two Infra-Red motion-activated cameras were deployed along the northern side of the Malahide Causeway, where a sluice gate is located under the railway line on the River Turvey/Pill. This was to determine the use of the railway line by commuting otters as movement is impeded by the sluice gate. Cameras were deployed for a period of 4 weeks between the 16th August 2023 and 13th September 2023 (inclusive).

#### *3.4.1.3 Breeding Birds*

Breeding bird surveys were undertaken by Síofra Quigley B.Sc. MSc. MCIEEM, Sorcha Shanley B.Sc. M.Sc, Shane Brien B.Sc. M.Sc. ACIEEM, Cathal O'Brien B.Sc. M.Sc., Lorna Gill BA M.Sc. and Wayne Daly B.Sc. using a methodology adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species* (Gilbert et al., 1998) (see Table 3-2 for more details). The surveys covered specific areas outside of the existing railway line where works are proposed (substations, proposed Construction Compound locations), and where very suitable breeding bird habitat was identified i.e. dense scrub, mature hedgerows/treelines, reed habitats, scrub/wetlands/sand dunes south of Laytown, as shown in Figure 5. While not all of the Proposed Development was surveyed, (for practical reasons owing to surveying on a live railway), the surveys undertaken covered a representative sample of all habitat types likely to be used by breeding birds. Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

**Table 3-2 Breeding bird survey details**

| Date (Sunrise) | Survey Time | Weather Conditions |
|---|---|---|
| 26/04/2022 (06:00) | 06:15-11:50 | Mild, partly sunny weather with temperatures around 4 to 10°C. (conducted by Shane Brien and Cathal O'Brien) |
| 26/05/2022 (05:08) | 06:00-12:00 | Humid day, mist rain conditions with overcast clouds, with temperatures around 11 to 14°C and moderate south west breeze. (conducted by Cathal O'Brien and Lorna Gill) |
| 22/06/2022 (04:55) | 05:30-09:45 | Humid day, mist rain conditions with overcast clouds, with temperatures around 15 to 16°C. (conducted by Shane Brien and Cathal O'Brien) |
| 06/04/2023 (06:47) | 06:50-11:00 | Humid day, light drizzle conditions with overcast clouds, with temperatures around 5 to 8°C. (conducted by Shane Brien and Síofra Quigley) |
| 04/05/2023 (05:45) | 05:55-11:45 | Mild day, few clouds and light breeze conditions, with temperatures around 9 to 10°C. (conducted by Síofra Quigley and Sorcha Shanley) |
| 07/06/2023 (04:59) | 05:15-09:15 | Temperate day, few clouds in the sky and moderate wind conditions, with temperatures around 9-14°C. (conducted by Shane Brien and Síofra Quigley) |
| 22/05/2024 (05:14) | 05:30 – 09:30 | Temperate day, overcast with a gentle breeze, temperatures around 12°C. (Conducted by Wayne Daly) |
| 28/05/2024 (05:06) | 06:00 – 09:00 | Intermittent rain, overcast with a moderate breeze, temperatures around 13°C(Conducted by Wayne Daly) |

#### *3.4.1.4 Wintering birds*

A desk study was carried out to identify any potential suitable sites for wintering birds located within or directly adjacent to the Proposed Development. This included a review of recent aerial photography and known inland feeding sites for the SCI bird species light-bellied Brent goose *Branta bernicla hrota* (Scott Cawley Ltd., 2017). A habitat suitability assessment was carried out in August 2021 to verify the suitability of potential inland feeding / roosting sites identified during the desk study.

The desk study identified five sites along or adjacent to the Proposed Development with potential for wintering birds that will be subject to direct habitat loss or subject to collision risk as a result of the new Over Head Line Equipment (OHLE) for the electrification of the line. Each site was surveyed twice a month over six months across October 2021 - March 2022, and over six months across October 2022 - March 2023 using a methodology based on the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species* (Gilbert *at al*., 1998).

The results of the desk study and field surveys have informed the assessment of potential impacts on wintering bird species arising from the Proposed Development. The impact was determined to be greatest in the estuaries and areas of highly suitable habitat that are adjacent to the exposed railway, so other areas outside of the aforementioned localities were not surveyed due to health and safety concerns with working on a live railway, and the railway being screened in some areas by residential and urban habitats, and treelines.

Additional wintering bird surveys were undertaken in September 2023 – March 2024, at the proposed compound and substation locations with suitable wintering bird habitat (i.e., agricultural fields, grasslands), following the same methodology as described above and below. Four Construction Compounds/Substation locations were determined to have potential wintering bird habitat, and included Drogheda Substation/Construction Compound, Laytown Construction Compound, Skerries Substation/Construction Compound, and Gormanston Construction Compound. Two additional Construction Compounds at Malahide by Caves Strand and Bisset Strand to accommodate the Malahide turnback design change, which was made in response to significant feedback following public consultation no. 2. Due to the timing of when these Construction Compound were added, it was not possible to complete wintering bird surveys in these locations. However, this is not considered to be a limitation to the assessment as a habitat survey was undertaken in these areas, and the proposed Construction Compound locations at Caves Strand and Bissett's Strand were not suitable for foraging and/or roosting wintering birds, due to being comprised of overgrown grassland and scrub.

The Proposed Development crosses five localities that are considered to harbour high numbers of wintering bird species and are likely to fly across the existing rail line to use habitats on either side of the line. Three of the localities (River Nanny Estuary, Rogerstown Estuary, Malahide Estuary) are currently exposed bridges, with the railway line traversing areas of high habitat suitability for wintering bird species (i.e., estuarine habitat). The other two localities (Gormanston and Balbriggan) are areas that contain short sward grassland, bordered by low hedgerows, with the existing railway traversing through the fields.

Surveys were timed to cover a range of tidal conditions, using a binoculars/scope from vantage points at a suitable visual distance viewing the estuaries and current rail line. The survey time at these vantage points was determined around sunlight hours during low or high tide for 4 hours (1 before peak tide and 3 after).

Surveys at the estuaries mentioned above, surveyed the 500m area either side of the existing railway line from vantage points. Each vantage point was covered once a month at high and low tide, as shown in Figures 6. Balbriggan was an exception with walkovers of green spaces adjacent to the current rail line only undertaken as there were no suitable vantage points available that would allow surveyors to cover large areas from one location.

Any birds flying over or close proximity to the rail line were recorded within height bands and height based on level with the current rail line e.g. band -0 was used when birds flew under the bridge & band 1 was used when birds flew over the rail line at risk of collided with the OHLE, as outlined in the Table 3-3 below.

**Table 3-3 Wintering bird survey height bands**

| Band number | Approximate height (m) | Possibility of colliding with OHLE |
|---|---|---|
| 0 | Under the bridge | None |
| 1 | 0-10 | High |
| 2 | 10-20 | Moderate |
| 3 | 20-35 | Low |
| 4 | 35-50 | Low |
| 5 | >50 | Low |

An additional approach was a "*look-see*" methodology i.e., whereby the surveyor scans the entirety of a predefined survey area and records all birds present (based on Bibby *et al.,* 2000) within proximity of the current rail line and in areas outside of the boundary of the railway line, i.e. Construction Compounds and substation compounds.

All birds present within the sites were identified with reference to *Collins Bird Guide* (Svensson, 2010) to confirm identification (where necessary), and were recorded using the BTO species codes. The total flock size of birds present, their general location within the site and any activity exhibited were also recorded. Evidence of bird droppings were recorded.

# 4. RECEIVING ENVIRONMENT

## 4.1 European sites

The Proposed Development overlaps with five European sites;

- Malahide Estuary SAC and Malahide Estuary SPA where the existing Malahide Viaduct and railway traverses Malahide Estuary;
- Rogerstown Estuary SAC and Rogerstown Estuary SPA where the existing Rogerstown Viaduct and railway traverses Rogerstown Estuary; and
- River Nanny Estuary and Shore SPA where the existing Laytown Viaduct and railway traverses the River Nanny Estuary.

The Proposed Development does not traverse any other European site but does come close to several other European sites (as shown in Figure 1). In Zone A, the Proposed Development is close to European sites in Dublin Bay, which is variously designated for a number of overlapping European sites. The nearest European site to the Proposed Development in Zone A is South Dublin Bay and River Tolka Estuary SPA, located c. 500m east from the Proposed Development boundary at its closest point. North Dublin Bay SAC and North Bull Island SPA are also close to the Proposed Development, located approximately 800m, east.

The aforementioned European sites, i.e., South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC, and the North Bull Island SPA, are also hydrologically connected to the Proposed Development via the River Santry, which flows under the railway line in Raheny, and outfalls *c*. 1.3km downstream into Dublin Bay at the Bull Island Causeway. There are a number of other European sites that are within the ZoI, but are not directly hydrologically linked, to the Proposed Development or located offshore, namely; South Dublin Bay SAC, North-West Irish Sea SPA, Rockabill to Dalkey Island SAC, Howth Head SAC, Howth Head Coast SPA, Lambay Island SAC, Irelands Eye SAC, Clogher Head SAC, Dalkey Island SPA.

There are three European sites containing marine mammals, which are known to frequent Dublin Bay and the eastern coastline. These are Rockabill to Dalkey Island SAC, Lambay Island SAC, and Codling Fault Zone SAC.

In Zone B, whilst the Proposed Development boundary comes within metres of European sites in Baldoyle Estuary, i.e. Baldoyle Bay SAC and Baldoyle Bay SPA, no works are proposed along the Howth line, with works only Proposed Development at Howth Junction and Donaghmede, Clongriffin, and Malahide Station and Viaduct. Therefore, Baldoyle Bay SAC which is located *c.* 250m east of the Proposed Development, and Baldoyle Bay SPA located *c*. 600m east, are also hydrologically connected to the Proposed Development via the River Mayne, which flows under the existing railway line, and outfalls into Baldoyle Bay *c*. 950m downstream of the Proposed Development.

There are a number of European sites associated with the River Boyne. The Boyne Estuary SPA, Boyne Coast and Estuary SAC, and the River Boyne and River Blackwater SAC are all downstream and hydrologically linked to the Proposed Development. The River Boyne and River Blackwater SPA designated for kingfisher, is located *c*. 4km upstream of the Proposed Development, and therefore also within the ZoI of the Proposed Development.

There are 21 SPAs designated for SCI bird species that are known to forage and / or roost across Dublin City, and / or utilise Dublin Bay, and the eastern coastline and estuarine/wetland habitats within. These are Malahide Estuary SPA, Baldoyle Bay SPA, Rogerstown Estuary SPA, Skerries Islands SPA, North Bull Island SPA, South Dublin Bay and River Tolka SPA, Ireland's Eye SPA, Lambay Island SPA, Rockabill SPA, Dalkey Islands SPA, North-West Irish Sea SPA, River Nanny Estuary and Shore SPA, Boyne Estuary SPA, Stabannan-Braganstown SPA, Wicklow Mountains SPA, Howth Head Coast SPA, Dundalk Bay SPA, The Murrough SPA, Seas Off Wexford cSPA, Wicklow Head SPA, and the Saltee Islands SPA.

There are 34 European sites (SACs and SPAs) located within the vicinity of the Proposed Development, listed in Appendix 1.1 and illustrated in Figure 1 (European Sites). There is 31 European sites within the ZoI of the Proposed Development, Appendix 1.1 lists these European sites, their distance from the Proposed Development, and the sites Qualifying Interests (QIs) / Special Conservation Interests (SCIs).

A number of other SPA, some that are similar to the Saltee Islands SPA provide breeding territory for SCI species associated with the Seas Off Wexford SPA, have been assessed and are described in Table 4-1.

**Table 4-1 Assessment of other SPA sites (Conservation Objectives for each are listed in table)**

| European site (Conservation Objective Version) | Special Conservation Interests | Approximate Distance from Proposed Development | Reasoning |
|---|---|---|---|
| Cahore marshes SPA 004113<br><br>(NPWS 2022h Conservation objectives for Cahore Marshes SPA [004143]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.) | A050] Wigeon *Anas penelope*<br>[A140] Golden Plover *Pluvialis apricaria*<br>[A142] Lapwing *Vanellus vanellus*<br>[A395] Greenland White-fronted Goose *Anser albifrons flavirostris*<br>[A999] Wetlands | 85km | No impact pathway to Proposed Development as SCI species are typically coastal birds with limited foraging range.<br><br>No impact supporting habitat given its distance from the Proposed Development, tidal current flowing in opposite direction and dispersion in coastal waters. |
| Lady's Island Lake SPA 004009<br><br>(NPWS 2022i Conservation objectives for Lady's Island Lake SPA [004009]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage). | [A051] Gadwall *Anas strepera*<br>[A179] Black-headed Gull *Chroicocephalus ridibundus*<br>[A191] Sandwich Tern *Sterna sandvicensis*<br>[A192] Roseate Tern *Sterna dougallii*<br>[A193] Common Tern *Sterna hirundo*<br>[A194] Arctic Tern *Sterna paradisaea*<br>[A999] Wetlands | 125km | Although sharing some SCI species with Seas offWexford SPA, no impact pathway to Proposed Development as SCI species are typically coastal birds with limited foraging range.<br><br>No impact supporting habitat given its distance from the Proposed Development, tidal current flowing in opposite direction and dispersion in coastal waters. |
| Tacumshin Lake SPA 004092<br>(NPWS 2022j Conservation objectives for Tacumshin Lake SPA [004092]. | [A004] Little Grebe *Tachybaptus ruficollis* | 125km | Although sharing some SCI species with Seas off Wexford SPA, no impact pathway to Proposed |

| European site (Conservation Objective Version) | Special Conservation Interests | Approximate Distance from Proposed Development | Reasoning |
|---|---|---|---|
| First Order Site-specific Conservation Objectives Version 1.0.<br>Department of Housing, Local Government and Heritage). | [A037] Bewick's Swan *Cygnus columbianus bewickii*<br>[A038] Whooper Swan *Cygnus cygnus*<br>[A050] Wigeon *Anas penelope*<br>[A051] Gadwall *Anas strepera*<br>[A052] Teal *Anas crecca*<br>[A054] Pintail *Anas acuta*<br>[A056] Shoveler *Anas clypeata*<br>[A061] Tufted Duck *Aythya fuligula*<br>[A125] Coot *Fulica atra*<br>[A140] Golden Plover *Pluvialis apricaria*<br>[A141] Grey Plover *Pluvialis squatarola*<br>[A142] Lapwing *Vanellus vanellus*<br>[A156] Black-tailed Godwit *Limosa limosa*<br>[A999] Wetlands | | Development, as SCI species are typically coastal birds with limited foraging range.<br>No impact supporting habitat given its distance from the Proposed Development, tidal current flowing in opposite direction and dispersion in coastal waters. |
| Ballyteigue Burrow SPA 004020<br><br>(NPWS 2014b Conservation Objectives: Ballyteige Burrow SPA 004020. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht). | [A046] Brent Goose *Branta bernicla hrota*<br>[A048] Shelduck *Tadorna tadorna*<br>[A140] Golden Plover *Pluvialis apricaria*<br>[A141] Grey Plover *Pluvialis squatarola*<br>[A142] Lapwing *Vanellus vanellus*<br>[A156] Black-tailed Godwit *Limosa limosa*<br>[A157] Bar-tailed Godwit *Limosa lapponica*<br>[A999] Wetlands | 126 km | No impact pathway to Proposed Development as SCI species are typically coastal birds with limited foraging range.<br><br>No impact supporting habitat given its distance from the Proposed Development, tidal current flowing in opposite direction and dispersion in coastal waters. |
| Bannow Bay SPA 004033<br><br>(NPWS 2012 Conservation Objectives: Bannow Bay SPA 004033. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht). | [A046] Light-bellied Brent Goose *Branta bernicla hrota* wintering<br>[A048] Shelduck *Tadorna tadorna* wintering<br>[A054] Pintail *Anas acuta* wintering<br>[A130] Oystercatcher *Haematopus ostralegus* wintering<br>[A140] Golden Plover *Pluvialis apricaria* wintering<br>[A141] Grey Plover *Pluvialis squatarola* wintering<br>[A142] Lapwing *Vanellus vanellus* wintering | 124km | No impact pathway to Proposed Development as SCI species are typically coastal birds with limited foraging range.<br><br>No impact supporting habitat given its distance from the Proposed Development, tidal current flowing in opposite direction and dispersion in coastal waters. |

| European site (Conservation Objective Version) | Special Conservation Interests | Approximate Distance from Proposed Development | Reasoning |
|---|---|---|---|
| | [A143] Knot *Calidris canutus* wintering<br>[A149] Dunlin *Calidris alpina* wintering<br>[A156] Black-tailed Godwit *Limosa limosa* wintering<br>[A157] Bar-tailed Godwit *Limosa lapponica* wintering<br>[A160] Curlew *Numenius arquata* wintering<br>[A162] Redshank *Tringa totanus* wintering<br>[A999] Wetlands | | |
| Keeragh Island SPA 004118<br><br>(NPWS 2022k Conservation objectives for Keeragh Islands SPA [004118]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage). | [A017] Cormorant *Phalacrocorax carbo* | 130 km | There is no potential for impacts to occur to these SCI species by virtue of their being beyond the foraging distance (see Table 5-1) of the Proposed Development. |

## 4.2 Habitats

The Proposed Development is located in variety of different habitat types, as shown on Figure 2. Habitats present in the footprint and in the vicinity of the Proposed Development include the following:

- Other Artificial Lakes and Ponds (FL8);
- Reed and large sedge swamps (FS1);
- Tall-herb swamps (FS2);
- Depositing/Lowland Rivers (FW2);
- Dry calcareous and neutral grassland (GS1);
- Dry meadows and grassy verges (GS2);
- Dry-humid acid grassland (GS3);
- Wet grassland (GS4);
- Hedgerows (WL1);
- Treelines (WL2);
- (Mixed) broadleaved woodland (WD1);
- Mixed broadleaved/conifer woodland (WD2);
- (Mixed) conifer woodland (WD3);
- Scattered trees and parkland (WD5);
- Scrub (WS1);
- Ornamental/non-native shrub (WS3);

- Spoil and bare ground (ED2);
- Recolonising vegetation (ED3);
- Shingle and gravel banks (CB1);
- Lower salt marsh (CM1);
- Upper salt marsh (CM2);
- Tidal rivers (CW2);
- Embryonic dunes (CD1);
- Fixed dunes (CD3);
- Sea walls, piers and jetties (CC1);
- Shingle and gravel shores (LS1);
- Sand shores (LS2); and
- Estuaries (MW4)

The following habitat types listed on Annex I of the EU Habitats Directive were recorded within the Proposed Development site:

- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] located in the north of Malahide Estuary the eastern side of the railway line, with a small area on the western site of the railway line where the River Turvey enters the estuary. Also located in Rogerstown Estuary on the western side of the railway line, on the outskirts of Beaverstown Golf Club; and
- Estuaries [1130], located in Rogerstown and Malahide Estuaries adjacent to the railway line.

These Annex I habitats are located within the Rogerstown Estuary SAC and SPA, and Malahide Estuary SAC and SPA.

## 4.3 Flora and Fauna Species

### 4.3.1 Rare and Protected Flora

There were no protected plant species contained within the Flora (Protection) Order, 2022 identified within the Proposed Development during habitat surveys undertaken.

The desk study returned records of a total of five species listed on the Flora Protection Order across the wider Proposed Development (i.e., Grid Squares O23, O17) and are listed in Appendix 1.2. All of these species are bryophytes. Records within close proximity of the Proposed Development (i.e., within *c*. 2km of the boundary) include Cercuous thread-moss *Bryum uliginosum* in Malahide, and many-seasoned thread-moss *Bryum intermedium*, Petalwort *Petalophyllum ralfsii*, and Warne's thread-moss *Bryum warneum* all recorded on Bull Island. Plant species listed on the Flora Protection Order are considered to be of National Importance.

There were no species listed on Ireland Red List No. 8: Bryophytes (Lockhart *et al*., 2012) recorded within the Proposed Development.

### 4.3.2 Non-Native Invasives

There were 11 (eleven) areas of non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) recorded within the Proposed Development in 2021 and 2022. The locations of these non-native invasive plant species are summarised below in Table 4-2.

None of these stands were located within the existing railway corridor but were located on the verge of the tracks or in lands adjacent to the railway line.

The desk study returned records of 22 species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011, across the wider Proposed Development (i.e., Grid Squares O13, O14, O07, O08, O23) and area listed in Appendix 1.2.

Records within close proximity to the Proposed Development include common cord-grass *Spartina anglica*, giant hogweed *Heracleum mantegazzianum,* Indian balsam *Impatiens glandulifera*, Japanese knotweed *Reynoutria japonica*, Rhododendron *Rhododendron ponticum*, sea-buckthorn *Hippophae rhamnoides*, Spanish bluebell *Hyacinthoides hispanica*, and three-cornered garlic *Allium triquetrum*.

**Table 4-2 Summary of non-native invasive plant species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) recorded along or adjacent to the Proposed Development .**

| Zone/Location | Species | Description |
|---|---|---|
| Zone B/Malahide Estuary | Common cord-grass *Spartina anglica* | Extensive stands of *Spartina* in the salt-marsh habitat of Malahide Estuary |
| Zone C/Donabate | Japanese knotweed *Reynoutria japonica* | In fenced off section of Donabate station |
| Zone C/Skerries | Himalayan balsam *Impatiens glandulifera* | On banks of stream adjacent to the railway line |
| Zone C/Ardgillan demesne | Rhododendron *Rhododendron ponticum* | In understory of woodland adjacent to railway line |
| Zone C/Ardgillan demesne | Himalayan balsam *Impatiens glandulifera* | Stand in woodland adjacent to railway line |
| Zone C/Skerries | Himalayan balsam *Impatiens glandulifera* | Stand located in a bank adjacent to the Mill Stream |
| Zone C/Ardgillan demesne | Japanese knotweed *Reynoutria japonica* | Stands in woodland adjacent to railway line |
| Zone C/Delvin Bridge | Himalayan balsam *Impatiens glandulifera* | Three stands covering the bank east and west of the railway line |
| Zone D/Gormanston | Spanish bluebell *Hyacinthoides hispanica* | In a planted area adjacent to Gormanston railway station |
| Zone D/Laytown | Common cord-grass *Spartina anglica* | Present in River Nanny Estuary |
| Zone E/Drogheda | Japanese knotweed *Reynoutria japonica* | In area adjacent to Drogheda MacBride train station car park |

#### *4.3.2.1 Otter*

Otter *Lutra lutra*, and their breeding and resting places, are protected under the Wildlife Acts. Otter are also listed on Annex II and Annex IV of the EU Habitats Directive and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) (as amended). The desk study returned 76 records for otter in the wider Proposed Development (i.e. Grid Squares O06, O07, O08, O14, O15, O16, O17, O18, O23, O24, and O26) and are listed in Appendix 1.2.

All of these records are located along watercourses within the area, including: the River Boyne, the River Nanny, the River Matt, Inner Rogerstown Estuary, Broadmeadow River and the inner Malahide Estuary, Baldoyle, the Tolka River and Dublin Bay, all of which have hydrological connections to the Proposed Development.

Otter surveys were carried out at watercourses that the existing railway line crosses over (i.e., the Tolka River by the R131 at Fairview Park, Mayne River south of the Moyne road, Malahide Estuary, Rogerstown Estuary, River Matt at Balbriggan viaduct, River Delvin at Delvin Bridge, Mosney River at Mosney beach, and the River Nanny at Laytown), with suitable accessible habitat 150m upstream and downstream from the railway line also surveyed. No holts were identified at any of the surveyed locations. An otter couch was identified *c*. 75m upstream of the railway line at Laytown Estuary along the transitional body of the River Nanny. An otter print was identified in Mosney, on the southern bank of the Mosney River, located *c*. 77m downstream of the railway line, and a potential slide was identified in Rogerstown Estuary *c*. 20m east of the railway line, where a drainage ditch outflows into the north of the estuary. No other signs of otter were identified within the ZoI of the Proposed Development.

Two trail cameras were deployed for a period of four weeks between August and September 2023 on either side of the railway by the sluice river gate on the River Turvey/Pill in the Malahide Estuary, to determine if the local otter population were crossing over the railway line to travel between the River and the Estuary. Analysis of the cameras determined that otters were not using the railway to cross over at the time of deployment.

Otter are known to utilise the watercourses crossed by the Proposed Development, including; Liffey Estuary Upper, the Tolka River, Grand Canal, Dublin Port (Scott Cawley Ltd., 2022), Malahide Estuary (Broadmeadow Way Project, An Bord Pleanála Reference number: 304624), River Nanny and the River Boyne (Bailey & Rochford, 2006). It is considered likely that otter continue to utilise these watercourses and their tributaries within the catchment for breeding, foraging and commuting activities.

In an Irish context, the conservation concern of otter is 'Least Concern' (Marnell *et al,.* 2019) due to population recoveries since 2009. However, otter remains 'Near Threatened' at a European and Global context, as per the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Roos *et al.,* 2021).

The River Boyne and River Blackwater SAC is the closest European site designated for otter, located *c.* 150m north of the Proposed Development. The Proposed Development is located upstream and within the ZoI of this European site, and as such otter populations present on the River Boyne in the vicinity of the Proposed Development are considered to be associated with the QI population of the River Boyne and River Blackwater SAC.

### 4.3.3 Marine Mammals

There were no dedicated marine mammal surveys carried out at part of the assessment due to the Proposed Development being located inland. However, a watching brief was maintained during all vantage point wintering bird surveys. The desk study returned a number of records for marine mammals in the vicinity of the Proposed Development, all of which are included in Appendix 1.2. All of these records were located offshore or within the estuaries along the eastern coastline.

Harbour porpoise *Phocoena phocoenca* bottlenose dolphin *Tursiops truncates*, grey seal *Halichoerus grypus*, harbour/common seal *Phoca vitulina* are all listed on Annex II of the Habitats Directive and are therefore the only species relevant to this assessment.

Harbour seal, grey seal, and harbour porpoise are known to be present in Dublin Bay, and along the eastern coastline. These species are all protected under the Wildlife Acts. Harbour porpoise is a QI species designated as part of Rockabill to Dalkey Island SAC located approximately 3km east of the Proposed Development. The nearest European site for which harbour seal, grey seal have been designated is Lambay Island SAC located *c*. 7.4km east of the Proposed Development, of which harbour porpoise is a QI species. Harbour porpoise is also a QI species recently included as a QI for the Codling Fault Zone SAC, located *c*. 37km east of the Proposed Development.

A number of additional protected marine mammals are known to occur within Dublin Bay and off the eastern coast downstream of the Proposed Development, including:

- Common Dolphin *Delphinus delphis*;
- Minke Whale *Balaenoptera acutorostrata*;
- Fin whale *Balaenoptera physalus*;
- White-beaked Dolphin *Lagenorhynchus albirostris*;
- Bottlenose Dolphin *Tursiops truncatus*;
- Humpback Whale *Megaptera novaeangliae*;
- Striped Dolphin *Stenella coeruleoalba*; and
- Risso's Dolphin *Grampus griseus*.

These cetacean species are all protected under the Wildlife Acts and Habitats Directive (see Appendix 1.2). Bottlenose dolphin is common to Irish coastlines, particularly the west coast, throughout the year and are infrequently recorded within Dublin Bay. There are 10 SACs designated for bottlenose dolphin, most of which are located along the west and south coast, and are therefore well outside the ZoI of the Proposed Development. This species is protected under Annex II; Annex IV of the Habitats Directive and the Wildlife Acts.

Common dolphin and Risso's dolphin, white-beaked dolphin, striped dolphin, fin whale, minke whale, and humpback whale are species listed on Annex IV of the Habitat Directive and are not listed as Qualifying Interests for any European sites, and therefore are not discussed further.

### 4.3.4 Birds

The desktop study found a total of 46 birds listed as Special Conservation Interest (SCIs) associated of the nearby European sites illustrated in Appendix 1.1 and also listed in Table 4-3 of this report.

The desktop study also identified an additional 78 bird species listed as SCIs of other European Sites more than 15km from the Proposed Development and/or are listed as: Birds Directive Annex I species; Amber/Red Birds of Conservation Concern in Ireland. The majority of wintering birds identified in the desk-based review are typically found in coastal, estuarine and intertidal habitats in the Malahide, Rogerstown, and River Nanny Estuaries.

Light-bellied Brent goose *Branta bernicla hrota* and wintering waders regularly use Dublin's amenity parks and sports grounds for foraging. There are multiple known Brent goose feeding sites located near the existing railway line and Proposed Development area, including Fairview Park, Clontarf Golf Club, St. Annes Park, Donaghmede Park, Malahide Demesne, and Beaverstown Golf Club (Scott Cawley Ltd., 2017).

Whilst this study covers suitable feeding sites in Dublin, there are a number of other areas with suitable feeding habitat for Brent Geese north of Dublin. Potential suitable habitat sites in close proximity to the Proposed Development area include Skerries Golf Club, GAA pitches in Balbriggan, Gormanston Camp, McBride Pitch,and Putt in Drogheda and Caves Strand in Malahide (adjacent to the proposed Construction Compound location in Caves Strand). Brent goose is an SCI species of Malahide Estuary SPA, Rogerstown Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA, Dundalk Bay SPA, The Murrough SPA and Baldoyle Bay SPA. Greylag goose *Anser anser*, has similar habitat preferences as Brent goose, and is a SCI species for Rogerstown Estuary SPA, Lambay Island SPA, Stabannan-Braganstown SPA, The Murrough SPA, and Dundalk Bay SPA.

**Table 4-3. Desktop results of SCI bird species associated with European sites**

| Bird species | Bird species |
|---|---|
| Arctic Tern Sterna paradisaea | Grey Plover Pluvialis squatarola |
| Bar-tailed Godwit Limosa lapponica | Greylag Goose Anser anser |
| Black-headed Gull Chroicocephalus ridibundus | Herring Gull Larus argentatus |
| Kittiwake Rissa tridactyla | Lesser Black-backed Gull Larus fuscus |
| Black-tailed Godwit Limosa limosa | Little Tern Sternula albifrons |
| Light-bellied Brent Goose Branta bernicla hrota | Merlin Falco columbarius |
| Goldeneye Bucephala clangula | Fulmar Fulmarus glacialis |
| Common Guillemot Uria aalge | Lapwing Vanellus vanellus |
| Kingfisher Alcedo atthis | Pintail Anas acuta |
| Redshank Tringa totanus | Shoveler Anas clypeata |
| Shelduck Tadorna tadorna | Peregrine Falcon Falco peregrinus |
| Common Tern Sterna hirundo | Purple Sandpiper Calidris maritima |
| Dunlin Calidris alpina | Razorbill Alca torda |
| Curlew Numenius arquata | Knot Calidris canutus |
| Oystercatcher Haematopus ostralegus | Red-breasted Merganser Mergus serrator |
| Teal Anas crecca | Ringed Plover Charadrius hiaticula |
| Golden Plover Pluvialis apricaria | Roseate Tern Sterna dougallii |
| Shag *Phalacrocorax aristotelis* | Turnstone *Arenaria interpres* |
| Cormorant *Phalacrocorax carbo* | Sanderling *Calidris alba* |
| Great Crested Grebe *Podiceps cristatus* | Common scoter *Melanitta nigra* |
| Red-throated diver *Gavia stellata* | Manx shearwater Puffinus puffinus |
| Great-northern diver *Gavia immer* | Little gull *Larus minutus* |
| Great black-backed gull *Larus marinus* | Puffin *Fratercula artica* |

#### *4.3.4.1 Breeding birds*

Kingfisher *Alcedo atthis* reside within the River Boyne corridor (Cummins *et al*., 2010), with records of this species returned from the NBDC database from 2017 in the O07 10km Grid Square, which covers an area on the outskirts of the existing railway line in Drogheda.

This Birds Directive Annex I species is associated with watercourses throughout Ireland, and nests in sandy banks over and in the vicinity of its river habitat. The closest European site for which Kingfisher is an SCI species is the River Boyne and River Blackwater SPA, located *c.* 3.9km west of the Proposed Development area.

There are desktop records of the raptor species peregrine falcon *Falco peregrinus* and merlin *Falco columbarius,* both of which are listed on Annex I of the Birds Directive.

Peregrine falcon was also recorded during the wintering and breeding bird surveys within the vicinity (either flying over or hunting in lands adjacent).

Both species are associated with a range of habitats, with peregrine falcon tending to nest in rocky sites such as quarries, and merlin nesting in young coniferous forestry. There are numerous quarries across the Proposed Development, ranging from active to disused, which may provide nesting habitat for these species.

The closest European site for which merlin and peregrine are SCI species is the Wicklow Mountains SPA, located *c*. 14km south of the Proposed Development area. Peregrine have foraging ranges of up to 6km (Hardey *et al*., 2013), but will largely stay within 2km of their eyrie. For merlin, the core foraging range from a nest site during breeding season is within 5km (SNH, 2016). Therefore, it is unlikely merlin and peregrine populations utilising the lands within or in the vicinity of the Proposed Development are associated with the Wicklow Mountains SPA populations, due to the distance between these European sites and the Proposed Development and are not discussed further. Mapped results from breeding bird surveys are illustrated on Figure 5.

#### *4.3.4.2 Wintering birds*

Wintering bird vantage point surveys were carried out at five separate locations along or adjacent to the Proposed Development, focusing on the estuaries along the existing rail corridor, and other areas of suitable habitat (described in Section 3.4.1.4, across two seasons (2021 – 2022, and 2022 – 2023). Additional surveys at Construction Compounds and substation compounds were undertaken in September 2023 – March 2024. Two additional Construction Compounds at Malahide by Caves Strand and Bisset Strand to accommodate the Malahide turnback design change, which was made in response to significant feedback following public consultation no. 2. Due to the timing of when these Construction Compound were added, it was not possible to complete wintering bird surveys in these locations. However, this is not considered to be a limitation to the assessment as a habitat survey was undertaken in these areas, and the proposed Construction Compound locations at Caves Strand and Bissett's Strand were not suitable for foraging and/or roosting wintering birds, due to being comprised of overgrown grassland and scrub.

A full table of the results and summaries of activities is detailed in Appendix 1.3 and illustrated in Figure 6. A summary for each species across the whole scheme is provided below. In respect of the wintering birds recorded across the various surveys, Appendix 1.3 also provides a comparison to the recorded threshold of international and national populations.

##### *4.3.4.2.1 Bar-tailed godwit*

This species was generally observed foraging in the estuaries, and occasionally flying over the railway line to suitable foraging grounds adjacent to the railway line. Peak count of bar-tailed godwit was at Rogerstown Estuary, across both seasons with 34-36 birds observed foraging in the estuary. 3 of 7 (43%) flights of this species over the railway line across both seasons and all survey sites were within 0-10m, i.e. within the collision risk zone. This species was not observed at Gormanston or Balbriggan. Bar-tailed godwit is an SCI species for Baldoyle Bay SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, and the South Dublin Bay and River Tolka Estuary SPA.

##### *4.3.4.2.2 Black-headed gull*

Black-headed gulls were observed at all survey locations across both seasons, with a peak count of 650 foraging in grassland at Gormanston camp. This species was also observed flying at height on all surveys and foraging within the estuaries.

Out of 675 records, 262 (39%) of all flight lines observed across the two seasons and all survey sites, were within the 0-10m flight zone. Black-headed gull is an SCI species of Dundalk Bay SPA, North Bull Island SPA, North-West Irish Sea SPA, South Dublin Bay and River Tolka Estuary SPA, Seas Off Wexford cSPA, and The Murrough SPA.

*4.3.4.2.3 Black-tailed godwit*

Black-tailed godwit was either observed foraging within the estuaries, flying over the railway line, or foraging in grasslands adjacent to the railway line. This species was not observed in Balbriggan. A peak count of 450 individuals loafing was recorded in Rogerstown Estuary in March 2022. Large flock numbers were also observed in Malahide Estuary on multiple occasions across both seasons. Out of 146 records, 55 (37%) of all flight lines observed across the two seasons and all survey sites, were within the 0-10m flight zone. Black-tailed godwit is an SCI species of the Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, and Rogerstown Estuary SPA.

*4.3.4.2.4 Light-bellied brent goose*

Brent goose was observed at all survey sites, with a peak count of 564 on agricultural grassland north of Rogerstown Estuary. Generally, this species was observed foraging within the estuaries, and within agricultural grasslands across the Proposed Development. Out of 286 records, 144 (50%) of flight lines observed across the two seasons and all survey sites, were within the 0-10m flight zone. Light-bellied brent goose is an SCI species for Baldoyle Bay SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, Rogerstown Estuary SPA, Skerries Islands SPA, South Dublin Bay and River Tolka Estuary SPA and The Murrough SPA.

*4.3.4.2.5 Common gull*

Common gull was mostly observed flying over the railway line or survey areas across both seasons. A peak count of 38 foraging birds were recorded in GAA pitches in Laytown in November 2022. Out of 106 records, 22 (20%) of flight lines observed across the two seasons and all survey sites, were within the 0-10m flight zone. Common gull is an SCI species for Dundalk Bay SPA, and the North-West Irish Sea SPA.

*4.3.4.2.6 Common scoter*

Common scoter was only observed during surveys at Gormanston across both seasons, swimming offshore in very high numbers. A peak flock count of 2,000 birds was recorded in February 2023, and 1,750 birds recorded in March 2022, between 2 – 400m from the shoreline. This species was not observed within or in the vicinity of the railway line, or in any fields/lands adjacent to the Proposed Development. Common scoter was also not observed flying over the line during any survey across both seasons. Common scoter is an SCI species for Dundalk Bay SPA, North-West Irish Sea SPA, and the Seas Off Wexford SPA.

*4.3.4.2.7 Common tern*

Common tern was only recorded once during surveys in September 2021, with two individuals observed flying over the railway line in the 10-20m flight zone in Malahide Estuary. As this species is a summer breeder, it is not considered to be frequent visitor during the winter period.

Common tern is a breeding SCI species of Dalkey Islands SPA, Rockabill SPA, South Dublin Bay and River Tolka Estuary SPA, North-West Irish Sea SPA, and the Seas Off Wexford SPA.

*4.3.4.2.8 Cormorant*

Cormorant was observed foraging and swimming in the estuaries and Irish Sea on multiple occasions across the two seasons and survey sites but was not observed in Balbriggan during any survey. A peak count of 43 individuals observed foraging in Malahide Estuary was recorded in December 2022. Out of 290 records, 184 (63%) of flight lines recorded across the two seasons and all survey sites, were within the 0-10m flight zone. Cormorant is an SCI species of Ireland's Eye SPA, Lambay Island SPA, and the North-West Irish Sea SPA, Saltee Islands SPA, and Seas Off Wexford SPA.

*4.3.4.2.9 Curlew*

Curlew was observed at all survey sites during both seasons, either foraging in the estuaries or grasslands adjacent to the Proposed Development or flying over the railway line. A peak count of 295 individuals observed foraging was recorded in Rogerstown Estuary.

Out of 354 records, 122 (34%) of flight lines recorded across the two seasons and all survey sites, were within the 0-10m flight zone. Curlew is an SCI species of Dundalk Bay SPA, and North Bull Island SPA.

*4.3.4.2.10 Dunlin*

Dunlin was recorded foraging at the estuaries during both seasons. A peak count of 3,000 individuals foraging was recorded in Rogerstown Estuary in January 2022, and 1,313 were recorded in December 2022 in the same location. Dunlin was not observed flying over the railway line on many occasions, however out of 31 occasions, 15 of these (48%) were within the 0-10m flight zone. The numbers of Dunlin observed in Rogerstown Estuary is significantly higher than the threshold of National Population, which is 460. Dunlin is an SCI species of Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

*4.3.4.2.11 Golden plover*

Golden plover was generally observed foraging in the estuaries and grasslands adjacent to the Proposed Development. Golden plover was only recorded on one occasion in Malahide during surveys in November 2022. A peak count of 1,160 individuals foraging was recorded in the grassland habitat in Gormanston camp in January 2022. This is greater than the threshold of National Population, which is 920. High numbers were also recorded in Rogerstown Estuary. Out of 38 records, 3 (7%) of flight lines recorded across the two seasons and all survey sites, were within the 0-10m flight zone. Golden plover is an SCI of Baldoyle Bay SAC, Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, and River Nanny Estuary and Shore SPA.

*4.3.4.2.12 Great-black backed gull*

Generally great-black backed gulls were identified flying over the estuaries and/or railway line, but not observed in great numbers. A peak count of 8 individuals roosting/loafing were recorded in Malahide Estuary in October 2021.

Out of 67, 35 (52%) of flight lines recorded across the two seasons and all survey sites, were within the 0-10m flight zone. Great-black backed gull is an SCI species for the North-West Irish Sea SPA.

*4.3.4.2.13 Great crested grebe*

Great crested grebe was observed foraging in Malahide Estuary, and swimming/loafing offshore in Laytown, and Gormanston. A peak count of 9 individuals was recorded offshore near Laytown in November 2022. Great crested grebe was not recorded flying over the Proposed Development. Great crested grebe is an SCI species of Dundalk Bay SPA, and Malahide Estuary SPA.

*4.3.4.2.14 Great northern diver*

Great northern diver was observed offshore in Laytown and Gormanston on two occasions, foraging and/or swimming in the Irish Sea, with a peak count of 8 observed in March 2022. Great northern diver was not recorded flying over the Proposed Development. Great northern diver is an SCI species of the North-West Irish Sea SPA.

*4.3.4.2.15 Grey Plover*

Grey plover was identified foraging in the estuaries and associated habitats in Rogerstown, Malahide, Laytown and Gormanston.

A peak count of 104 individuals foraging was recorded in Rogerstown Estuary in February 2023. Out of 4 flight lines over the railway recorded, none were recorded in the 0-10m flight zone. Grey plover is an SCI species of Baldoyle Bay SPA, Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

*4.3.4.2.16 Common Guillemot*

Guillemot was only recorded in Gormanston swimming offshore in the Irish Sea, with 3 individuals observed. Guillemot was not recorded flying elsewhere over the Proposed Development. Common guillemot is an SCI species of Irelands Eye SPA, Lambay Island SPA, North-West Irish Sea SPA, Seas Off Wexford SPA, and the Saltee Islands SPA.

*4.3.4.2.17 Herring gull*

Herring gull was recorded across the Proposed Development, either flying over the railway line, or loafing/foraging in the estuaries and Irish Sea. A peak count of 230 individuals flying over the railway line was observed in January 2022. Out of the 1,406 flight lines recorded, 374 (26%) were within the 0-10m flight zone. Herring gull is an SCI species of Dundalk Bay SPA, Ireland's Eye SPA, Lambay Island SPA, the North-West Irish Sea SPA, River Nanny Estuary and Shore SPA, Skerries Islands SPA, Seas Off Wexford SPA, Saltee Islands SPA, and the Murrough SPA.

*4.3.4.2.18 Knot*

Knot was recorded in Malahide, Rogerstown and Laytown Estuaries, foraging, loafing and flying between areas of suitable habitat adjacent to the railway line. A peak count of 1,650 individuals foraging was recorded in Rogerstown Estuary in January 2022. This is significantly higher than the Threshold of National population, which is 160.

Out of the 19 flight lines recorded, 5 (26%) were within the 0-10m flight zone. Knot are an SCI species of Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, River Nanny Estuary and Shore SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

*4.3.4.2.19 Lapwing*

Lapwing were recorded either foraging in the grasslands adjacent to the estuaries/railway line or flying over the railway line. A peak count of 170 individuals was recorded in agricultural fields in Laytown in November 2022. Out of 50 flight lines recorded, 6 (12%) were within the 0-10m flight zone. Lapwings are an SCI species for Boyne Estuary SPA, and Dundalk Bay SPA.

*4.3.4.2.20 Lesser Black-backed gull*

Lesser black-backed gull was recorded in low numbers in the estuaries and associated habitats across the Proposed Development, generally observed flying or loafing in the estuaries. A peak count of 7 individuals was recorded in Rogerstown Estuary in March 2022. Out of 12 flight lines recorded, 5 (42%) were within the 0-10m flight zone. Lesser black-backed gull are an SCI species of Lambay Island SPA, the North-West Irish Sea SPA, Seas Off Wexford SPA and the Saltee Islands SPA.

*4.3.4.2.21 Little gull*

Little gull was only recorded on one occasion in Rogerstown Estuary, with 28 individuals observed flying over the railway line. The only flight line recorded for this species was not within the 0-10m flight zone. Little gull is an SCI species of the North-West Irish Sea SPA.

*4.3.4.2.22 Mallard*

Mallard was generally observed foraging and loafing in the estuaries, with a peak count of 63 individuals recorded in Rogerstown Estuary in October 2021. Out of the 78 flight lines recorded, 21 (30%) were within the 0-10m flight zone. Mallard is an SCI species of Dundalk Bay SPA.

*4.3.4.2.23 Oystercatcher*

Oystercatcher was recorded across the Proposed Development, foraging in the estuaries and grassland habitats adjacent to the railway line, with a peak count of 700 observed soaring over Rogerstown Park in October 2021. This is above the threshold of national population, which is 610. Out of the 373 flight lines recorded, 256 (69%) were within the 0-10m flight zone. Oystercatcher is an SCI species of Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, River Nanny Estuary and Shore SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

*4.3.4.2.24 Pintail*

Pintail was only observed in Malahide Estuary, swimming in the estuary on two occasions. A peak count of 37 was recorded in January 2023. This is above the threshold of national population, which is 20. No flight lines were recorded for this species. Pintail is an SCI species for Malahide Estuary SPA, Dundalk Bay SPA, and North Bull Island SPA.

#### *4.3.4.2.25 Razorbill*

Razorbill was recorded on one occasion in Gormanston, with two individuals observed perched on rocks at Ben Head in January 2021. This species did not fly over the railway line. Razorbill are an SCI species of Ireland's Eye SPA, Lambay Island SPA, and the North-West Irish Sea SPA, Saltee Islands SPA and Seas off Wexford SPA.

#### *4.3.4.2.26 Red-breasted Merganser*

Red-breasted merganser was only recorded foraging and loafing in Malahide and Rogerstown Estuaries, with a peak count of 10 recorded in October 2021. Out of the 19 flight lines recorded, 13 (68%) were within the 0-10m flight zone. Red-breasted merganser is an SCI species of Dundalk Bay SPA, and Malahide Estuary SPA.

#### *4.3.4.2.27 Redshank*

Redshank was recorded across the survey areas, generally observed roosting and foraging in the estuaries, with a peak count of 120 individuals observed in Malahide Estuary in January 2023. Out of the 265 flight lines recorded, 197 (74%) were within the 0-10m flight zone. Redshank is an SCI species for Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

#### *4.3.4.2.28 Red-throated Diver*

Red-throated diver was observed foraging in the Irish Sea off Gormanston and Laytown Beach, with a peak count of 17 observed in Gormanston in January 2022. Red-throated diver is an SCI species of the North-West Irish Sea SPA, Seas Off Wexford SPA, and The Murrough SPA.

#### *4.3.4.2.29 Ringed Plover*

Ringed plover was observed in the estuaries and grasslands adjacent to the railway line, with a peak count of 150 individuals observed in Rogerstown Estuary in January 2022. Out of the 4 flight lines recorded, 2 (50%) were within the 0-10m flight zone. Ringed plover is an SCI species of Baldoyle Bay SPA, Dundalk Bay SPA, River Nanny Estuary and Shore SPA, Rogerstown Estuary SPA, and South Dublin Bay and River Tolka Estuary SPA.

#### *4.3.4.2.30 Sanderling*

Sanderling was observed at foraging at Laytown Beach and the beach at Ben Head, with a peak count of 20 recorded in Laytown in November 2022. Sanderling is an SCI species of Boyne Estuary SPA, North Bull Island SPA, River Nanny Estuary and Shore SPA, and South Dublin Bay and River Tolka Estuary SPA.

#### *4.3.4.2.31 Shag*

Shag was observed on one occasion, foraging in the Irish Sea off Gormanston, with one individual recorded. Shag is an SCI species of Lambay Island SPA, the North-West Irish Sea SPA, and Skerries Islands SPA.

*4.3.4.2.32 Shelduck*

Shelduck was only observed swimming in Rogerstown and Malahide Estuaries, with a peak count of 500 observed in Malahide in January 2021. This is above the threshold of national population, which is 100. Out of the 54 flights recorded, 18 (33%) were within the 0-10m flight zone. Shelduck is an SCI species of Baldoyle Bay SPA, Boyne Estuary SPA, Dundalk Bay SPA, Malahide Estuary SPA, North Bull Island SPA, and Rogerstown Estuary SPA.

*4.3.4.2.33 Shoveler*

Shoveler was only observed swimming and foraging in Rogerstown and Malahide Estuaries, with a peak count of 11 observed in Malahide in December 2022. Out of the 4 flights recorded, 2 (50%) were within the 0-10m flight zone. Shoveler is an SCI species of North Bull Island SPA, and Rogerstown Estuary SPA.

*4.3.4.2.34 Teal*

Teal was recorded in the estuaries, foraging and loafing, with a peak count of 285 recorded in Malahide Estuary. Out of the 95 flight lines recorded, 68 (71%) were within the 0-10m flight zone. Teal is an SCI species of Dundalk Bay SPA, North Bull Island SPA, and The Murrough SPA.

*4.3.4.2.35 Turnstone*

Turnstone was recorded in the estuaries foraging, with a peak count of 54 recorded foraging in Malahide Estuary in March 2022. Out of the 5 flight lines recorded, 3 were within the 0-10m flight zone. Turnstone is an SCI species of Boyne Estuary SPA, North Bull Island SPA, and Skerries Islands SPA.

*4.3.4.2.36 Wigeon*

Wigeon was recorded foraging and loafing in the estuaries, with a peak count of 430 recorded in Rogerstown Estuary in January 2022. Out of the 130 flight lines recorded, 28 (22%) were within the 0-10m flight zone. Wigeon are an SCI species of The Murrough SPA.

*4.3.4.2.37 Construction Compounds/Substations*

Full results and survey details can be found in Appendix A 1.3 with a brief summary for each location described under their respective headings below.

**Drogheda Compound/Substation**

During all of the wintering bird surveys between September 2023 – March 2024, no bird species were identified landing within the site. There were however a number of wintering bird species noted to be flying over the site. The vast majority of these recordings were gull species, namely, herring gull, black-headed gull and lesser black-backed gull, flying between 20 -150m high over the site, but never landing within. Other birds identified flying over the site in low numbers (i.e. one or two individuals maximum) included common gull, cormorant, and mallard. These birds were likely commuting from roosting and foraging grounds within the Boyne Estuary.

**Laytown Compound**

During the wintering bird surveys undertaken in Laytown, birds were not identified within the compound to the north of the River Nanny. A number of bird species were identified flying over the site from the adjacent wetland habitats adjacent. The species identified can be found in Appendix A A 1.3 of this AA report.

The compounds to the south of the River Nanny, comprising of short sward grassland are very suitable for wintering bird species. Wintering bird species were recorded foraging in the compound east of the railway line included black-headed gull, oystercatcher, common gull, and curlew in small flocks. No birds were noted in the compound west of the railway line. A range of species were also identified flying over the compound location, as described in Appendix A 1.3 of this AA Report.

**Gormanston Compound**

The surveys within this location did not identify any bird species utilising the lands for foraging or roosting. All these recordings were gull species, namely, herring gull, and black-headed gull, flying between 20 -150m high over the site, but never landing within. No other birds were recorded flying over or landing within the site.

**Skerries Substation/Compound**

The surveys within this location did not identify any bird species utilising the lands for foraging or roosting. The vast majority of recordings were gull species, namely, herring gull, lesser black-headed gull and black-headed gull, flying between 20 -150m high over the site, but never landing within. No other birds were recorded flying over or landing within the site. Other birds identified flying over the site included a flock of 20 brent goose and a flock of 15 curlew. Neither species landed within the site.

#### *4.3.4.3 Summary*

To summarise, flight lines of the following species were recorded within the 0-10m range, above 20% of their total flight lines across the survey areas; bar-tailed godwit, black-headed gull, black-tailed godwit, light-bellied brent goose, cormorant, curlew, dunlin, great black-backed gull, herring gull, knot, lesser black-backed gull, mallard, oystercatcher, red-breasted merganser, redshank, ringed plover , shelduck, shoveler, teal, and wigeon.

Flight lines for wintering bird surveys are presented in Figure 6.

### 4.3.5 Other Fauna

Marsh fritillary *Euphydryas aurinia* butterfly is protected through its inclusion on Annex II of the EU Habitats Directive. None of the European sites in the Proposed Development or its vicinity include this species as a QI, and the closest site where it is a QI species is Ballynafagh Lake SAC, located *c*. 36km west of the Proposed Development. The species is dependent on the presence of its host plant species, *Succisa pratensis*[12], which tends to occur in wetland, heathland and diverse semi-natural grassland habitats.

[12] Information on Marsh Fritillary ecology posted on the NPWS website Marsh Fritillary *Euphydryas aurinia* | National Parks & Wildlife Service (npws.ie)

The records retrieved from the NBDC data search of the Proposed Development are mostly broad scale, with the most recent record located on Bull Island from 2020. Due to the distance between the Proposed Development and the nearest European site designated for marsh fritillary, this species is not further considered in this assessment.

Desmoulin's whorl snail *Vertigo moulinsiana* is protected through its inclusion on Annex II of the EU Habitats Directive. The NBDC database search of the 10km grid squares returned records for this species from 1972 in the O07 10km Grid Square, which covers an area on the outskirts of the existing railway line in Drogheda. The closest European site for which Desmoulin's whorl snail is a QI species is the Rye Water Valley/Carton SAC, located *c.* 16.6km west of the Proposed Development, which is not hydrologically connected to the Proposed Development and therefore is not discussed further.

## 4.4 Hydrology

The Proposed Development areas are located within three different catchments: the Boyne Catchment, the Nanny-Delvin Catchment and the Liffey and Dublin Bay Catchment. The northern area adjacent to Drogheda drains to the Boyne catchment; the central rail line from Drogheda to Malahide marina drains to the Nanny-Devlin catchment; and from Malahide to Connelly station drains to the Liffey and Dublin Bay catchment. According to EPA data[13], several rivers, and their associated tributaries, are located within the Proposed Development. The Stagrennan River is a tributary of the Boyne and crosses under the current rail line in the Boyne catchment and ultimately discharges into the Irish Sea via the Boyne Estuary. The Betaghstown, Nanny, Mosney, Delvin, Matt, Mill stream (Skerries), Balcunnin, Palmerstown, Ballyboghil, and Turvey rivers all cross under the current rail line in the Nanny-Devlin catchment and ultimately discharge into the North-western Irish Sea. The Sluice, Mayne, Santry, and Tolka rivers all cross under the current rail line in the Liffey and Dublin Bay catchment and ultimately discharge into Dublin Bay. There is also the addition of the Royal Canal going under the current rail line in the Liffey and Dublin Bay catchment.

The EPA undertakes monitoring and reporting of the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive or WFD) status of Irish waterbodies. Good ecological status (good status) is defined in Annex V of the WFD, in terms of quality of the biological community, the hydrological characteristics and the chemical characteristics of a waterbody[14]

The WFD classification scheme in Ireland includes five status classes: high, good, moderate, poor, and bad[15]. The WFD status of a waterbody reflects the biological, chemical, and morphological conditions associated with it, and these elements together make up the ecological status of a waterbody. The WFD status of the waterbodies crossed by the Proposed Development are as follows:

- Stagrennan River – moderate status;
- Betaghstown River – poor status;
- River Nanny (Meath) – poor status;

[13] Environmental Protection Agency (2020) Data available for download at http://gis.epa.ie/GetData/Download

[14] Introduction to the EU Water Framework Directive - Environment - European Commission (europa.eu) [Accessed in September 2023, rechecked February 2024, and May 2024].

[15] Information on WFD classification categories and characterisation from the EPA website www.epa.ie/water/watmg/wfd/ [Accessed 18/04/2023, rechecked February 2024, and May 2024]

- Mosney River – poor status;
- Delvin River – poor status;
- River Matt – poor status;
- Mill Stream (Skerries) – poor status;
- Balcunnin River – poor status;
- Palmerstown River – poor status;
- Ballyboghill River – poor status;
- Turvey River – poor status;
- Sluice River – poor status;
- Mayne River – poor status;
- Santry River – poor status;
- Tolka River – poor status; and
- Royal Canal – good status.

In addition to monitoring WFD status, the EPA characterises whether waterbodies are at risk of failing to meet their environmental objectives. With the exception of the Stagrennan, Betaghstown, Balcunnin, Palmerstown, Sluice Rivers and the Royal Canal waterbodies, which are listed as currently under review, all other river waterbodies in the Proposed Development are listed as being 'at risk' of failing to meet their environmental objectives.

## 4.5 Hydrogeology

The Proposed Development is comprised of eight different WFD Groundwater Body (GWB) management units as follows:

- Drogheda (Code IE_EA_G_025);
- Bettystown (Code IE_EA_G_016);
- Duleek (Code IE_EA_G_012);
- Balbriggan (Code IE_EA_G_039);
- Balrothery (Code IE_EA_G_043);
- Lusk-Bog of the Ring (Code IE_EA_G_014);
- Waste Facility (W0009-02) (Code IE_EA_G_088);
- Swords (Code IE_EA_G_011); and
- Dublin (Code IE_EA_G_008).

With the exception of the Bettystown groundwater body, which has a poor groundwater status, all of the aforementioned groundwater bodies have a good WFD groundwater status.

Aquifer vulnerability is the term used to describe the intrinsic geological and hydrogeological characteristics which determine the ease with which a groundwater body may be contaminated by human activities. This is generally a function of the thickness and permeability of the subsoils that underlie the topsoil. Groundwater vulnerability along the current rail line ranges from 'Extreme' where bedrock is close or at the surface (i.e. OBB47 adjacent to Skerries golfclub) and to 'Low' vulnerability in areas where thick subsoil deposit is present (i.e. urban areas in southern Drogheda).

## 4.6 Soils & Geology

The landcover for the Proposed Development includes artificial, recreational, and urban fabric in urban and developed areas and along the railway corridor with agricultural areas in between.

The subsoils along the Proposed Development are comprised of recent fine and coarse grained alluvial, peatland estuarine and marine sediments associated with the rivers, estuaries, and marine locations. These overlie or are adjacent to Quaternary glacial deposits derived from the underlying bedrock with widespread glacial tills including Irish Sea till adjacent to the coast.

The underlying bedrock is variable and dominated by Carboniferous limestones and calcareous shales with older Silurian deep marine sediments (mudstones, greywacke, and conglomerates) indicated along the route from Skerries to Laytown and volcanic Ordovician basalt (andesite, tuff, slate & mudstone) expected in the area around Balbriggan.

### 4.6.1 Soil Suitability

The GSI landslide susceptibility mapping has classified the area as being of low susceptibility to landslides. However, there is a potential for soft and unstable soils associated with waterbodies and the estuary crossings at Malahide and Rogerstown.

### 4.6.2 Contaminated Land and Existing Quarries and Pits

Potential sources of contamination within the Proposed Development have been investigated and identified ranging from historic heavy industries, such as gas works and linen factories in urban areas, to a number of historical quarries, pits and brickworks on and along the Proposed Development route. There are numerous light industries within the Proposed Development which are not considered to be a significant constraint for soils and geology.

The railway itself poses a potential source for contaminated land. Landfills of interest along the Proposed Development project area include the remediated Balleally Landfill now Rogerstown Park and Milverton Waste Recovery Facility to the south of Skerries Station.

## 4.7 Air Quality

The effects of air pollution derived from anthropogenic activities is known to have negative impacts on the environment, either directly by causing vegetation die-back, or indirectly by affecting the acidity and nutrient status of soils and waters (Aherne, 2021). Governments have set limit values for a range of air pollutants in ambient air, known as Air Quality Standards (AQS).

The Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) transpose 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 Irish law.

According to the Air Quality Chapter of the EIAR[16] prepared for the Proposed Development, a desk study of the EPA air quality monitoring programmes has been undertaken. The most recent annual report at the time of the assessment, Air Quality in Ireland 2021 (EPA 2022), details the range and scope of monitoring undertaken throughout Ireland. In addition, scheme-specific baseline air quality monitoring has been conducted. The data collected has been included to provide site-specific baseline concentrations of $NO_2$ in areas which have the potential to be impacted by the Proposed Development. The Proposed Development site falls within Zones A (Dublin Conurbation), C (Cities and towns) and D (Rural Ireland) for air quality zoning.

[16] EIAR Volume 2: Chapter 12 Air Quality, DART+ Coastal North

The continuous monitoring data from EPA monitoring stations in Zone A, C and D are outlined in the Air Quality Chapter of the EIAR, which presents a five-year maximum of background pollutant concentration values for $NO_2$, $NO_x$, $PM_{2.5}$ and $PM_{10}$. The background concentrations are within the Air Quality Standards for all pollutants in Zone A, except for $NO_x$ which exceeded its Air Quality Standard for the protection of vegetation. The background concentrations are well within the air quality standards for all pollutants in Zone C and Zone D.

There is a potential impact from air quality during the Construction Phase from construction dust emissions, $PM_{10}$/$PM_{2.5}$ emissions and nuisance dust. Deposition of dust typically occurs in close proximity to the source and with TII Standard (TII, 2022) defining a maximum impact area of 200m from the dust generating activity. Dust deposition impacts on ecology can occur due to chemical or physical effects. This includes reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as acidity to soils. Often impacts will be reversible once the works are completed and dust deposition ceases. The Proposed Development will be within close proximity to the Malahide Estuary SPA, SAC, Baldoyle Bay SPA, SAC, Rogerstown Estuary SPA, SAC, and River Nanny Estuary and Shore SPA and the North-West Irish Sea SPA which are classed as highly sensitive receptors.

# 5. SCREENING ASSESSMENT

This section identifies all the potential impacts associated with the Proposed Development, examines whether there are any European sites within the ZoI of effects from the Proposed Development, and assesses whether there is any risk of the Proposed Development resulting in a significant effect on any European site, either alone or in combination with other plans or projects.

In assessing the potential for the Proposed Development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites (i.e. mitigation measures) are not taken into account as part of the Stage One Appropriate Assessment Screening appraisal.

Considering the baseline ecological environment and the extent and characteristics of the Proposed Development, the following potential impacts have been identified:

- Habitat loss and fragmentation during construction;
- Habitat degradation / effects on QI / SCI species as a result of hydrological impacts during
- construction and operation;
- Habitat degradation as a result of hydrogeological impacts during construction and
- operation;
- Habitat degradation as a result of introducing / spreading non-native invasive species during
- construction;
- Habitat degradation as a result of air quality impacts during construction and operation;
- Disturbance and displacement impacts during construction and operation; and
- Direct injury/mortality.

## 5.1 Habitat Loss and Fragmentation

The Proposed Development overlaps with five European sites: Malahide Estuary SAC, Malahide Estuary SPA, Rogerstown Estuary SAC, Rogerstown Estuary SPA, and the River Nanny Estuary and Shore SPA. However, the areas where the Proposed Development overlaps with the Malahide Estuary SAC, Malahide Estuary SPA, Rogerstown Estuary SAC, and Rogerstown Estuary SPA, do not contain, or provide a supporting role to any QI EU Annex I habitat (for the SACs), or SCI species (for the SPAs), as the works will be on the Viaducts (and associated access roadways in the case of Malahide) themselves, and not within the estuary or the associated habitats. In addition, none of the QI habitats of the SACs are located within or adjacent to the Proposed Development corridor.

However, there will be works at the Laytown Viaduct (UBB72) which will involve the installation of scaffolding at the northern and southern piers, in order to facilitate works on the Viaduct. These temporary works are within the River Nanny Estuary and Shore SPA boundary, where the existing Viaduct piers are located. The habitat within this area is shingle and gravel bank (Fossitt Code CB1), which is suitable foraging and/or roosting habitat for bird species. However, the area that will be utilised for the work is minor (*c*. 300m$^2$) in comparison to the suitable habitat in the wider estuary and surrounding lands. Wintering bird species were not observed utilising this habitat during wintering bird surveys carried out between 2021 – 2024 by Scott Cawley Ltd. In addition, this area is frequently used by IÉ for routine maintenance of the piers and the Viaduct.

A public road (Coastview Cottages road) and pedestrian bridge are also immediately adjacent, this area is constantly disturbed and not important roosting habitat for SCI species from the River Nanny Estuary and Shore SPA, or any other SPAs in the wider environment, as noted from two seasons of wintering bird surveys.

In addition, the works area is temporary and will only be in place for the duration of the works on the Laytown Viaduct (i.e., approximately 2 months, with works taking place opportunistically over that time when line possession allows) and will be reinstated following works. Therefore, there is no risk of direct habitat loss or removal of any QI habitats or habitat for SCI species from any European site arising from works at these locations.

Howth Head SAC, Ireland's Eye SAC, and Clogher Head SAC are designated for their QI terrestrial habitats, i.e., Vegetated Sea cliffs [1203], European dry heaths [4030], and perennial vegetation of stony banks [1220]. As these sites are not hydrologically connected or otherwise, to the Proposed Development and are located over 4km away, there are no pathways for potential impacts between the Proposed Development and these European sites. They are therefore not discussed further.

The 50otentiall for the loss of *ex-situ* inland feeding and/or roosting sites[17] utilised by SCI bird species as a consequence of the Proposed Development to impact on the conservation objectives of any SPA has also been assessed. Potential impacts may arise due to the direct loss of important *ex-situ* inland sites that individual SCI bird species of local SPA populations rely upon as feeding and/or roosting habitat where these sites fall within the Proposed Development boundary.

A number of overwintering SCI species from the SPAs in the vicinity of the works i.e., Malahide Estuary SPA, Rogerstown Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, North Bull Island SPA, North-West Irish Sea SPA, River Nanny Estuary And Shore SPA, Irelands Eye SPA, Lambay Island SPA, Skerries Islands SPA, The Murrough SPA, Seas Off Wexford SPA, Saltee Islands SPA, and Wicklow Head SPA use suitable habitats outside the European sites designated boundaries as *ex-situ* sites for foraging and roosting, such as amenity grasslands for Brent geese. There are a number of *ex-situ* sites in close proximity or adjacent to the Proposed Development throughout the entirety of the Proposed Development, including agricultural lands, and short sward grassland. Whilst the majority of the works to facilitate the OHLE will be confined to the existing railway corridor (which does not contain suitable habitat for SCI species), there are a number of locations outside of this area where additional land take is Proposed Development for substation compounds, Construction Compounds, and access roads to these compounds. A number of these locations are in carparks or urban areas (see Section 2.1.4 for details) and will not involve any additional land take. However, there are several locations that are proposed that are on private lands adjacent to the railway, and will involve removal of suitable wintering bird habitat (i.e., short sward grassland and agricultural grasslands). In total, approximately 13.4ha of land will be temporarily used to accommodate the Construction Compounds (ranging in duration from weeks – years). However, the majority of these locations with suitable wintering bird habitat will only be utilised for a number of weeks and up to a maximum of 5 months outside of the wintering bird season (i.e., September to March).

[17] "*Several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas ecologically connected to it [i.e., ex-situ sites]. The reliance on these habitats will vary from species to species and from site to site. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers*"

Therefore, *ex-situ* habitat loss for wintering bird species is confined to compound and substation locations that will be active for a year or more, including; CC-51800 in Drogheda, CC-44700 Laytown Station, CC-40200 Gormanston Station, CC-CC-32200 Skerries North Substation. These areas total *c.* 6.5ha. Much of the land surrounding the Proposed Development is composed of habitats suitable for foraging wetland birds, e.g., arable land, and improved agricultural grassland.

Therefore, there is an abundance of alternative suitable habitat for wintering wetland bird species in the surrounding area. The loss of the lands for the compound locations, which is 6.5ha in area, would not be significant in the context of the wider environment, given the abundance of similar habitat in the immediate and surrounding area. It is also worth noting that field parcels will change in rotation between grassland, winter crops, stubble etc., year on year, and that this would constitute "natural patterns of variation". The fact that these field parcels are constantly changing from season to season and year to year, means that wintering birds using land in the area are habituated to these changes and are accustomed to moving from field to field in order to find suitable foraging habitat. In addition, results from the wintering bird surveys in these areas undertaken between September 2023 – March 2024, noted that these areas were not being utilised by large flocks of wintering birds, with the majority of birds noted to be flying over the site. The loss of the Proposed Development would not result in population level effects on SCI bird number and would not adversely affect the integrity of SCI species from distal SPAs identified as being within the ZoI of the Proposed Development.

As the Proposed Development will not result in habitat loss or habitat fragmentation within any European site, there is no potential for any in combination effects to occur in that regard.

## 5.2 Habitat Degradation as a result of Hydrological Impacts

Surface water run-off and discharges from the Proposed Development works will drain to the existing local surface water drainage network. In the case of works located in the Liffey and Dublin Bay Catchment, i.e. works south of Malahide Viaduct, works will drain overland or via groundwater to the closest surface water feature, from where waters will be conveyed downstream to Malahide Estuary, ultimately entering the Irish Sea. In the case of works located in the Nanny-Delvin Catchment, i.e. works north of the Malahide Viaduct, works will drain overland or via groundwater to the closest surface water feature, from where waters will be conveyed downstream, and ultimately discharge into the Irish Sea via the Rogerstown, Malahide or River Nanny Estuaries, ultimately discharging into the Irish Sea via the nearest surface water feature. In the case of works located in the Boyne Catchment i.e. works around Drogheda and surrounds, works will drain overland or via groundwater to the closest surface water feature, from where waters will be conveyed downstream, and ultimately discharge into the Irish Sea via the Boyne Estuary. The potential Zone of Influence of potential effects on water quality from the Proposed Development could extend downstream of the study area, via the local surface water network. There are no foul waters associated with the Proposed Development.

The release of contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water features during the construction or operation stage of the Proposed Development, has the potential to affect water quality in the receiving aquatic environment. Due to the close proximity of surface water features to the Proposed Development, in the absence of mitigation, the associated effects of a reduction of surface water quality could potentially extend for a considerable distance downstream of the discharge point or location of the accidental pollution event.

Such an occurrence, of a sufficient magnitude, either alone or in combination with other pressures on water quality, and in the absence of mitigation could undermine the conservation objectives of the European sites in Dublin Bay, Baldoyle Bay, Malahide Estuary, Rogerstown Estuary, River Nanny Estuary, and Boyne Estuary transitional waterbodies and the Irish Sea i.e., River Boyne and River Blackwater SAC, Boyne Estuary SPA, Boyne Coast and Estuary SAC, Lambay Island SAC, River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SPA, Baldoyle Bay SAC, Baldoyle Bay SPA, Howth Head Coast SPA, Ireland's Eye SPA, Irelands Eye SAC, Lambay Island SPA, Malahide Estuary SAC, Malahide Estuary SPA, the North-West Irish Sea SPA,

North Bull Island SPA, North Dublin Bay SAC, Rockabill SPA, Rockabill to Dalkey Island SAC, Rogerstown Estuary SPA, Skerries Islands SPA, South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC, Codling Fault Zone SAC. This reduction in water quality (either alone or in combination with other pressures on water quality) could result in the degradation of sensitive habitats present within these European sites, which in turn would negatively affect the SCI bird species that rely upon these habitats as foraging and/or roosting habitat. It could also negatively affect the quantity and quality of prey available to SCI bird species. In addition, impacts on water quality, if of a sufficient magnitude and duration, could negatively affect the SCI populations for which SPAs are designated by affecting their foraging resources. As birds are mobile species, it is possible that wintering birds occurring in Dublin Bay, Baldoyle Bay, Rogerstown, Malahide, Nanny, Boyne Estuaries are not limited to these sites. Despite the distance, the recent guidance on bird foraging ranges (Woodward *et al*., 2019) suggest that some of the SCI species from other European sites along the eastern coastline may be subject to likely significant effects from the Proposed Development. Some of the SCI species listed in Table 5-1, are also listed as SCIs for other SPAs within the ZoI of the Proposed Development. Others are beyond their normal forage range and thus outside the ZoI of the Proposed Development (See Table 5-1). However, the Proposed Development is within the foraging distance of some. While it is likely that most of these SCI species from the SPA would not be subject to direct impacts arising from the Proposed Development by virtue of location and dispersal potential within coastal waters, indirect impacts arising from Habitat degradation as a result of pollution / contamination of receiving waterbodies, on SCI birds that have mixed with SCI species in closer proximity to the Proposed Development remain. For this reason, populations of SCI bird species of the following SPAs may also fall within the zone of influence of effects of hydrological impacts: Dundalk Bay SPA, Dalkey Islands SPA, Murrough SPA, Stabannan-Braganstown SPA, The Murrough SPA, Seas off Wexford cSPA, Wicklow Head SPA and the Saltee Islands SPA.

A number of offshore SACs have been updated in March 2024 to include Annex II QI species, harbour porpoise, and common bottlenose dolphin[18]. Some of the European sites in the vicinity of the Proposed Development support harbour porpoise (as discussed in Section 5.3.4) i.e., Lambay Island SAC, Rockabill Island to Dalkey Island SAC, and the Codling Fault Zone SAC, and are included within the assessment of potential hydrological impacts above due to being less then 8km from the boundary of the Proposed Development. It is recognised that cetaceans have very wide foraging and dispersal ranges (Robinson *et at*., 2012), and therefore these QI species from SACs around the entire Irish Coastline and beyond, could overlap with populations in Dublin Bay and the Irish Sea due to wide foraging ranges. However; there will be no works within any watercourse or waterbody associated with the Proposed Development, and by virtue of coastal dilution, only a localised percentage of the marine environment would be impacted temporarily.

[18] https://iwdg.ie/npws-new-protection-measures/

Furthermore, the Proposed Development will not restrict access to suitable habitat within the species range, result in any disturbance to these species, or affect habitat condition in critical areas used by the species. Therefore, European sites supporting cetaceans that are not located off the eastern coastline are unlikely to be impacted by the hydrological impacts from the Proposed Development, and Lambay Island SAC, Rockbill to Dalkey Island SAC, and Codling Fault Zone SAC, are the only European sites that fall within the ZoI of effects of hydrological impacts from the Proposed Development.

The release of contaminated waters (via the groundwater or surface water) and / or a spillage or pollution event during construction, or operation, also has the potential to affect QI mammal species that commute or forage within the watercourses intersected by the Proposed Development. It could also negatively affect the quantity and quality of prey available to QI populations.

River lamprey *Lampetra fluviatilis* and salmon *Salmo salar*, could also be negatively impacted by a reduction in water quality. A hydrological connection exists between the Proposed Development and the River Boyne and River Blackwater SAC. It is considered possible that otter, river lamprey, and salmon present within the ZoI of the Proposed Development may be connected with the River Boyne and River Blackwater SAC population, and as such these pollution/contamination impacts could occur to such a degree that the conservation objectives of River Boyne and River Blackwater SAC are undermined.

As the Proposed Development has the potential to result in habitat degradation and effects on of the QIs/SCIs of European sites (i.e. River Boyne and River Blackwater SAC, Boyne Estuary SPA, Boyne Coast and Estuary SAC, River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SPA, Baldoyle Bay SAC, Baldoyle Bay SPA, Howth Head Coast SPA, Ireland's Eye SPA, Lambay Island SPA, Malahide Estuary SAC, Malahide Estuary SPA, the North-West Irish Sea SPA, North Bull Island SPA, North Dublin Bay SAC, Lambay Island SAC, Codling Fault Zone SAC, Rockabill SPA, Rockabill to Dalkey Island SAC, Rogerstown Estuary SAC, Rogerstown Estuary SPA, Skerries Islands SPA, South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC, The Murrough SPA, Dundalk Bay SPA, Dalkey Islands SPA, Seas Off Wexford SPA, Saltee Islands SPA, Wicklow Head SPA and Stabannan-Braganstown SPA as the result of hydrological impacts, there is the potential for in combination effects to occur. All other European sites are not considered to be within the ZoI of the Proposed Development works, and therefore are not at risk of any hydrological impacts as a result of the Proposed Development works.

**Table 5-1 Special Conservation Interest for recently published "Seas off Wexford" cSPA and foraging distances**

| Special Conservation Interest | Forage Distance (and confidence level)* | Within ZoI of Proposed Development |
|---|---|---|
| [A001] Red-throated Diver *Gavia stellata* | 9km (low confidence) | No, based on foraging distance |
| [A009] Fulmar *Fulmarus glacialis* | 1200km (good confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development. |

| Special Conservation Interest | Forage Distance (and confidence level)* | Within ZoI of Proposed Development |
|---|---|---|
| [A013] Manx Shearwater *Puffinus puffinus* | 2365.5km (Moderate confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development. |
| [A016] Gannet *Morus bassanus* | 509.4km (high confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development. |
| [A017] Cormorant *Phalacrocorax carbo* | 33.9km (moderate confidence) | No, based on foraging distance |
| [A018] Shag *Phalacrocorax aristotelis* | 23.7km (high confidence) | No, based on foraging distance |
| [A065] Common Scoter *Melanitta nigra* | None given in 2019 guidance and none explicitly quoted in any SPA for which this sea duck is listed as an SCI | Cannot be ruled out that intermixing of foraging ducks in distal coastal SPAs |
| [A176] Mediterranean Gull *Larus melanocephalus* | 20km (Uncertain) | No, based on foraging distance |
| [A179] Black-headed Gull *Chroicocephalus ridibundus* | 18.5km (Uncertain) | No, based on foraging distance |
| [A183] Lesser Black-backed Gull *Larus fuscus* | 236km (High confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development |
| [A184] Herring Gull *Larus argentatus* | 85.6km (good confidence) | Cannot be ruled out that SCI population do not travel (edge of forage range within Proposed Development ZOI) and intermix with populations from SPAs within originally identified ZOI of Proposed Development |
| [A188] Kittiwake Rissa tridactyla | None given in 2019 guidance. However, Saltee Islands SPA Conservation Document notes:<br>Maximum forage range 200km, mean maximum 65.81km and mean as 24.45km | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development |

| Special Conservation Interest | Forage Distance (and confidence level)* | Within ZoI of Proposed Development |
|---|---|---|
| [A191] Sandwich Tern *Sterna sandvicensis* | 57.5km (moderate confidence) | No, based on foraging distance |
| [A192] Roseate Tern *Sterna dougallii* | 23.2km (moderate confidence) | No, based on foraging distance |
| [A193] Common Tern *Sterna hirundo* | 26.9km (good confidence) | No, based on foraging distance |
| [A194] Arctic Tern *Sterna paradisaea* | 40.5km (good confidence) | No, based on foraging distance |
| [A195] Little Tern *Sterna albifrons* | 5km (moderate confidence) | No, based on foraging distance |
| [A199] Guillemot *Uria aalge* | 95.2km (highest confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development |
| [A200] Razorbill *Alca torda* | 122.2km (good confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development |
| [A204] Puffin *Fratercula arctica* | 265.4km (good confidence) | Cannot be ruled out that SCI population do not travel and intermix with populations from SPAs within originally identified ZOI of Proposed Development |

## 5.3 Habitat Degradation as a result of Hydrogeological Impacts

The Proposed Development lies within several groundwater bodies (GWB), outlined in section 4.5. The European sites within groundwater bodies that are designated for groundwater dependant habitats and/or species are:

- River Boyne and River Blackwater SAC (Drogheda GWB);
- North Dublin Bay SAC (Dublin GWB);
- Rye Water Valley/Carton SAC (Dublin GWB); and,
- Mouds Bog SAC (Dublin GWB).

The River Boyne and River Blackwater SAC has two groundwater-dependent qualifying interest habitats: Annex I habitat Alkaline fens and a priority Annex I habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae). Both of these habitats are located *c.* 4.7km upstream of the Proposed Development works (NPWS, 2021). Based on the information published by Geological Survey Ireland (GSI) on the Drogheda GWB[19], 'Groundwater flow in the aquifer will be from the main recharges areas, i.e., the areas of thin subsoil,

[19] https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DroghedaGWB.pdf

in the west and north towards the discharge areas i.e., River Boyne and the coast.' As the Proposed Development lie down gradient of the main waterbody of the River Boyne and River Blackwater SAC and these groundwater-dependent QI habitats, and as the Proposed Development will be taking place on the Boyne Viaduct itself and within the Drogheda MacBride Station, it cannot influence groundwater conditions in the European site.

The North Dublin Bay SAC (the Annex I habitat humid dune slacks), Rye Water Valley/Carton SAC (the priority Annex I habitat Petrifying springs and the two whorl snail species), and Mouds Bog SAC (the priority Annex I habitat Active raised bogs) are dependent upon the existing condition and functioning of the groundwater regime. Based on information published by Geological Survey Ireland (GSI) on the Dublin GWB[20], 'The general groundwater flow direction in this aquifer is towards the coast and also towards the River Liffey and Dublin City'. As the Proposed Development works lie down gradient of the SACs, and are temporary and localised in nature, the Proposed Development cannot influence groundwater conditions in the European site.

Therefore, there is no possibility of the Proposed Development undermining the conservation objectives of any of the Qualifying Interests or Special Conservation Interests of any European sites, either alone or in combination with any other pans or projects, as a result of hydrogeological effects.

## 5.4 Habitat degradation as a result of Introducing/spreading Non-Native Invasive Species

Five non-native invasive plant species, listed on the Third Schedule of the EU (Birds and Natural Habitats) Regulations 2011 (S.I. No 477 of 2011) (as amended) were present in 11 locations within or in close proximity to the Proposed Development. In addition, records of invasive species in the vicinity of the Proposed Development were returned from the desk study.

During construction and/or routine maintenance/management work, four terrestrial species (i.e., Himalayan balsam, rhododendron, Spanish bluebell, and Japanese knotweed) could potentially spread or be introduced to terrestrial habitats located within downstream European sites via surface water features.

Himalayan balsam and Japanese knotweed are both found in a wide variety of habitats including riverbanks, roadsides, and urban areas such as waste ground and railways; the former species spreading by seed dispersal, the latter vegetatively (NBDC, 2013b; NBDC, 2013c). Rhododendron is also found in a wide variety of habitats including bog, grassland, heath, woodland, and artificial habitats. It generally invades disturbed areas as seedlings have difficulty establishing in areas covered by native plants (Hulme, 2009). Spanish bluebell's seed freely and often hybridize through insect pollination. The Spanish bluebell has hybridised frequently with the native common bluebell and the resulting hybrids are regarded as invasive. Himalayan Balsam, rhododendron and Japanese knotweed are all classified as high impact invasive species, while Spanish bluebell is classified as a low-impact invasive species.

The only estuarine species listed on the Third Schedule recorded within the ZoI of the Proposed Development was common cord-grass, recorded from estuaries adjacent to the Proposed Development. This species spreads through the establishment of seedlings or plant fragments on open mudflats, which then expand into tussocks by radial clonal growth (Hammond & Cooper, 2002).

[20] https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DublinGWB.pdf

Spreading tussocks then fuse to form clumps that can expand into extensive meadows (Hammond & Cooper, 2002). This is a well-established invasive species in these areas and is classified as a high impact invasive species.

The introduction and/or spread of these invasive species to downstream European sites could potentially result in the degradation of existing habitats present, in particular coastal habitats not permanently or regularly inundated by seawater. These species may outcompete other native species present, negatively impacting the species composition, diversity and abundance and the physical structural integrity of the habitat. This in turn could undermine the conservation objectives of these European sites.

Therefore, in the absence of mitigation there is potential for invasive species to spread or be introduced during construction and operation to terrestrial habitat areas in European sites downstream in Dublin Bay (i.e. North Dublin Bay SAC, South Dublin Bay SAC, North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA), Baldoyle Bay (i.e. Baldoyle Bay SAC and Baldoyle Bay SPA), Malahide Estuary (i.e. Malahide Estuary SAC and Malahide Estuary SPA), Rogerstown Estuary (i.e. Rogerstown Estuary SAC and Rogerstown Estuary SPA), Nanny Estuary (i.e. River Nanny Estuary and Shore SPA), the River Boyne (i.e. River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Boyne Estuary SPA), and the North-West Irish Sea SPA due to its proximity to the Proposed Development. These in turn may result in the degradation of the existing habitats and therefore undermine the conservation objectives of these European sites.

As the Proposed Development has the potential to result in habitat degradation of the QIs / SCIs of European sites as the result of the spread of invasive species, there is the potential for in combination effects to occur in association with other activities / plans / projects.

## 5.5 Habitat Degradation as a result of Air Quality Impacts

A reduction in air quality within the immediate vicinity of the construction works may occur as a consequence of dust deposition associated with construction activities. This includes reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as acidity to soils. Whilst potential impacts on vegetation and habitats arising from air pollution associated with a project of this nature is generally greatest within *c.* 50-100m; impacts may also occur beyond this to a maximum distance of *c.* 200m from the road development and haul routes construction vehicles (NRA, 2011; Natural England, 2016; Bignal *et al*., 2004).

The risk of dust impacts as a result of the Proposed Development are summarised in Chapter 12 Air Quality of the EIAR as part of this application for a railway order. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring. In accordance with the EPA Guidelines (EPA 2022) the likely effects associated with the Construction Phase dust emissions pre-mitigation are overall negative, moderate, and short-term. Therefore, European sites within 200m of the Proposed Development have the potential to be impacted by dust during the construction phase of the development, i.e., Malahide Estuary SAC, Rogerstown Estuary SAC, Baldoyle Bay SAC, River Boyne and River Blackwater SAC.

The impact of the Proposed Development on the nearby ecologically sensitive areas during the Construction Phase using the REM tool is outlined in Table 5-2.

The annual mean NOx concentration has been compared to the critical level of 30 µg/m3 at each of the designated habitat sites in proximity to affected routes, i.e. within 200m of road links and construction traffic routes. Two European sites come within this criteria, North Bull Island SPA at Laytown Road West, and North Dublin Bay SAC at Mill Road. The predicted concentration of mean annual NOx at all sections modelled comply with the critical level for NOx. All sites are below the lower critical load for the designated habitat site.

**Table 5-2 Impacts at Key Ecological Receptors for the Construction Phase Simple Assessment ($NO_x$ Annual Mean Concentration)**

| Ecological Receptor | Receptor Location (ITM) | Do Nothing (µg/m$^3$) | Distance from road beyond which concentration is below critical level (30 µg/m$^3$) (m) | Do Something (µg/m$^3$) | Distance from road beyond which concentration is below critical level (30 µg/m$^3$) (m) | Impact (DS – DN) (µg/m$^3$) | Change as a percentage of critical level (30 µg/m$^3$) (%) |
|---|---|---|---|---|---|---|---|
| North Bull Island SPA - R150 Laytown Road West | 713828, 770785 | 27.84 | n/a | 29.38 | n/a | 1.54 | 5.13% |
| North Dublin Bay SAC -Mill Road | 712156, 775725 | 25.79 | n/a | 27.2 | n/a | 1.41 | 4.70% |

During the operational phase of the Proposed Development, the bulk of the rolling stock using the railway will change from diesel units to electric rail units. The Proposed Development is therefore considered beneficial, as reductions in emissions of all pollutants modelled will occur. In accordance with the EPA Guidelines (EPA 2022) the likely effects associated with the Operational Phase rail traffic emissions pre-mitigation are overall positive, slight and long-term.

## 5.6 Disturbance and Displacement Impacts

A temporary increase in noise, vibration, lighting and / or human activity levels during the construction or operation of the Proposed Development could result in the disturbance to and/or displacement of fauna species present within the vicinity of the Proposed Development.

### 5.6.1 Construction

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the Proposed Development works. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m[21]. The River Boyne is *c*. 150m from the Proposed Development boundary and therefore just outside the potential disturbance ZoI for otter.

[21] This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (2006) and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) (2005) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

The works will be confined to the deck of the Boyne Viaduct south of the River Boyne, and not over the River itself, with the vast amount of works in Drogheda occurring in the existing station area. However, the Stagrennan River, a tributary of the River Boyne, flows under the existing railway line and Proposed Development, and is within 150m of the River Boyne or its tributaries, and therefore within the potential disturbance ZoI for otter, a QI species of the River Boyne and River Blackwater SAC. Noisy works associated with the Proposed Development could include piling works close to watercourses known to support otter.

These potential impacts could occur to such a degree that the conservation objectives of the River Boyne and River Blackwater SAC are undermined. Whilst most of the works are planned during the day, due to the restrictions with working on an active railway line, some works will be required at night-time. An increase in noise levels and lighting in close proximity to watercourses used by otter could result in disturbance impacting otter movements. It is predicted that the disturbance could affect the local population over the short term, but that the local otter population could utilise other unaffected suitable habitat along the watercourse during this temporary period. This is not uncommon among otter who can maintain a number of resting sites within their territory[22], however, otters could establish holts or resting places in the vicinity of the railway line, and therefore, there is potential for the Proposed Development to result in significant effects which could have implications for the conservation objectives of River Boyne and River Blackwater SAC as a result of disturbance/displacement impacts on otter during construction.

For birds, disturbance effects would not be expected to extend beyond a distance of *c.*300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance[23].

There are five European sites within the ZoI of the Proposed Development in relation to disturbance to bird species, including; Malahide Estuary SPA, Rogerstown Estuary SPA, River Nanny Estuary and Shore SPA, North-West Irish Sea SPA and the South Dublin Bay and River Tolka Estuary SPA, all of which are designated for overwintering bird species.

The Construction Compound location in Malahide at Caves Strand (CC-16100) does not contain suitable wintering bird habitat due to the sward height and lack of management. Immediately adjacent to this site on the eastern side, however there is a short sward amenity grassland that is suitable for brent geese and is a known area of high significance for the species (Scott Cawley Ltd., 2017). Construction noise generated from works within the Compound could disturb foraging and/or roosting brent geese utilising this grassland during the winter months. Four Construction Compounds/Substation locations were also determined to have potential wintering bird habitat, and included Drogheda Substation/Construction Compound, Laytown Construction Compound, Skerries Substation/Construction Compound, and Gormanston Construction Compound.

[22] Species Profiles: Otter. Vincent Wildlife Trust (VWT). Accessed here: https://www.vincentwildlife.ie/species/otter

[23] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. *Wildfowl* (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

These four Construction Compounds, whilst they contain suitable wintering bird habitat, surveys in these locations determined they are not important foraging and/or roosting sites, as the majority of species were identified flying over the proposed Compound locations. Utility works are proposed in an area south of the Laytown Construction Compound (CC-44390E), and will include minor, temporary works to this area. Surveys in this area identified wintering bird species foraging on the amenity grassland habitat present, and therefore works here could result in disturbance and displacement of SCI bird species.

There are a number of SPAs located in relatively close proximity to the Proposed Development and/or Construction Compounds which are designated for SCI species that are known to forage and / or roost at inland *ex-situ* sites (as described in Section 5.1) such as amenity grassland playing pitches and other short sward grassland, i.e. Malahide Estuary SPA, Rogerstown Estuary SPA, Lambay Island SPA, Skerries Islands SPA, Boyne Estuary SPA, Dalkey Island SPA, Dundalk Bay SPA, Ireland's Eye SPA,

The Murrough SPA, Baldoyle Bay SPA, North Bull Island SPA, Dundalk Bay SPA, Stabannan-Braganstown SPA, South Dublin Bay and River Tolka Estuary SPA, River Nanny Estuary and Shore SPA, the North-West Irish Sea SPA. These species include light-bellied Brent goose, curlew, grey plover, black-tailed godwit, bar-tailed godwit, oystercatcher, lapwing, golden plover, ringed plover, grey plover, greylag geese, blacked-headed gull, herring gull and lesser black-backed gull. Suitable inland foraging / roosting sites, which these bird species utilise, are located within the potential ZoI of the Proposed Development. Current understanding of construction related noise disturbance to wintering waterbirds is based on the research presented in Cutts *et al.,* (2009) and Wright *et al.,* (2010). In terms of construction noise, levels below 50dB would not be expected to result in any response from foraging or roosting birds. Noise levels between 50dB and 70dB would provoke a moderate effect/level of response from birds, i.e., birds becoming alert and some behavioural changes (e.g., reduced feeding activity), but birds would be expected to habituate to noise levels within this range. Noise levels above 70dB would likely result in birds moving out of the affected zone or leaving the site altogether. At *c.* 300m, typical noise levels associated with construction activity (BS 5228) are generally below 60dB or, in most cases, are approaching the 50dB threshold.

Chapter 14 Noise and Vibration of the EIAR, details the noise levels across the Proposed Development throughout the construction phase. At 100m all construction works are below 74dB, reducing thereafter this distance, with the bulk of the works between 50-65dB at 100m. Therefore, there is potential for the construction stage of the Proposed Development to result in disturbance / displacement impacts on SCI populations associated with European sites listed above.

Kingfisher is a SCI species of the River Boyne and River Blackwater SPA, located *c.* 3.9km west of the Proposed Development. Kingfisher breeding territories for the SPA population are strongly associated with the River Boyne and Blackwater main channels and their tributaries (Cummins et al., 2010). The Proposed Development will not involve works across the River Boyne Viaduct, as the Proposed Development boundary only goes until the R150, 170m from the River Boyne. As the Proposed Development is located over 3km from the River Boyne and River Blackwater SPA, and given the works are not located on any major tributary of the River Boyne, there is no potential for disturbance related impacts on kingfisher as a result of the Proposed Development.

### 5.6.2 Operation

During operation, the maximum noise level $LAF_{max}$ of an existing diesel Enterprise train measured at 25m from the nearest track is approximately 90dB. This would apply at Malahide, Rogerstown and the River Nanny estuary where the maximum line speed is 145km/h. The existing DART trains (that run between Dublin City Centre and Greystones) are approximately 10dB quieter than the diesel enterprise trains (maximum speed 100 km/h) and the future DART+ trains are approximately 6dB quieter than the existing diesel Enterprise trains (max speed 145km/h). At 100m from the trainline, noise levels from the DART would be approximately 78dB. Wintering bird surveys at the estuaries identified birds roosting and foraging right up to the existing railway line and Viaducts (Malahide, Rogerstown and River Nanny Viaducts). Bird species in these estuaries are habituated to constant disturbance from the existing diesel trains that pass through these estuaries. Whilst the DART trains will be more regular than the current passing trains, they are quieter, and therefore bird species in the estuaries will be less disturbed than is currently experienced. During the operation of Proposed Development there will be several ongoing maintenance activities associated with the operation of the railway to ensure the safe and efficient operation. To maintain the service provision, several maintenance activities need to be carried out at night. Some of the activities have the potential to generate noise with a risk of noise disturbance during the activity. It is understood that the railway maintenance activities that can result in adverse noise impacts are generally: alignment and levelling of tracks; track tamping; and rail grinding / reprofiling.

As birds are generally roosting at night when maintenance activities will be undertaken, there is potential for disturbance related impacts on SCI species during the operation of the Proposed Development.

Marine mammals associated with European sites may commute and forage within lower parts of estuaries along the east coast. The Proposed Development will not impact on the conservation objectives or any QI marine mammal species, as the works are largely Proposed Development inland along or adjacent to the existing rail corridor, where water levels can drop diurnally, reducing the likelihood of marine mammals venturing this far inland.

As the Proposed Development has the potential to result in the disturbance / displacement of the QI / SCI species of the following European sites during the construction stage; River Boyne and River Blackwater SAC, Malahide Estuary SPA, Rogerstown Estuary SPA, Lambay Island SPA, Skerries Islands SPA, Boyne Estuary SPA, Dalkey Island SPA, Dundalk Bay SPA, Skerries Islands SPA, Ireland's Eye SPA, The Murrough SPA, Baldoyle Bay SPA, North Bull Island SPA, Dundalk Bay SPA, Stabannan-Braganstown SPA, South Dublin Bay and River Tolka Estuary SPA, River Nanny Estuary and Shore SPA, and the North-West Irish Sea SPA, there is the potential for in combination effects to occur.

## 5.7 Direct Injury/Mortality

A potential increase in the mortality and/or direct injury risk to SCI species associated with increased collisions arising from the introduction of Proposed Development new Overhead Line Equipment on the railway line in the Malahide, Rogerstown, and River Nanny Estuaries has been considered.

As the current railway line north of Malahide currently has no overhead lines, areas that are exposed (i.e., are not screened by vegetation and/or the railway is in line or above the surrounding landscape and therefore exposed) and have suitable wintering bird habitat and *ex-situ* habitat (as discussed above in Section 5.1 and Section 5.6) have also been considered in terms of potential collision risks to SCI species. This is namely at Gormanston, Balbriggan, and Laytown.

The OHLE is formed by primarily two aerial electrical live wires (catenary and contact wire) located above the tracks which power the trains through the contact between the train pantograph and the OHLE contact wire. To support the OHLE wires, masts and other infrastructure will be erected along the line and through stations, from north of Malahide to Drogheda (including Drogheda depot). Typical spacing between OHLE support structures will be between 40 m and 50 m, with a maximum spacing of 65 m. The OHLE support heights vary between 6.5 m and 8.5 m (i.e., maximum height is 8.5m from the line).

Wintering bird surveys at Malahide, Rogerstown, Laytown, Gormanston, and Balbriggan, recorded flight lines and the approximate heights birds were flying at over the existing railway line and Viaducts (for Malahide, Rogerstown and Laytown). The number of flights over the railway of each bird species was compared between each height band (i.e., as described in Section 4.3.5.2) and converted into a percentage across all sites surveyed (see Appendix 1.3). The majority of birds were flying over the line in the 0-10m height band for surveys in 2021 – 2022, with the 10-20m height band being the second highest number of flights. Whilst in 2022 – 2023, more birds were flying at the 10-20m height band, with the 0-10m height band having the second highest number of flights.

Therefore, there is potential for direct injury/mortality related impacts of SCI species as a result of the Proposed Development of the following European sites; Malahide Estuary SPA, Rogerstown Estuary SPA, River Nanny Estuary and Shore SPA, Boyne Estuary SPA, Dundalk Bay SPA, Stabannan-Braganstown SPA, Skerries Islands SPA, Lambay Island SPA, Ireland's Eye SPA, North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, the North-West Irish Sea SPA and the Murrough SPA. Other SPAs that are within the ZoI of the Proposed Development, i.e. Howth Head Coast SPA, Dalkey Islands SPA, Rockabill SPA, and River Boyne and River Blackwater SPA, are not considered as the designated SCI species within these sites were not identified flying over the Proposed Development during wintering bird surveys carried out in 2021 – 2023.

## 5.8 Summary

The habitat degradation as a result of hydrological impacts, disturbance and displacement impacts, habitat degradation as a result of introducing/spreading non-native invasive species, direct injury/mortality, habitat degradation as a result of air quality impacts associated with the Proposed Development have the potential to affect the receiving environment and, consequently, have the potential to affect the conservation objectives supporting the Qualifying Interest/Special Conservation Interests of European sites. Therefore, the Proposed Development is likely to have significant effects on European sites.

As the Proposed Development itself is likely to affect the QIs/SCIs or conservation objectives of European sites, there is also the potential for other plans or projects to act in combination with it to result in likely significant effects on European sites.

The potential impacts of the Proposed Development on the receiving environment, their ZoI, and the European sites at risk of likely significant effects are summarised in Table 5-3 below. In assessing the potential for the Proposed Development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

**Table 5-3 Summary of Analysis of Likely Significant Effects on European sites**

| Potential Direct, Indirect In Combination Effects and the ZoI of the Potential Effects | Are there any European sites within the ZoI of the Proposed Development? |
|---|---|
| Habitat loss<br>Habitat loss will be confined to the lands within the Proposed Development boundary. | No<br>Although some works are located within the Malahide Estuary SAC, Malahide Estuary SPA, Rogerstown Estuary SAC, Rogerstown Estuary SPA, and River Nanny Estuary and Shore SPA, no works are Proposed Development within any QI Annex I habitats. Works are proposed in *ex-situ* habitat for wintering birds, however this will not undermine the conservation objectives of any SPA. |
| Habitat degradation as a result of hydrological impacts<br>Habitats and species downstream of the Proposed Development site and the associated surface water drainage discharge points, and downstream of offsite wastewater treatment plants. | Yes<br>There are European sites at risk of hydrological effects associated with the Proposed Development , namely; Malahide Estuary SPA, Rogerstown Estuary SPA, Lambay Island SAC, Skerries Islands SPA, Boyne Estuary SPA, River Boyne and River Blackwater SPA, Howth Head Coast SPA, Dalkey Island SPA, Dundalk Bay SPA, Skerries Islands SPA, Ireland's Eye SPA, Lambay Island SPA, Rockabill SPA, The Murrough SPA, Baldoyle Bay SPA, Boyne Coast Estuary SAC, Boyne Estuary SPA, River Boyne and River Blackwater SAC, Codling Fault Zone SAC, North Bull Island SPA, North-West Irish Sea SPA, and South Dublin Bay and River Tolka Estuary SPA, River Nanny Estuary and Shore SPA, Saltee Islands SPA, Wicklow Head SPA, and the Seas Off Wexford SPA. |
| Habitat degradation as a result of hydrogeological impacts<br>Groundwater-dependant habitats, and the species those habitats support, in the local area that lie downgradient of the Proposed Development site. | No<br>There are no European sites at risk of hydrogeological effects associated with the Proposed Development |
| Habitat degradation as a result of introducing/spreading non-native invasive species.<br>Habitat areas within, adjacent to, and potentially downstream of the Proposed Development site. | Yes<br>There are non-native invasive species present adjacent to the Proposed Development site and, therefore, a risk associated with the Proposed Development to the following European sites from the spread/introduction of non-native invasive species; North Dublin Bay SAC, South Dublin Bay SAC, North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SAC and Baldoyle Bay SPA, Malahide Estuary SAC and Malahide Estuary SPA, Rogerstown Estuary SAC and Rogerstown Estuary SPA, North-West Irish Sea SPA, River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Boyne Estuary SPA. |
| Disturbance and displacement impacts | Yes |

| Potential Direct, Indirect In Combination Effects and the ZoI of the Potential Effects | Are there any European sites within the ZoI of the Proposed Development? |
|---|---|
| Potentially up to several hundred metres from the Proposed Development boundary, dependent upon the predicted levels of noise, vibration and visual disturbance associated with the Proposed Development, taking into account the sensitivity of the qualifying interest species to disturbance effects | Disturbance effects associated with the construction of the Proposed Development are predicted on the following European sites:<br>River Boyne and River Blackwater SAC, Malahide Estuary SPA, Rogerstown Estuary SPA, River Nanny Estuary and Shore SPA, the South Dublin Bay and River Tolka Estuary SPA, Skerries Islands SPA, Boyne Estuary SPA, Dalkey Island SPA, Dundalk Bay SPA, Ireland's Eye SPA, The Murrough SPA, Baldoyle Bay SPA, North Bull Island SPA, Dundalk Bay SPA, Stabannan-Braganstown SPA and the North-West Irish Sea SPA. |
| Direct Injury/Mortality | Yes<br>there is potential for direct injury/mortality related impacts of SCI species as a result of the Proposed Development of the following European sites; Malahide Estuary SPA, Rogerstown Estuary SPA, River Nanny Estuary and Shore SPA, Boyne Estuary SPA, Dundalk Bay SPA, Stabannan-Braganstown SPA, Skerries Islands SPA, Lambay Island SPA, Ireland's Eye SPA, North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, the North-West Irish Sea SPA and the Murrough SPA. |
| Air Quality | Yes<br>The following European sites are European sites are potentially at risk of air quality during construction phase of the Proposed Development:<br>Malahide Estuary SAC, Rogerstown Estuary SAC, Baldoyle Bay SAC, River Boyne and River Blackwater SAC. |

## 5.9 In Combination Effects

This Section presents the assessment carried out to examine whether other plans or projects have the potential to act in combination with the Proposed Development to have a significant effect on European sites.

There are 31European sites within the ZoI of the Proposed Development at outlined above. These are: Malahide Estuary SAC [000205], Rogerstown Estuary SAC [000208], River Boyne and River Blackwater SAC [002299], Baldoyle Bay SAC [000199], Boyne Coast and Estuary SAC [001957], Rockabill to Dalkey Island SAC [003000], Lambay Island SAC [000204], North Dublin Bay SAC [000206], South Dublin Bay SAC [000210], Codling Fault Zone SAC [003015], River Nanny Estuary and Shore SPA [004158], River Boyne and River Blackwater SAC [004232], Boyne Estuary SPA [004080], South Dublin Bay and River Tolka Estuary SPA [004024], Howth Head Coast SPA [004113], North Bull Island SPA [004006], Baldoyle Bay SPA [004016], Dalkey Island SPA [004172], Malahide Estuary SPA [004025], Rogerstown Estuary SPA [004015], Dundalk Bay SPA [004026], Skerries Islands SPA [004122], Ireland's Eye SPA [004117], Lambay Island SPA [004069], Rockabill SPA [004014], The Murrough SPA [004186], Stabannan-Braganstown SPA [004091], North-West Irish Sea SPA [004236], Seas Off Wexford SPA [004237], Saltee Islands SPA [004002], Wicklow Head SPA [004127].

All other European sites fall beyond the ZoI of the Proposed Development. Therefore, there is no potential for any other plans or projects to act in combination with the Proposed Development to adversely affect the integrity of any other European sites.

The in combination assessment involved first identifying those plans and projects which have the potential to impact on those European sites within the ZoI of the Proposed Development. Those plans or projects with the potential to impact upon these European sites are any national, regional and local land use plans or any existing or Proposed Development projects that could potentially affect the ecological environment within the ZoI of the Proposed Development. These are presented in Table 5-4 and Table 5-5.

**Table 5-4 Land Use Plans and Programmes Considered for the In Combination Assessment**

| **National Plans** |
|---|
| National Energy & Climate Plan 2021-2030 |
| National Spatial Strategy for Ireland 2002-2020 |
| Project Ireland 2040 – Building Ireland's Future |
| National Transport Authority Integrated Implementation Plan 2019-2024 |
| Smarter Travel a Sustainable Transport Future 2009-2020 |
| 4th National Biodiversity Action Plan 2023 - 2030 |
| River Basin Management Plan 2018-2021 |
| National Air Pollution Control Programme (NAPCP) 2021 |
| National Marine Planning Framework 2018 |
| Water Services Strategic Plan 2015 |
| National Development Plan Ireland 2021- 2030 |
| **Regional Plans** |
| Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study 2011-2016 |
| Greater Dublin Area Transport Strategy 2022- 2042 |
| Regional Spatial & Economic Strategy for the Eastern and Midland Region 2019-2031 |
| **County/Local Plans** |
| Fingal Development Plan 2023-2029 |
| Fingal Biodiversity Action Plan 2022-2030 |
| Fingal County Council Climate Action Plan 2024 - 2029 |
| • Donabate Local Area Plan 2026[24] |
| Dublin City Development Plan 2022-2028 |
| Dublin City Biodiversity Action Plan 2021-2025 |
| Dublin City Council Climate Action Plan 2024 - 2029 |
| Meath County Development Plan 2021 – 2027 |
| County Meath Biodiversity Action Plan 2015 – 2020 |
| Meath County Climate Action Strategy 2019 – 2025 |
| Louth County Development Plan 2021 – 2027 |
| Local Biodiversity Action Plan for County Louth 2021-2026 |

[24] The Donabate Local Area Plan 2016 was extended to 2026

### Table 5-5 Projects Considered for the In Combination Assessment

| In Combination Assessment Projects |
|---|
| DART+ South West |
| DART+ West |
| Broadmeadow Way |
| Metrolink |
| Bus Connects Projects |
| Luas Finglas |
| Dundalk Active Travel Project |
| ESB Electricity Supply Connections |
| DART Station Enhancement Project |
| Multimodal Interchange Project |
| Iarnród Éireann Carparks Programme |

# 6. SCREENING CONCLUSIONS AND STATEMENT

Following an examination, analysis and evaluation of all the relevant information, in view of best scientific knowledge and applying the precautionary principle, it can be concluded that there is the possibility for significant effects on the following European sites, in the absence of mitigation, either arising from the project alone or in combination with other plans and projects, as a result of habitat degradation as a result of hydrological impacts, habitat degradation as a result of introducing/spreading non-native invasive species, and disturbance and displacement impacts:

Malahide Estuary SAC [000205], Rogerstown Estuary SAC [000208], River Boyne and River Blackwater SAC [002299], Baldoyle Bay SAC [000199], Boyne Coast and Estuary SAC [001957], Rockabill to Dalkey Island SAC [003000], Lambay Island SAC [000204], North Dublin Bay SAC [000206], South Dublin Bay SAC [000210], Codling Fault Zone SAC [003015], River Nanny Estuary and Shore SPA [004158], Boyne Estuary SPA [004080], South Dublin Bay and River Tolka Estuary SPA [004024], Howth Head Coast SPA [004113], North Bull Island SPA [004006], Baldoyle Bay SPA [004016], Dalkey Island SPA [004172], Malahide Estuary SPA [004025], Rogerstown Estuary SPA [004015], Dundalk Bay SPA [004026], Skerries Islands SPA [004122], Ireland's Eye SPA [004117], Lambay Island SPA [004069], Rockabill SPA [004014], The Murrough SPA [004186], Stabannan-Braganstown SPA [004091], the North-West Irish Sea SPA [004236] River Boyne and River Blackwater SPA [004232], and the Seas Off Wexford SPA [004237], Wicklow Head SPA [004127], and Saltee Islands SPA [004002].

In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the zone of influence, and their conservation objectives, have been fully considered. Therefore, it is the professional opinion of the authors of this report that the application for consent for the Proposed Development does require a Stage 2 Appropriate Assessment and the preparation of a Natura Impact Statement (NIS).

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